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## Jurnal Dinamika Akuntansi dan Bisnis

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## Income Smoothing, Default Risk and Stock Price Crashes: The Moderating Effect of Manager Age

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### ABSTRACT

The purpose of this study is to investigate the moderating role of manager age on the association between income smoothing and stock price crashes and the association between default risk and stock price crashes. The data was collected from the samples of 182 companies firms listed on the Indonesia stock exchange from 2013 to 2017 (910 firm-year observation). Using the multivariate analysis as the data analysis method, this study revealed that manager age and default risk were negatively associated with stock price crashes. On the other hand, the income smoothing was not significantly associated with stock price crashes. With regard to moderating effect of manager age, the results showed that manager age effect the association between default risk and stock price crashes with a positive direction. Meanwhile, no significant effect of manager age on the association between income smoothing and stock price crashes is found in this study.

### *Perataan laba, Risiko Default, dan Crashes Harga Saham: Efek Moderasi Umur Manajer*

#### ABSTRAK

Penelitian ini menguji apakah umur manajer dapat memoderasi hubungan perataan laba dan crashes harga saham serta hubungan risiko default dan stock price crashes. Data dikumpulkan dari perusahaan sampel yang berjumlah 182 perusahaan yang terdaftar di Bursa Efek Indonesia antara tahun 2013 s.d. 2017 (910 observasi). Dengan menggunakan metode regresi berganda sebagai teknik analisis data, penelitian ini menemukan bahwa umur manajer dan risiko default berhubungan negatif dengan crashes harga saham sesuai dengan prediksi. Sementara itu, hasil analisis juga menunjukkan bahwa perataan laba tidak berhubungan dengan crashes harga saham. Untuk variabel interaksi, hasil analisis menunjukkan umur manajer dapat memoderasi hubungan antara risiko default dan crashes harga saham dengan arah positif. Efek yang signifikan dari umur manajer terhadap hubungan antara perataan laba dan crashes harga saham tidak ditemukan dalam penelitian ini.

## 1. Introduction

Efficient market theory assumes market participants act rationally and react quickly to new information. But the theory holds when information is widely available to market participants at the same time (Shleifer, 2000). In

such condition stock prices should reflect the economic reality of a company. However, firms may intentionally hide bad news to avoid its negative effect on stock prices. In such a situation, the firm's stock price will no longer reflect real financial conditions. When the market finally

discover the accumulated bad news and react accordingly, large drop in stock prices will occur (Habib et al., 2017). A sharp decline of stock prices in short period is widely known as stock price crashes. The incidence of stock price crashes has drawn many empirical studies in various capital markets that seek to identify the determinants of stock price crashes (Chang et al., 2017; Harymawan et al., 2019; Li et al., 2019; Shleifer, 2000).

The concept of bad news hoarding has been the widely accepted argument to explain stock price crashes (Chen et al., 2017; Habib et al., 2017; Hutton et al., 2009). It is based on the assumption that managers have incentives to withhold or keep bad news from market knowledge for an extended period. Systematic efforts to influence earnings will result in overvaluation of the firm's stock price. Prior studies confirm the tendency of managers to hide and suspend the disclosure of bad news to avoid its negative effect on manager long term career and compensation (Chang et al., 2017; Jung et al., 2019; Kim et al., 2011; Kothari et al., 2009). Meanwhile, Liu, Ng, Tang, & Zhong (2019) demonstrated that the credit swap market allows market participants to reduce the likelihood of bad news hoarding and thus lowers the risk of stock price crashes. Guan, Kim, Bon, Xin, & Liu (2019) reported that transparency in the bond market reduces the risk of stock price crashes.

Systematic efforts to delay the disclosure of bad news hinder the flow of negative information into capital market, causing the distribution of stock returns to be unsymmetrical (Hutton et al., 2009; Kothari et al., 2009). Default risk is one example of bad news that managers try to withhold from public disclosure. However, the ability of managers to hide default risk are not limitless. Once the accumulation of bad news passes a certain threshold, all bad news must be revealed at once. Severe financial difficulties that a firm faces must be released immediately, triggering a negative response from investors. As a result, firm's stock price drop significantly. A sharp

decline in stock prices within a relatively short period of time is widely called stock price crashes (Habib et al., 2017; Hutton et al., 2009).

Deliberate concealment of firm's economic realities can be accomplished through income smoothing (Chen et al., 2017; Kothari et al., 2009). Income smoothing practices produce stable and persistent earnings, making investors believe on firm's prospects. A survey conducted by Graham et al., (2005) shows that almost 97% of 400 top executives prefer more stable earnings to maintain positive perceptions of investors. Smooth earnings is a signal that helps investors estimate firm's real prospects more accurately. In this regard, income smoothing is a mechanism to communicate private information to prevent the downside risk of equity values (Badertscher et al., 2012). If investors can interpret the signal, the resulting effect on stock price will be positive and the likelihood of stock price crashes decreases.

However, Healy's (1985) classic study and several studies thereafter (for example, Fudenberg & Tirole, 1995; Defond & Park, 1997) show that managers smooth earnings to meet bonus targets and secure jobs. Such motives have the potential to reduce firm's value. Using US firms, Chen et al., (2017) provide evidence of positive relationship between income smoothing and stock price crashes, suggesting that income smoothing causes a negative impact on firm's value.

The findings also indicate that the US capital market is an efficient capital market. US Market participants seem to be knowledgeable in analyzing firm's financial statements that income smoothing cannot be used to obscure firm's real condition. It is unlikely to expect that Indonesian investors will have similar response to the practice of income smoothing.

This study aims to examine the moderating effect of manager age, income smoothing, and default risk on stock price crashes. Positive correlation between income smoothing and stock price crashes reported in Chen et al., (2017) indicates that US investors were able to see

beyond earning numbers and not affected by the company's efforts to display smooth earnings to hide poor performance. This is not necessarily true with Indonesian investors. Indonesia capital market may not as efficient as US capital market. Thus, the effect of income smoothing on stock price crashes remain an empirical question in the context of Indonesian capital market. Parallel test is also conducted on default risk. None of the prior studies tested the moderating effect of manager age.

A test of age moderating effects is motivated by Andreou et al., (2017) in which they show that firms with younger managers (CEOs) were more likely to experience stock price crashes. They argue that younger managers have greater incentives to show their capabilities in managing firms to gain early rises in compensation. Younger managers are more sensitive about firm performance because labor market will use their past performance in determining the level of compensation. Bad performance are more costly for younger managers than the older ones, causing younger managers have more incentive to withhold negative performance. In this perspective, the effect of income smoothing and default risk on stock price crashes may be influenced by the age of managers who run the company. In addition, this study also includes several control variables that have been reported previously to affect stock price crashes. Specifically, the control variables are firm size, profitability, debt levels (leverage) and sales growth (Chen et al., 2001; Hutton et al., 2009; Jin & Myers, 2006).

The following section discusses the theoretical framework and the formulation of the hypothesis. Research method section provides information about how the study conducted including the samples and data analysis method. Following that, the results and discussion section interprets the findings and discusses them with prior research. Finally, the conclusion section

summarizes and concludes the research findings and provides suggestions for further research.

## **2. Literature review**

Agency theory suggests that information asymmetry between managers and stockholders will lead to agency conflicts (Jensen & Meckling, 1976). Managers are more prone to opportunistic behaviour when control mechanisms do not function effectively. Having informational advantage over stockholders allow them to exploit information for personal gain and engage in short-sighted personal target at the expense of long run stockholders well-being (Andreou et al., 2017). Opportunistic behaviour may take two forms: undertaking inefficient investment decisions that aims at higher stock price, or engaging in earnings management to maintain inflated stock price. One way to accomplish earnings management is through adopting income-increasing accounting policies. At least, managers can choose accounting policies to obscure firm's economic reality so that firm's price remain unchanged. Systematic effort to avoid stock price decline may last for an extended period as long as the opportunity remains.

Most research on stock price crashes have been built upon bad news hoardings argument proposed by (Jin & Myers, 2006). Conceptually, stock price crash risk stems from the inability of managers to withhold accumulated bad news after having passed a certain threshold (Habib et al., 2017). Managers have attempted to withhold bad news from market knowledge for an extended period. But it is not limitless. Ultimately, accumulated bad news must be revealed at once. When the market learn how bad the condition of the firm really is, they will simultaneously release the firm's shares, leading to stock price crashes (Hutton et al., 2009; Kothari et al., 2009). When bad news accumulation is no longer able to be hidden from the market, distribution of stock returns becomes asymmetric and negatively biased

(Hutton et al., 2009; Jin & Myers, 2006; Zhu, 2016).

Estimation errors resulting from efforts to report smooth earnings are widely known as income smoothing. As a special type of earnings management, income smoothing is carried out through manipulation of accrual accounting as well (Tessema & Deumes, 2017). In addition to accelerating or shifting the recognition of costs, income smoothing can also be accomplished through allowance for uncollectible debts. The uncertainty of cash receipts from credit sales requires managers to set aside a portion of credit sales as uncollectible receivables (Subramanyam, 2014). However, the estimated amount of uncollectible receivables are subject to error due to unintentional-human errors or deliberate errors to increase or decrease earnings. In addition to adjusting accrual items, income smoothing can also be done through real activities such as offering price discounts at the end of the year, changing the delivery schedule, and delaying or speeding up intangible asset maintenance.

### **Income smoothing and stock price crashes**

The current accounting standards open rooms for managers to engage in income smoothing (Yao, 2014). Although discussions on income smoothing have been more on theoretical perspectives, recent firms' financial reporting suggest that the practice of income smoothing is not merely conceptual discourse but is actually carried out by firms. Gu & Zhao (2016) and Chen et al., (2017) state that managers have extensively engaged in income smoothing as reflected in Graham et al., (2005) findings. Acharya & Lambrecht (2015) claim that the practice of income smoothing has a long tradition in financial reporting. One example is Telecommunications company (ITT) led by Harold Geneen from 1959 to 1977. During the period, ITT recorded increases in earnings for fifty-eight consecutive quarters. Many believe that the increase is a result of income smoothing aiming to provide stable earnings

growth throughout his leadership. Other firms that are also believed to practice income smoothing are Microsoft, General Electric, and American Express.

Income smoothing has the potential to reduce firm value. According to Acharya & Lambrecht (2015) pressure to meet market's earnings expectations motivate managers to engage in income smoothing. They argue that shuffling cash flows backward and forward to smooth earnings may bring unintended consequences on firm value. The risk of meeting market's earnings expectation may force managers to take a shortcut by cutting investment expenses, causing firm value decreases. In an attempt to smooth earnings, managers distort real decisions and destroy firm value in the long run.

In contrast to the perspective that income smoothing may cause damage to firm value, some argue that income smoothing can be justified as a signaling tool, conveying private information to shareholders about the firm's prospects. Sankar & Subramanyam (2001) seek to understand the behaviour of managers towards reporting earnings using the economic exchange model in two periods. In this model, managers are assumed to report biased earnings in the current period and the bias reverse in the future. If the reversal exceeds the minimum limit, managers will be encouraged to level out earnings. Income smoothing is carried out with the aim of communicating private information through reported earnings. Results of their analytical study prove that income smoothing aiming to meet market expectations result in value creation for company.

Another analytical study conducted by Kirschenheiter & Melumad (2002) also supports income smoothing as a means of communicating private information. They developed a financial reporting model in which investors seek to assess the precision of earnings reported by companies. It assumes that earnings shock reduce the ability of investors to assess the quality earnings and thus decreases firm value. To prevent a decline in firm



value, managers engage in income smoothing. Their analysis showed that income smoothing through 'big bath' in the current period produce higher future profits and increase the value of the firm.

The preceding arguments highlight two conflicting arguments that can be used to explain the impact of income smoothing on firm value. One argument emphasizes the opportunistic nature of managers who intentionally obscure real financial performance to avoid the market's negative perception. Unstable reported earnings is a signal that firms are experiencing difficulties in maintaining earnings growth. Accordingly, systematic efforts are required to prevent negative perception that might harm firm market value (Kirschenheither & Melumad, 2002). Managers are at risk of losing their jobs following the decline in firm value (Defond & Park, 1997). Therefore, it is important for managers to report earnings that meets market earnings expectations (Acharya & Lambrecht, 2015). One way to avoid the negative effects of bad news is to temporarily hold the publication of bad news from market knowledge.

The second argument for income smoothing is the desire to convey private information. As an insider, managers have unlimited access to information that enable them to predict firm's future performance. Ease of access into private information makes them superior over outside parties in understanding the true condition of the firm. If managers strongly believe that firms have good prospect but investors do not share the same conviction, they have to find ways to reduce the information asymmetry. Directly inform the market that firm is in a good condition may not be a good choice. Firms choose to smooth earnings as indirect way to convey firm's real condition. If the signal successfully changes the market's perception, then market value increases and stock price crashes can be suppressed. This argument is consistent with Shabani & Sofian (2018) who find a negative relationship between income smoothing and bankruptcy risk.

Since arguments for and against income smoothing are equally reasonable, following hypothesis is stated with no specific direction.

H<sub>1</sub>: Income smoothing is associated with stock price crashes.

### **Default risk and stock price crashes**

Among other factors, rational investors base their stock investment decisions on the ability of firms to meet their obligations. A failure to meet financial obligations will affect firm's future operation and flexibility to respond market dynamics. Thus, default risks determine investors expected return (Garlappi et al., 2008). Higher default risk lead to higher demand of returns (Chava & Purnanandam, 2010). The likelihood of financial failure is reflected in higher debt ratio. Higher debt ratios suggest that firms are very dependent on debt to finance existing investment projects, causing default risk increases (Subramanyam, 2014).

He & Ren (2017) define default risk as the probability of firms failing to meet financial obligations. Similarly, Garlappi et al., (2008) defines default risk as the probability of failure to pay principal and related interest. Conceptually, default risk is different from financial constraints (He & Ren, 2017). A company is considered to be financially constraints if it has difficulty getting external sources to finance its operation. Firms having financial constraints are more likely to experience higher default risk compared to other companies. However, a threat of default risks can be reduced by increasing future cash flow through profitable investment projects (He & Ren, 2017). Financially constraints firms are less likely to invest in such projects due to insufficient source of funds.

Acharya & Lambrecht (2015) conducted an empirical analysis to determine the most appropriate financial policies that firms can adopt in limited external funding situation. In such conditions, firms must formulate policies to maintain availability of funds. There are two

choices that can be made: increasing cash balances by making savings and issuing additional debt or increasing firm's ability to attract creditors. The analysis shows the tendency of firms to increase cash or reduce the level of debt in the context of future investment financing depends on the sensitivity of cash flow to various investment opportunities. In other words, firms having financial difficulties adjust funding options to maintain cash flow stability. If funding choices are limited, then it is very likely that firms overlook profitable investment projects (He & Ren, 2017). The situation is expected to exacerbate financial problems and default risks, leading to stock price crashes.

Preceding analysis suggests that firms with financial constraints have difficulties in obtaining external financing. Potential default increases the likelihood of stock price crashes. Realizing the negative consequence of default risks, managers attempt to hide bad news to avoid stock price decline and maintain current stock price. As a result, current stock prices fail to reflect the firm's intrinsic value. Once accumulation of bad news are revealed to the market, investors would react negatively and stock price drop significantly (Hutton et al., 2009; Kim et al., 2011).

He & Ren (2017) suggest an alternative argument which is contrary to the previous explanation. They argue that the incidence of stock price crashes can only occur when investors are unable to detect financial constraints and their impact on stock prices. If the markets are assumed to be able to detect financial distress early and find out deliberate attempt to hide bad news, investors will gradually adjust the firm's stock price. Slower decline in stock prices deters the possibility of stock price crashes.

Nonetheless, prior studies examining the impact of financial difficulties on stock returns unveiled that the market is unable to detect and assess the impact of financial constraints on firm value (Lamon et al., 2001; White & Wu, 2006). Investors require private information to discover

amount of hidden bad news and make necessary adjustments to firm's stock price. Access to private information is possible only if investor have informants in the company.

Given the two opposing views described above, the relationship between default risk and stock price crashes cannot be determined convincingly.

H<sub>2</sub>: Default risks are associated with stock price crashes

### **Age of manager and stock price crashes**

Performance-based compensation is a common practice in the business world. Labor market tracks workers achievements and use them as a basis to determine wages to be received in future employment. Outstanding performance increases a manager's value in the labor market and result in higher future compensation (Andreou et al., 2017). Therefore, past managerial achievements is closely related to future compensation.

The desire to make superior achievements is stronger for younger managers because they need to impress labor market about their abilities. Litjens (2017) argues that younger managers (CEOs) tend to have excessive self-confidence due to higher knowledge and abilities in problem solving. Excessive self-confidence makes them bolder in taking risks. The argument is supported by Serfling (2014) who found that CEO age is associated with lower risk. Peltomäki et al., (2018) also reported consistent findings that CEO age is negatively related to stock volatility.

Younger managers have more incentives to withhold bad news to avoid adverse effect on compensation and labor market (Andreou et al., 2017). This is due to the fact that younger managers have longer future career and desire to proof their abilities to build good reputation in labor market. Disclosure of negative information should have more negative impact on personal wealth of younger managers because labor market will use this information as a basis for determining

compensation in the future. However, bad news accumulation cannot be hidden in the long run and ultimately must be revealed to the market. Thus, firms managed by younger managers are more likely to experience stock price crashes.

H<sub>3</sub>: Firms managed by younger managers experience higher stock price crashes than older managers

As described earlier, the relationship between default risk and stock price crashes can be positive or negative depending on the ability of investors to obtain private information. But the findings in Andreou et al., (2017) suggests that the correlation between the two variables might be influenced by the characteristics of managers who manage the company. Younger managers have more courage to choose accounting policies to hide default risk. The courage is driven by a very strong desire to build a reputation as a young manager with extraordinary achievements. On the contrary, older managers do not have the same desire to prove their achievements. They prefer natural ways to resolve financial problems and are not compelled to cover default risk.

However, the effect of manager age on the relationship between default risk and price crashes depends on the assumptions of private information ownership. If investors are assumed to be unable to anticipate the firm's financial difficulties, a positive relationship between default risk and price crashes will be stronger in firms managed by younger managers relative to older managers. Conversely, if investors are assumed to be able to anticipate the firm's financial difficulties, a negative relationship between default risk and price crashes will be stronger in companies managed by younger managers compared to older managers. Thus, moderating effect of age on the the relationship between default risk and price crashes cannot be stated in a specific direction.

H<sub>4</sub>: Age of managers affect the relationship between default risk and stock price crashes

As previously described, there are two opposing views related to income smoothing. The

first view is built upon the argument of opportunistic behaviour of managers. It is argued that managers have incentives to hide bad news to present stable earnings growth over time. However, efforts to smooth income by choosing certain accounting policies cannot be sustained in the long run. At the end, there are no ways left to maintain smooth earnings and firms are forced to disclose accumulated bad news at once. The market would reacts strongly following the revelation. Thus, a managerial opportunistic behaviour may result in large drop in stock price.

The situation is worse when younger managers control the company. With higher high self-confidence, it is expected that younger managers are bolder to do extreme income smoothing, making positive effect of income smoothing on stock price crashes stonger. It should be noted that this condition occurs when investors are not aware of income smoothing in prior years.

The second is built upon the assumption that managers are highly responsible on well-being of firms. With that characteristic, managers seek to eliminate information asymmetry regarding the real condition of the company to investors. If investors do not fully understand the prospect of the firm, firms are expected to engage in income smoothing to provide signals about a firm's real condition. In this perspective, income smoothing is an effort to prevent stock price departed from intrinsic value. Younger managers are expected to provide aggressive signaling in an attempt to show his managerial qualities. Thus, a negative effect of income smoothing on stock price crashes is expected to be stronger for firms managed by younger managers.

H<sub>5</sub>: Age of managers affect the relationship between income smoothing and stock price crashes

### **3. Research method**

This study collects sample from Indonesia Stock Exchange (IDX) in 2013-2017. This specific

period was chosen because many public companies experienced a decline in stock prices as reflected in higher market index volatility (Butar, 2019). Data sources are mainly collected from IDX website and firm' official website. The sampling criteria are as follows:

- 1) Firms are listed on Indonesia Stock Exchange from 2013 to 2017, except financial and insurance companies. Financial and insurance industries are

excluded because these companies have different financial characteristics.

- 2) Financial statements are available in rupiah and fiscal year of 31 December.
- 3) Annual reports are available from the sources and provide complete information to measure variables.

Based on the sample selection criteria presented in table 1, the number of firms available for test of hypotheses is 910 (182 x 5 years).

Table 1. Sampling criteria

| Criteria  | Total |
|---|-------|
| Firms are listed on the JCI in 2017                             | 572   |
| Firm are not listed for five consecutive years from 2013-2017   | (22)  |
| Firms belong to insurance, securities and banking industries    | (99)  |
| Financial data were stated in US Dollar                         | (25)  |
| Annual report are not available from data sources               | (89)  |
| Annual report does not contain financial statements             | (35)  |
| Stock prices are not available from data sources                | (58)  |
| Board of directors' profile are not available in annual reports | (62)  |
| Final sample  | 182   |

### Stock price crashes

Stock price crash is defined as a sudden drop of stock prices in a relatively short period (Hutton et al., 2009; Zhu, 2016). Consistent with prior studies, this study employs an expanded market

model by adding t-2 and t-1 lags and leads t+2 and t+1 into the standard market model (Andreou et al., 2016; Hutton et al., 2009; Kim et al., 2011). The expanded market model is stated as follows:

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

Note:  $R_j$  is individual return of firm j in week t;  $R_M$  is market return in week t.

The residuals from the expanded market model ( $\epsilon_j, t$ ) are added by 1 and then transformed into natural logarithms to  $w_j, t = \ln(1 + \epsilon_j, t)$ . The conversion is applied to reduce the tendency of asymmetrical return distributions (Andreou et al., 2016; Kim et al., 2011). Transformed residual ( $w_j, t$ ) is used as a measure of the stock price crashes. The residuals reflect firm-specific information.

### Income smoothing

Measure of income smoothing follows a procedure developed in (Gassen & Fülbier,

2015). Income smoothing is a ratio of standard deviation of net income and standard deviation of operating cash flows deflated with total assets.

### Default risk

Measure of default risk follows Altman Z score that has been specifically developed for firms in developing countries (Altman, 2005). The formula is stated as follows:

$$\text{Def\_Risk} = 6.56 * X1 + 3.26 * X2 + 6.72 * X3 + 1.05 * X4 \quad (2)$$

Note: X1 is working capital divided by total assets; X2 is retained earnings divided by total assets; X3 is EBIT divided by total assets; X4 is shareholder equity divided by total assets.

### Manager age

Manager age is an indicator variable, equal 1 if a manager's age below 51 and 0 otherwise. The measure is adopted from Andreou et al., (2017) who find significant difference in stock price crashes between the two groups. The term manager in this study is referred to president directors or directors.

### The control variables

Prior studies report that size, profitability, leverage and sales growth have significant effects

on price crashes (Chen et al., 2001; Hutton et al., 2009; Jin & Myers, 2006). For this reason, these variables are included in the regression model as control variables. These four control variables are measured as follows: 1) Size is Ln total assets. 2) Profitability is the ratio of net income to total assets. 3) Sales growth is the difference between current and last year's sales divided by current year's sales. 4) debt level is the ratio of total debt to total assets.

The test of hypotheses is conducted using the following regression model:

$$\text{Crashes}_{jt} = \beta_0 + \beta_1 \text{Smooth}_{jt} + \beta_2 \text{Default}_{jt} + \beta_3 \text{Age}_{jt} + \beta_4 \text{Age} * \text{Smooth}_{jt} + \beta_5 \text{Age} * \text{Default}_{jt} + \beta_6 \text{Size}_{jt} + \beta_7 \text{Growth}_{jt} + \beta_8 \text{ROA}_{jt} + \beta_9 \text{LEV}_{jt} + \varepsilon_{jt} \quad (3)$$

Where,

- Crashes = Stock price crashes.
- Smooth = Income smoothing.
- Default = Default risk.
- Age = Age of managers, equal 1 if manager age below median and 0 otherwise.
- Age\*Smooth = Interaction of age and income smoothing.
- Age\*Default = Interaction of age and default risk.
- Size = Firm size.
- Growth = Sales growth.
- ROA = Profitability.
- LEV = Leverage

## 4. Results and discussion

Based on the sample selection criteria, as much as 910 firm samples are available for the test of hypotheses. Of these, 58 firm samples were excluded to satisfy data normality assumption, leaving 852 available for further examination. Descriptive statistics for each variable are presented in table 2. As shown in Table 2, the mean for stock price crashes (crashes) is 2.49, indicating

the worst weekly return is 2.49 times the standard deviation below the mean.

Meanwhile, mean for income smoothing (Smooth) is 0.004, suggesting that level of income smoothing is moderate. Mean for the default risk is 5.47. Note that this figure is obtained from the Altman Z Score formula. Manager age has an average of 0.35, suggesting that proportion of managers who aged 51 years and younger is lower than those aged above 51 years.



Table 2. Descriptive statistics

|             | N   | Minimum | Maximum | Mean  | Standard Dev. |
|-------------|-----|---------|---------|-------|---------------|
| Crashes     | 852 | 0.002   | 5.43    | 2.49  | 0.89          |
| Smooth      | 852 | 0.00    | 0.78    | 0.004 | 0.03          |
| Default     | 852 | -8.64   | 10.99   | 5.40  | 2.27          |
| Age         | 852 | 0.00    | 1       | 0.35  | 0.47          |
| Age*Smooth  | 852 | 0.00    | 0.21    | 0.002 | 0.01          |
| Age*Default | 852 | -2.76   | 10.99   | 1.89  | 2.94          |
| Size        | 852 | 2.83    | 12.60   | 7.83  | 1.75          |
| Growth      | 852 | -1.00   | 3.50    | 0.08  | 0.39          |
| ROA         | 852 | -1.51   | 1.01    | 0.03  | 0.14          |
| Lev         | 852 | 0.01    | 3.24    | 0.49  | 0.31          |

Source: SPSS output, 2019

Mean for interaction of age and default risk (Age\*Default) and income smoothing (Age\*Smooth) are 0.0002 and 1.89, respectively. Because both variables are interaction variables, these figures have no meaning. The Mean for firm size (Size) is 7.83, suggesting that firm samples are generally medium-sized firms. Meanwhile, the mean for firm's growth (Growth) and profitability (ROA) are 0.08 and 0.03 respectively, indicating moderate growth and low profitability. The mean for debt (Lev) of 0.49 indicates that on average sample firms do not have financial difficulties.

### Correlation coefficient

Table 3 presents coefficient correlations of main variables. The main focus is on the relationship between stock price crashes as dependent variable and the hypothesized independent variables stated in the research hypothesis. Income smoothing and stock price crashes (Crashes) are positively correlated (0.013) but statistically insignificant (two-tail). The correlation between default risk and stock price crashes is negative (-0.022) but statistically insignificant.

Table 3. Correlation coefficient

|             | Crashes | Smooth  | Default | Age     | Age*Smooth | Age*Default |
|-------------|---------|---------|---------|---------|------------|-------------|
| Crashes     | 1       | 0.013   | -0.022  | -0.087* | -0.021     | -0.055      |
| Smooth      | 0.013   | 1       | 0.075*  | 0.036   | 0.456**    | 0.036       |
| Default     | -0.022  | 0.075*  | 1       | 0.005   | 0.013      | 0.297**     |
| Age         | -0.087* | 0.036   | 0.005   | 1       | 0.182**    | 0.880**     |
| Age*Smooth  | -0.021  | 0.456** | 0.013   | 0.182** | 1          | 0.170**     |
| Age*Default | -0.055  | 0.036   | 0.297** | 0.880** | 0.170**    | 1           |

\* Correlation is significant at 0.05 (two tails)

\*\* Correlation is significant at 0.01 (two tails).

Source: SPSS output, 2019.

The correlation between manager age and stock price crashes is negative (-0.087) and statistically significant at the 5% level (two tails). However, the direction is not consistent with prediction.

Meanwhile, the correlation between the two interacting variables and stock price crashes is also insignificant with p-value of -0.021 and 0.107 respectively. Taking as a whole, the results

presented in table 3 provide preliminary evidence to reject moderating effect of age on stock price crashes.

### Results of the hypothesis tests

Table 4 presents the test of hypotheses. Adjusted R<sup>2</sup> is relatively small (2.6%). It suggests a low ability of independent variables to explain variations in stock price crashes. In other word, most variations in stock price crashes are influenced by other variables outside the model. Simultaneously, the effect of income smoothing, default risk, and moderating effect of age on stock price crashes are relatively strong as reflected in p-value less than 1% or F-test of 3.554.

The H<sub>1</sub> predicts that income smoothing affect stock price crashes, but the test result do not supported H<sub>1</sub>. Meanwhile, the H<sub>2</sub> that predicts default risk affects stock price crashes is statistically supported as the p-value less than 1%. This finding suggests that the higher the default risk, the lower the risk of stock price crashes.

Moreover, the H<sub>3</sub> that predicts firms managed by younger managers have a higher risk of stock

price crashes than the older ones. The manager age is measured by a dummy variable (1 for manager age is under 51 and 0 for manager age is above 51). The results shows that manager age (Age) is negatively associated with crashes at less than 1% level of significance. This means that companies managed by older managers are more at risk of experiencing stock price crashes than younger managers. Thus, H<sub>3</sub> is rejected.

Furthermore, the H<sub>4</sub> predicts that age of managers affect the relationship between default risk and stock price crashes. The regression analysis showed that the interaction coefficient of age and default risk (Age\*Default) is positive and significant at less than 5% significant level. Thus, the test result confirm H<sub>4</sub>.

Lastly, the H<sub>5</sub> predicts that age of managers effect the relationship between income smoothing and stock price crash and the result showed that interaction of age and income smoothing (Age\*Smooth) is statistically insignificant. Thus, the test results reject the H<sub>5</sub>.

Table 4. The data analysis results

| Variables               | Coefficients | Dev. Std | T      | P-Value |
|-------------------------|--------------|----------|--------|---------|
| Constant                | 3.625        | 0.228    | 15.901 | 0.000   |
| Smooth                  | 0.401        | 1.153    | 0.347  | 0.728   |
| Default                 | -0.069       | 0.021    | -3.309 | 0.001   |
| Age                     | -0.519       | 0.162    | -3.211 | 0.001   |
| Age*Smooth              | -3.461       | 2.511    | -1.378 | 0.168   |
| Age*Default             | 0.066        | 0.027    | 2.414  | 0.016   |
| Size                    | -0.071       | 0.018    | -3.845 | 0.000   |
| Growth                  | -0.054       | 0.078    | -0.695 | 0.487   |
| ROA                     | 0.196        | 0.249    | 0.788  | 0.431   |
| Lev                     | -0.292       | 0.121    | -2.413 | 0.016   |
| Adjusted R <sup>2</sup> | 0.026        |          |        |         |
| F-Stat                  | 3.554        |          |        |         |
| P-Value                 | 0.000        |          |        |         |

Source: SPSS output, 2019

### Discussions

The results of the regression analysis do not support H<sub>1</sub> that states income smoothing affect

stock price crashes. It seems that investors do not respond to managers' efforts to present stable earnings trends over time. This implies that the

income smoothing undertaken by managers do not affect investors' views about the firm's prospects. Although managers try to display a positive image of the firm's financial performance, it seems that investors can see what really happens behind the stable earnings trend. Stock price movements are not affected by managers' efforts to influence market perception.

This finding is not consistent with Chen et al., (2017) who found evidence that a high level of income smoothing increases the risk of stock price crashes. But additional test showed that income smoothing was associated with negative returns. The market seem to be able to quickly anticipates income smoothing. In light of Chen et al., (2017) findings, the failure to identify the relationship between income smoothing and stock price crashes in this study may be an indicative of investors abilites to anticipate income smoothing before stock price crashes occurred.

Furthermore, the relationship between default risk and stock price crashes stated in H<sub>2</sub> depends on the assumptions about the ownership of private information by investors. The first assumption is the market does not know about the default risk that firms had hidden for long time. As previously described, firms under financial distress are more likely to experience defaults in meeting financial obligations. The higher the financial problems, the greater the possibility of stock price crashes.

Firms seek to find ways to prevent investors from understanding firm's financial condition to avoid the downside of stock prices that may trigger stock price crashes. However, the efforts to hide bad news cause bad news accumulation to pile up. Ultimately, firms are forced to reveal the accumulated bad news at once, leading to stock price crashes. Thus, default risk is predicted to be positively related to stock price crashes.

The second assumption is that investors are able to detect and anticipate financial difficulties and gradually adjust firm's stock prices. Gradual adjustments prevent incidence of stock price crashes. In light of efficient market theory, the

finding reported in this study is consistent with efficient market theory. However, it should be noted that prior studies show that the market cannot fully anticipate the effects of firm's financial difficulties (Lamon et al., 2001; White & Wu, 2006). With no sufficient information from within the company, the market will not be able to detect hidden bad news.

The results of this study demonstrated that the default risk negatively affects stock price crashes. The negative relationship supports the second assumption that market participants are able to detect firm's financial difficulties and anticipate them before things get worse. They do this by releasing their stock ownership gradually and thus prevent stock price crashes. In sum, the higher the default risk, the lower the risk of stock price crashes.

Firms managed by younger managers are more likely to experience stock price crashes as stated in H<sub>3</sub>. Younger managers have excessive self-confidence and motivation to show their abilities and competences to impress labor market. They are risk takers and more willing to engage in income smoothing for the purpose of reputation. Practice of income smoothing through selecting accounting policy allow them to hide bad news so that firm performances look stable over time. However, the accumulation of bad news cannot be hidden at all times and must be disclosed to the market. On the other hand, older managers do not have the same desires and urge to pursue outstanding career. They are not compelled to adopt unsound reporting practices to hide bad performance. Thus, firms managed by older managers are less likely to experience stock price crashes.

Test of hypothesis shows that age has a positive effect on stock price crashes. However, the observed sign is contrary to the prediction. A positive direction suggests that firms managed by older managers are more likely to experience stock price crashes. This finding is not consistent with Andreou et al., (2017) who used US firms as samples. The contradicting result may be attributed

to differences in personal characters of Indonesian managers and US managers. While younger managers in US seem to be more open to the practice of bad news hoarding, younger managers in Indonesia prefer normal ways to advance their careers. They realize that their career are still long to go and do not want to sacrifice them for short-term results. When experiencing financial performance declines, younger managers in Indonesia chose to acknowledge and disclose bad news when it occurs so that the accumulation of bad news that lead to stock price crashes can be prevented.

The results also demonstrated that interaction between age and default risk has positive effect on stock price crashes at 5% level of significance. This findings is contrary to H<sub>2</sub> test result that default risk has a negative effect on stock price crashes and also contrary to H<sub>3</sub> test result that age has a negative effect on stock price crashes. As explained earlier, the negative sign is an indicative of investor's ability to detect and anticipate financial difficulties by gradually sell their shares and thus preventing stock price crashes. Furthermore, it suggests that firms managed by older managers are more likely to experience stock price crashes. When age interacts with default risk and price crashes, the sign of coefficient becomes positive, which means that firms with higher default risk and managed by younger managers are more likely to experience stock price crashes.

A change from negative to positive sign is quite confusing and no explanation could be offered right now to explain this bizarre behaviour. Subsequent studies by using different default risk measures should be conducted before strong inferences be made. It is possible that the Altman Z Score measure of default risk is not appropriate in Indonesia context resulting in contradicting results. Another possibility is that the measure of age based on two grouping, below and above 51, are not strict enough to separate older and younger managers groupings.

As described earlier, H<sub>5</sub> is stated without no specific direction due to conflicting arguments linking income smoothing and stock price crashes. However, the test result show the insignificant effect of income smoothing on stock price crashes. We have to look at the initial relationship between income smoothing and stock price crashes to understand the insignificant result. The direction of the interaction coefficient depends on the initial relationship between income smoothing and stock price crashes. The following paragraphs describe the possibilities of the moderating effect of age on the relationship between income smoothing and stock price crashes. These are reflected in the signs of interacting variables.

First, the interacting coefficient is positive and statistically significant. This condition occurs because income smoothing and stock price crashes have a positive relationship. A positive relationship between income smoothing and stock price crashes is expected to be magnified when a company is managed by younger managers. In this scenario, the interaction coefficient is predicted to have a positive direction. In spite of managing by older managers, the direction is predicted to be positive. However, the magnitude of direction is lower for firms managed by older managers than those managed by younger managers. Note that in both conditions, opportunistic behaviour is assumed to persist but stronger for younger managers.

Second, the interacting coefficient is negative and statistically significant. This condition occurs because income smoothing and stock price crashes are negatively related. As explained in the previous section, the negative relationship between income smoothing and stock price crashes is based on the assumption that the manager is a responsible person and cares about firm's prospects. If income smoothing and stock price crashes are negatively related then two possibilities exist regarding the sign of interacting variable: 1) when a company is managed by younger managers with obsessions to show best performance, the negative correlation between income smoothing and stock price crashes

is expected to be stronger. Thus, the interacting coefficient is also predicted to be positive. 2) when a company is managed by older managers, the correlation between income smoothing and stock price crashes is expected to remain positive but the magnitude the interacting coefficient is expected to be lower than firms managed by younger managers.

Third, the interacting coefficient is positive (negative) but is not statistically significant. In this condition, two possibilities exist regarding the sign of interacting variable: 1) the initial relationship between income smoothing and stock price crashes is positive (negative) but not statistically significant and the relationship between age and stock price crashes is positive (negative) but also not statistically significant. 2) the initial relationship between income smoothing and stock price crashes may be positive (negative) but statistically insignificant but the correlation between age and stock price crashes are positive (negative) and statistically significant.

Comparing one possibility to others, it can be concluded that the third possibility is consistent with the test result. The interacting coefficient is negative but statistically insignificant. In addition, the test results also show that age has a negative effect on stock price crashes, but income smoothing has no significant effect on stock price crashes. Taken together, the results indicate that, although insignificant, the negative interacting coefficient is due to negative effect of age on stock price crashes. However, when age of manager is interacted with income smoothing, the effect on stock price crashes is significantly reduced that it does not affect stock price movements. This finding suggests that age plays an important role in influencing stock price crashes, but the effect is not strong enough to change the relationship between income smoothing and stock price crashes.

It has been explained previously that there are two conflicting views related to income smoothing. The first is built upon opportunistic nature of managers. It is argued that managers have incentives to hide bad news through selecting

certain accounting policies to report stable earnings from time to time. However, efforts to smooth income by choosing certain accounting policies cannot be carried out for ever. Ultimately there are no ways left to maintain smoothing earnings and accumulated bad news have to be revealed at once, leading to stock price crashes. The situation is worse for firms managed by younger managers due to extreme income smoothing practices.

Younger managers are expected to have a greater incentive to engage in income smoothing than older managers. A strong impetus is triggered by a desire to establish outstanding reputation as a young, high-achieving manager. The courage of young managers to engage in income smoothing relative to older managers strengthen the positive effect of income smoothing on stock price crashes. As a result, the decline in stock prices occurs with a greater intensity that it triggers a severe stock price crashes as well. It should be noted that this condition can only occur with the assumption that investors do not know the income smoothing practices in the past.

The second view to support income smoothing is built upon the assumption that managers are individuals who are responsible and concerned about firm's sustainability. Managers are assumed to be mindful of increasing shareholders's welfare and reducing asymmetric information with regard to firm's prospects. A manager who has a strong belief in firm's prospects may use certain accounting policies to smooth earnings so that the market's perception matches manager's. In this perspective, income smoothing engagement is an effort to prevent stock price crashes. If the company is managed by younger managers, the negative effect of income smoothing on stock price crashes is expected to be stronger than older managers and vice versa. This is due to strong desire within younger managers to give signals to investors .

Test result of H<sub>5</sub> does not appear to support the predictions. The insignificant result may be induced by the initial relationship between income smoothing and stock price crashes as stated in H1.



As reported before, H1 is not statistically supported. Although as a main variabel, age has negative effect on stock price crashes but interaction with income smoothing causes the effect of age to be no longer dominant in influencing stock price crashes. Therefore, the insignificant interacting variable implies that investors do not regard age of managers as an essential factor in assessing the effect of income smoothing on the firm's stock price. Regardless of how old are the managers who run the companies, the market seems to understand and be able to assess the effect of income smoothing on firm's prospects. With regard to control variables, firm size (Size) and leverage (Lev) are the only variables that affect price crashes with 1% and 5% level of significant respectively.

## 5. Conclusions

This study seeks to identify factors that influence stock price crashes in the context of the Indonesian capital market. The finding suggests that investors are quite rational in assessing the economic reality of a company. Efforts to smooth income through selecting certain accounting policies seem to have no effect on investors' perceptions of future performances. Secondly, the default risk is inversely related to stock price crashes. It seems that investors are able to detect firms' financial difficulties and make a quick respond to anticipate large drop in stock prices.

Thirdly, firms managed by older managers pose higher stock price crash risk relative to those managed by younger managers. However, the findings are not consistent with the prediction. Differences in manager's characters may explain the insignificant result. Younger Indonesian managers seem not to be as aggressive as younger managers in other countries, for example in the US.

Fourthly, the interaction of age and default risk has positive effect on stock price crashes. The result suggests that firms having higher default risk and managed by younger managers are more likely to experience stock price crashes. Lastly, the

interaction between age and income smoothing has no effect on stock price crashes. This findings suggests that investors are rational enough in assessing the purpose of income smoothing that age of managers does not influence their views on firm's prospects. The market seems to be able to assess the economic effects of income smoothing regardless of a manager's age.

Generalization of the results should be made carefully. This study uses weekly returns to measure stock price crashes. Further researches should consider to use different proxies for stock price crashes and income smoothing, for example changes in earnings before earnings management and abnormal accrual changes.

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## **SURAT TUGAS**

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