

## Determinants of Derivatives Usage and Its Effect on Firm Risk: Evidence from Indonesian Non-Financial Firms

Made Reina Candradewi (Corresponding author)

School of Management, Faculty of Economics and Business, Udayana University  
Jl Sudirman Denpasar, Bali 80232, Indonesia  
Tel: +62811380440 E-mail: reinacandradewi@unud.ac.id

I Gusti Bagus Wiksuana

School of Management, Faculty of Economics and Business, Udayana University  
Jl Sudirman Denpasar, Bali 80232, Indonesia  
Tel: +628123816460 E-mail: igb.wiksuana@yahoo.com

Ida Bagus Anom Purbawangsa

School of Management, Faculty of Economics and Business, Udayana University  
Jl Sudirman Denpasar, Bali 80232, Indonesia  
Tel: +6281529119108 E-mail: gidabagus@yahoo.com

Ida Bagus Panji Sedana

School of Management, Faculty of Economics and Business, Udayana University  
Jl Sudirman Denpasar, Bali 80232, Indonesia  
Tel: +628970818845 E-mail: panjisedana@yahoo.co.id

### Abstract

This research aims to analyse the effect of financial performance and corporate governance on derivatives usage, to explain the effect of financial performance, corporate governance and derivatives usage on firm risk and to elucidate the mediating role of derivatives usage between financial performance and corporate governance towards firm risk. The object of this research is non-financial firms listed in Indonesian Stock Exchange for the year of 2015. Current ratio, debt to equity ratio, return on assets and total assets turnover ratio are used to assess financial performance. Managerial ownership, independence of board commissioners and commissioners' education are used to assess corporate governance. The firm risk is measured by calculating the volatility of firm daily stock returns. This research employs multiple regression analysis and path analysis. This research proves that derivatives usage has a negative relationship with firm risk. There is evidence that the firms tend to have lower risk if using more derivatives products as a risk management instrument. Furthermore, this research finds that derivative usages has mediating role on the relationship between total assets turnover and proportion of independent commissioners towards firm risk.

**Keywords:** financial performance, corporate governance, derivatives usage, firm risk

### 1. Introduction

The development of Indonesia capital market shows steady growth in recent years. By 2015, the number of firms listed in Indonesian Stock Exchange (IDX) rose to 521 units with the trading value of Rp 1,406,362 billion (IDX Statistics, 2015). A major challenge encountered by firms in IDX is concerning how they could deal with globalization, liberalization, and advanced technology. These three factors may boost the firms' productivity if they could handle them. These factors, however, can also be a major threat to the firms. Hanafi (2014) explains that the globalization, liberalization and technology are the driving factors in the increased risks of the firms.

Nowadays firms encounter a wide range of risks, such as interest rates risk, exchange rate risk, market risk, credit risk, operational risk, technology risk, the risk of liquidation, changes in commodity prices, global financial crisis and others (Saunders and Cornett, 2014). Interest rate risk is related to interest rate fluctuations, in which greatly affect firms with debt and loans for the costumers, as the interest rate highly affects the level of profits and losses from performing such activities. Exchange rate risk is related to fluctuations in the exchange rate which could lead to losses for firms engaging in export and import and foreign trade transactions (Hanafi, 2014).

These risks can occur at any time and be difficult to avoid. As a result, many firms may experience significant losses causing financial distress and underinvestment problem. The financial problems

encountered by the firms will greatly affect their business value. Therefore, all the risks will be reflected in the volatility of the firms' value (Guay, 1999). In accordance with the research done by Guay (1999) and Bartram *et al.* (2008), that the firm risk can be measured by the volatility of stock returns, as the volatility of the firm's value is not easily accessible. This research will also use the stock return volatility to measure the firm risk.

Development of monthly stock returns on the non-financial industries can be observed in Figure 1. There are eight sectors categorized for the non-financial firms. The fluctuations of monthly stock returns can be seen clearly in Figure 1. A fairly high fluctuation is seen in agriculture sector, with the lowest stock returns by -17.15% in August 2015, and the highest by 15.56% in May 2015. In addition, high fluctuations also appear in miscellaneous industry, basic industry and chemicals. This shows that the firms are facing a risk due to the volatility of the firm value as reflected by the volatility of the stock returns.

Hanafi (2014) argues that corporate risk management is crucial to anticipate the risks. The application of corporate risk management aims to allow the firms manage risk so that they can survive and optimize such risks. Risk management theory by Froot *et al.* (1993), Hentschel and Kothari (2001) suggests that firms can manage their risks by using derivatives. Guay (1999) explains that the implementation of risk management using derivatives is beneficial in lowering the firm risk, such as the volatility of the firm's value, financial distress and underinvestment problem.

Firms in developed as well as developing countries have been using derivatives for years because this instrument provides a way to manage financial risks. Mallin *et al.* (2001) found that 60% of firms in the United Kingdom have been using one type of derivatives at least. Meanwhile, firms in Hong Kong that use derivatives account for 37% (Yu *et al.*, 2001). Schiozer and Saito (2009) found 54% of firms in Brazil use derivatives. Nonetheless, Lantara (2010) found that only 18.4% firms in Indonesia make use of derivatives. This number is considered very low compared to other countries'. Therefore, research on the derivatives usage against the firm risk is ultimately needed in Indonesia.

Several empirical studies have analyzed the relationship between derivative usages against the firm risk. Guay (1999) identifies that firms using derivatives products experience a decline in the volatility of stock returns, interest-rate exposure and exchange-rate exposure significantly when compared with firms that do not use derivatives. Hentschel and Kothari (2001) found that the majority of firms in the United States use derivatives to manage the firm's exposure and experience from a decreased risk. Research by Bartram *et al.* (2008) found strong evidence that the use of derivatives is beneficial to reduce the total and systematic risks of the firms. In this case, further research is needed to analyze the relationship between the derivatives usage and the firm risk in developing country like Indonesia.

Factors that can influence the firm risk other than the derivatives usage is the firms' financial performance (Chun and Meharani, 1999; Hardwick and Adams, 1999; Prevost *et al.*, 2000). Empirical research explains that when the firm has a weak financial performance, they tends to have higher risk. Financial performance can be measured by using financial ratio analysis consisting of current ratio, return on assets, debt to equity and total assets turnover. Based on previous research, the firm's financial performance is also thought to have an effect on the derivatives usage (Borokhovich *et al.*, 2004; Nguyen and Faff, 2003; Shu and Chen, 2003). The use of derivatives products is more frequent when the firms experience financial problems and financial distress (Bartram *et al.*, 2009; Lantara, 2012). Therefore, when the financial performance of the firm is not good enough, they will be motivated to use derivatives products to cope with the financial problems.

Earlier studies claim that firm risk can also be affected by corporate governance (Buckley, 2003; Tsorhe *et al.*, 2011; Trinh *et al.*, 2000). Empirical study explains that when a firm has a good corporate governance, the firm risk tends to decrease. In addition, the corporate governance also influences the corporate use of derivatives (Fama and Jensen, 1983; Borokhovich, 2004; Marsden and Prevost, 2004). The empirical research indicates, when a firm has good corporate governance, the firm will be able to deliver a better financial decision, including the decision to use derivatives as a risk management tool. Important indicators of good corporate governance are the proportion of insider ownership, the proportion of independent board of commissioner, and the education background of commissioners.

### 1.1 Aim of Study

This research aims to analyze the effect of the derivatives usage, financial performance, and corporate governance against the firm risk, as well as the influence of the financial performance and corporate governance against the derivatives usage. Furthermore, this study will analyze the role of mediation in

derivatives usage between financial performance and corporate governance against the firm risk.

## 1.2 Significance of Study

This research contributes in explaining the mediating role of derivatives usage between financial performance and corporate governance towards firm risk, which is still limited in previous studies. The remaining paper is organized as follows. Section 2 discusses study of literature and hypothesis development. Section 3 describes research methodology. Section 4 explain the results of study and continued by section 5 with conclusion and recommendations.

## 2. Literature Review and Hypothesis Development

### 2.1 The Effect of Financial Performance on Derivatives Usage

The firm's financial performance reflects their success in a given period to manage and control the resources it owns. Financial performance can be measured by using financial ratio. Financial ratio can be defined as a mathematical relationship between one number with another number (Paramasivan and Subramanian, 2009). This relationship will produce an index to evaluate the financial performance. Financial ratio analysis can be employed to perform internal comparisons and external comparisons (Van Horne and Wachowicz, 2008). By doing this, the analysis of the firm's financial performance is easier to perform. In assessing the financial performance in relation to the use of derivatives, it is important to note the factos of Liquidity, Profitability, Leverage and the Activity Ratio.

The firm's capacity to meet the current liabilities can be measured by the Liquidity Ratio. Low level of liquidity of the firm indicates the less satisfying financial performance. When the firm has short-term liquidity constraints, it is likely to use derivatives to fix the issue (Froot *et al.*, 1993). Liquidity problems can be overcome with derivatives as a hedging instrument (Carter and Sinkey, 1998). By performing hedging, the firm could reduce fluctuations in the cash flow and suppress the expected cost of financial distress, so that it is able to maintain and increase the level of liquidity (Iqbal, 2015). Research by Lantara (2012) discovers a negative relationship between the level of liquidity and the derivatives usage. Gatopoulos and Louberge (2013) examine the factors affecting the firms to use currency derivatives in Latin America and discover a negative correlation between liquidity and the derivatives usage. Liquidity can be measured with current ratio.

Profitability Ratio reflects the firm's ability to generate net income. When a firm manages to achieve a high level of profitability, the firm is able to optimize revenues and lower the operating costs (Van Horne and Wachowicz, 2008). High profitability levels show that firms have better financial performance and tend to have a lower financial distress. In contrast, firms with a low profit will have low free cash flow and have difficulties in meeting their liabilities (Bartram *et al.*, 2009). Therefore, firms with low profitability have a tendency to do hedging using derivatives instrument. Profitability ratio used for this research is return on assets.

A firm possessing a fairly high degree of leverage will increase the cost of financial distress and the risk of bankruptcy (Hardwick and Adams, 1999). They can lower the probability of financial distress and risk of bankruptcy by using derivatives through hedging (Froot *et al.*, 1993). If the firm has an increasingly high level of leverage, it is in high need of derivatives. Therefore, an increase in the leverage ratio has a positive influence against the use of derivative. The higher leverage ratio of the firm would impact to the more tendency to use derivatives. This conclusion is also based on previous research by Berkman and Bradbury (1996), Gay and Nam (1999), and Haushalter (2000), who found a positive relationship between the debt ratio and the level of hedging using derivatives. They also found that higher leverage ratio of a firm causes higher preference to use derivatives as a hedging instrument. The most well known leverage ratio is debt to equity ratio.

Activity Ratio measures the firm's level of effectiveness in managing its own assets to generate profits. Total Assets Turnover ratio is an activity that is often used. The high ratio indicates the firm's ability to manage its assets well, so it is capable of generating optimum profit (Horne and Wachowicz, 2008). Conversely, the low activity ratio reflects that the firm does not use its assets effectively so as not to produce maximum profit. This makes the firm encounter financial problems like cash shortfalls; hence it requires the derivatives products to fix the issue (Nguyen, 2011). Total assets turnover ratio can be used to

measure firms' activity ratio.

Based on the theoretical explanation above, several hypotheses are proposed as follows:

Hypothesis 1a: Current Ratio has negative and significant effect on derivatives usage.

Hypothesis 1b: Return on Assets has negative and significant effect on derivatives usage.

Hypothesis 1c: Debt to Equity Ratio has positive and significant effect on derivatives usage.

Hypothesis 1d: Total Assets Turnover has negative and significant effect on derivatives usage.

## 2.2 The Effect of Corporate Governance on Derivatives Usage

Corporate governance is a structure consisting of shareholders, Board of Directors, Board of Commissioners and the managerial hierarchy. Good implementation of corporate governance will benefit the firm, especially for the increased quality of resource supervision (Chen et al., 2001). Quality supervision will enhance the firm's ability to provide the best financial decisions for the firm, including in the decision to use derivatives (Oshuoha, 2013). Corporate governance has three indicators, namely the proportion of managerial ownership, the proportion of independent Commissioners and background knowledge of the Commissioners that all are mutually influential in the use of derivatives.

The structure of ownership is another contributing factor of corporate governance which may affect the derivatives usage. In his research, Lantara (2012) explains that the bigger proportion of stocks owned by the managerial positions indicates that the firm has a greater motivation to use derivatives to reduce the risks and enhance the value. This is because the Board of Directors and Board of Commissioners are part of shareholders that have the same purpose with other common shareholders, increasing the firm's value. Tufano (1996) found empirical evidence that managers having greater share ownership tend to use derivatives to reduce the risk of changes in the gold rate.

The proportion of independent Commissioners can affect firm's decisions to choose derivatives. A stronger urge to make decisions that are really useful for shareholders tend to be from the independent Board of Directors (Fama and Jensen, 1983). The members have an active role in the firm's decision to use derivatives for hedging, solely for the benefit of the shareholders (Borokhovich, 2004). Oshuoha *et al.* (2000) found that the composition of the Board is an indicator of the most powerful corporate governance that affects the derivatives usage. Therefore, the bigger proportion of independent Board of Directors and Board of Commissioners will lead to higher tendency to corporate use of derivatives.

Educational background is a reference that can be used to measure the insight and knowledge of the Board of Commissioners. If the Board of Commissioners has good knowledge and insight, they will understand the risk management. When the Board of Commissioners have proper knowledge on risk management, it would support the firm's decision in employing derivatives (Buckley, 2003). Therefore, the Board of Commissioners with higher education background will increase the firm's tendency to use derivatives.

Based on the theory and empirical concepts described previously, the hypotheses can be constructed as follows.

Hypothesis 2a: Managerial ownership has positive and significant effect on derivatives usage.

Hypothesis 2b: Independence of board of commissioners has positive and significant effect on derivatives usage.

Hypothesis 2c: Commissioners education has positive and significant effect on derivatives usage

## 2.3 The Effect of Financial Performance on Firm Risk

Liquidity Ratio reflects the firm's ability to meet its short-term needs by using current assets. The low level of liquidity demonstrates the inability of the firm to meet the short-term needs (Van Horne, 2008). It can be noted that the low level of liquidity of a firm reflects the bad corporate financial performance. When a firm has a high level of liquidity, the firm has no financial problems, so that the risk decreases. Beaver *et al.* (1970) investigate the influence of market factors and accounting on the systematic risks of firm and found a significant correlation between the negative level of liquidity and the systematic firm risk. Empirical research by Biase and Apolito (2012) found evidence that the level of liquidity affects negatively and significantly to the firm risk on banks in Italy.

Van Horne and Wachowicz (2008) explain that firm profitability shows the ability to generate net

income. When the firm is able to generate a positive net income, the firm is able to invest properly and reduce operational costs effectively. Thus, high profitability ratio shows the firm has no significant financial problems. Besides, the increased profitability ratio also proves the firm has good performance so that the firm risk tends to be low. Chun and Meharani (1999) conduct a study on the influence of accounting variables against the systematic firm risk in Malaysia. They found the level of profitability is the most important factor in influencing the systematic firm risk. In addition, a negative and significant relationship between profitability and systematic risk is also found by Biase and D'Apolito (2012) in banks in Italy.

Leverage of the firms shows to what extent the firms use debt to finance the assets. When they have a high solvency level, they would also have large debt. Firms with a large debt on the capital structure would experience increased costs of financial distress which in later are associated with the increased risk faced by the firms (Hardwick and Adams, 1999). Empirical research by Mandelker and Rhee (1984) indicate that the operating leverage and financial leverage has a positive influence on the systematic firm risk. Furthermore, Biase and D'Apolito (2012) confirm that the systematic firm risk and leverage have a strong and positive correlation.

Activity Ratio measures the firm's ability to manage its own assets. Brigham and Daves (2007) explain that firms making large investment in assets but having less sales will have excessive operating assets and capital. This leads to the decline in the net cash flow and the firm's value. Total Assets Turnover Ratio is the ratio of the firm's capability to measure the business activity in generating profit using the total assets (Ross et al., 2012). Firms with high activity ratio, particularly the Total Assets Turnover Ratio, have the ability to manage their assets optimally in accordance with their capacity. Therefore, when firms have the ability to manage assets properly, as shown with the high Total Assets Turnover Ratio, the risks faced by the firms tend to decrease.

Based on the theoretical explanation, some hypotheses are given as follows:

Hypothesis 3a: Current Ratio has negative and significant effect on firm risk.

Hypothesis 3b: Return on Assets Ratio has negative and significant effect on firm risk.

Hypothesis 3c: Debt to Equity Ratio has positive and significant effect on firm risk.

Hypothesis 3d: Total Assets Turnover has negative and significant effect on firm risk.

## 2.4 The Effect of Corporate Governance on Firm Risk

Managerial ownership in firms would improve the firm's performance as it attracts the Board of Directors and Board of Commissioners to carry out their work properly and efficiently in the surveillance (Brickley et al, 1988). When firms have managerial ownership, the Board of Directors and Board of Commissioners are also becoming part of the shareholders, so that they have the same goals with the other shareholders, namely enhancing the firm's value and lowering risk. Empirical research by Jensen and Murphy (1990) as well as Chung and Pruitt (1996) found that board's ownership could improve the firm's performance. In addition, Chen et al. (1998) conclude that the managerial ownership is effective to lower the market risk. Furthermore, Capozza and Seguin (2003) sum up that higher proportion of firms with insider ownership tend to invest in assets that are not at risk and use the smaller proportion of debt on the capital structure, so that the total risk tends to decline.

Agency conflicts in the firm lead to higher risks of the firm. The independent Commissioner at the firm might overcome the agency conflicts, so that the risks faced by the firm with high proportion of independent Commissioners will be reduced (Tsorhe et al, 2011). Empirical research suggest that the independent directors is an important factor in achieving the firm's success. Empirical research concludes that firms owning a high ratio of independent directors are facing lower frequency of financial pressure (Elloumi and Gueyie, 2001). In addition, Daily *et al.* (2003) discover that firms with more independent directors show the possibility of bankruptcy. In corporate governance, especially in Indonesia, firms should have independent Commissioners of at least 30 percent. Independent Commissioners and Directors represent the outsiders. They have considerably the same role and supervision. Therefore, the high proportion of independent Commissioners reflects good corporate governance that leads to the decreased firm risk.

The knowledge and insight of the Board of Commissioners can be measured by looking at the educational level of the Board of Commissioners. When the Board of Commissioners has a high degree of

education, they will have the proper knowledge and insight. Buckley (2003) found that the board of directors who have high education degree are able to direct the firm to manage the risk properly. Hence, when firms have Board of Commissioners with high degree of education, the risks encountered by the firm will decline.

Based on the theory and empirical concepts stated above, several hypotheses are given as follows:

Hypothesis 4a: Managerial Ownership has negative and significant effect on firm risk.

Hypothesis 4b: Independence of Board of Commissioners has negative and significant effect on firm risk.

Hypothesis 4c: Commissioners Education has negative and significant effect on firm risk.

## 2.5 The Effect of Derivatives Usage on Firm Risk

Derivatives is a financial instrument which has the value determined by the price of others (McDonald, 2006). Hull (2009) explains that the derivatives is a financial instrument which value depends on the value of other underlying variables, and the variable is often the price of the traded assets. Types of derivatives are options, swaps, forward contracts, and futures contracts. One of the main objectives of the firm in using derivatives is to lower the risks faced by the firm through hedging.

The classical theory of funding decision by Modigliani and Miller (1958, 1961) reveals that the firm's risk management is irrelevant because the shareholders can publish a well diversified stock portfolio in the perfect capital markets assumption. However, in reality, there is no perfect capital market. Corporate hedging theory developed by Smith and Stulz (1985) states that imperfect capital market creates a condition that hedging is economically justified.

Research by Guay (1999) found that firms using derivatives for hedging, experience decreased risks significantly. The implementation of hedging by means of derivatives is able to lower the firm risks by reducing the expected costs of financial distress and lowering the costs for taxes (Gatopoulos and Louberge, 2013). Therefore, if the firm can manage the risk by using derivatives through hedging, the firm risk is probably lowered.

Based on the theory and empirical concepts provided earlier, the hypothesis can be given as follows.

Hypothesis 5: Derivatives usage has negative and significant effect on firm risk.

## 2.6 The Mediating Role of Derivatives Usage Between Financial Performance towards Firm Risk

Based on the given empirical studies, the financial performance which consists of current ratio, debt to equity ratio, return on assets, and total assets turnover, can influence the derivatives usage. When the firms have poor financial performance, they tend to use derivatives product as risk management instrument to lessen the financial distress. Empirical studies also indicate that financial performance can influence the firm risk. When the firms have better financial performance, the firms tend to have lower risk. In addition, according to previous studies derivatives usage can influence firm risk negatively. The next hypotheses can be formulated as follows:

Hypothesis 6a: Derivatives usage plays a mediating role between current ratio towards firm risk.

Hypothesis 6b: Derivatives usage plays a mediating role between return on assets towards firm risk.

Hypothesis 6c: Derivatives usage plays a mediating role between debt to equity towards firm risk.

Hypothesis 6d: Derivatives usage plays a mediating role between total assets turnover towards firm risk.

## 2.7 The Mediating Role of Derivatives Usage Between Corporate Governance towards Firm Risk

Based on the empirical studies presented above, corporate governance comprising the proportion of managerial ownership, the proportion of independent Commissioners, and the education background of Commissioners, influence the derivatives usage and the firm risk. Empirical studies indicate that the companies with good corporate governance, tend to use more derivatives product as risk management instrument. Previous studies also suggest that corporate governance influence firm risk negatively. Furthermore, empirical research suggest that the derivatives usage also influences the firm risk. The next hypotheses can therefore be formulated as follows:

Hypothesis 7a: Derivatives usage plays a mediating role between managerial ownership towards firm risk.

Hypothesis 7b: Derivatives usage plays a mediating role between the independence of board of commissioners towards firm risk.

Hypothesis 7c: Derivatives usage plays a mediating role between commissioner education towards firm risk.

### 3. Research Methodology

#### 3.1 Population and Sample

The population of this research is non-financial firms listed on the IDX in 2015. This research employs purposive sampling method. The sampling criteria used in this study were: (1) non-financial firms listed on the IDX by 2015, (2) firms using derivatives and supplying data on the total value of derivatives. This research employed cross section data based on the sampling technique and criteria, and then the samples that met the criteria were 54 firms.

#### 3.2 Data Sources

This research used quantitative data on non-financial firms listed on IDX by 2015. The data were secondary data, where the current ratio, return on assets ratio, debt to equity ratio, total assets turnover ratio, the proportion of managerial ownership, the proportion of independent Commissioners, Board of Commissioners education, the use of derivatives, and the risks of the firms where obtained by analyzing the financial statements and the annual report of the firms published on IDX website.

#### 3.3 Variables and Measurements

The independent variable in this study are as follows: Current Ratio, Return on Assets, Debt to Equity Ratio, Total Assets Turnover; and Corporate Governance that consists of Managerial Ownership, independence of board of commissioners and commissioners' education. The dependent variable in this study is firm risk. The mediating variable in this study is the derivatives usage.

The Current Ratio is calculated by dividing current assets with current liabilities. Return on assets is calculated by dividing the net income by the firms' total assets. Debt to equity ratio is measured by dividing the firms' debts with the firms' capital. The total assets turnover ratio is measured by dividing the net income by the total assets. The proportion of managerial ownership is measured by dividing the number of shares owned by the Board of Directors and Board of Commissioners with the total number of shares of the firms. Then, the independence of board of commissioners is determined by dividing the number of independent Commissioners and the total members of the Board of Commissioners in the firms. Commissioners' education is indicated by looking at whether the Commissioners have education background in undergraduate, master, or PhD level in the related field. The derivatives usage is analyzed by calculating the natural logarithm of the total value of derivatives. The firm risk is measured by calculating the volatility of daily stock returns.

#### 3.4 Empirical Model

The empirical model of this research can be observed in Figure 2. The research employs multiple linear regression analysis and path analysis to test the hypotheses in this study. Multiple linear regression equations from the empirical model of this research can be written below:

##### Equation Model 1:

$$\text{DERIV} = a_1 + b_{11}\text{CR} + b_{12}\text{ROA} + b_{13}\text{DER} + b_{14}\text{TAT} + b_{15}\text{MO} + b_{16}\text{IBC} + b_{17}\text{CE} + \varepsilon_1$$

##### Equation Model 2:

$$\text{RISIKO} = a_2 + b_{21}\text{CR} + b_{22}\text{ROA} + b_{23}\text{DER} + b_{24}\text{TAT} + b_{25}\text{MO} + b_{26}\text{IBC} + b_{27}\text{CE} + b_{28}\text{DERIV} + \varepsilon_2$$

##### Description:

RISK = Firm risk, DERIV = The Derivatives usage, CR = Current Ratio, ROA= Return on Assets, DER = Debt to Equity Ratio, TAT = Total Assets Turnover, MO = Managerial Ownership, IBC = Independence of Board of Commisioners, CE = Commisioners' Education

#### 4. Results and Discussions

The first empirical evidence this study found is that among 435 non-financial firms registered in the IDX, 54 of them or 12,44% used derivatives. The proportion of the derivatives users and the non-users can be seen in Table 1.

The test using regression analysis need some requirements to produce goodness of fit. The requirements include residual and the classical assumptions. The results of classical assumption test can be seen in Table 2 for Equation Model 1 and Table 3 for Equation Model 2.

The equations of the empirical models of 1 and 2 meet the requirements of normality error, multicollinearity, heteroscedasticity, goodness of fit, but for the autocorrelation test, the models do not meet the classical assumptions as required in the regression equation model (ordinary least square). Both Equation 1 as well as Equation 2 show inconclusive results. This means, it could not yet be ascertained whether the equations have problems in autocorrelation or do not have problems of positive autocorrelation. According to Emory and Cooper (2004), problems in autocorrelation can be ignored as long as the objectives of the research are only to know and describe phenomena that happened, not to predict. Then, the empirical models for Equation 1 and 2 can still be used to explain empirical phenomena that occurred in the IDX, and thus the analysis can proceed.

The test on regression was carried out by multiple regression using SPSS program. The summary of the results of regression test on Equation 1 can be seen in Table 4 below. Based on Table 4, the regression equation can be written as follows:

$$\text{DERIV} = -0,050\text{CR} + 0,034\text{ROA} + 0,169\text{DER} - 0,276\text{TAT} + 0,116\text{MO} + 0,242\text{IBC} - 0,296\text{CE}.$$

The amount of R-square of 0.238 and F-count 2.054 with the sig-F = 0.068 suggest that the independent variables in the model are able to explain 23.8 percent on the level of significant 10%, while the rest 66.2% can be explained by other variables outside the model.

The statistical test results of beta coefficient -0.050 and sig-t = 0.717 indicate that the current ratio (CR) has a negative but not significant effect on the derivatives usage (DERIV), and thus Hypothesis 1a is **rejected**. The current ratio shows a small influence against the derivatives usage. This result shows that the non-financial firms in Indonesia are paying more attention to the ratio of activity in deciding the derivatives usage.

The statistical test results of beta coefficients of 0.034 and sig-t = 0.821 show that the return on assets (ROA) has a negative and not significant effect on the derivatives usage (DERIV), thus Hypothesis 1b is **rejected**. Return on assets is not the main driving factor in using derivatives. This is because the high profit is not necessarily invested in derivatives, but on other assets such as stocks and bonds or for business expansion.

The statistical test results of beta coefficient of 0.169 and sig-t = 0.218 show that debt to equity ratio (DER) shows a positive but not significant effect against the derivatives usage (DERIV), then Hypothesis 1c is **rejected**. Debt to equity ratio denotes a small influence on the use of derivatives. This is because of high debt levels will encourage the firms to perform well.

The statistical test results of beta coefficient of -0.276 and sig-t = 0.070 describe that the total assets turnover (TAT) has a negative and significant effect against the derivatives usage, then Hypothesis 1d is **accepted**. The total assets turnover ratio is negatively influential, meaning the ratio is used as a measure to improve the derivatives usage or act as a risk management tool.

The statistical test results of the beta coefficients of 0.116 and sig-t = 0.397 explain that the managerial ownership (MO) indicates a positive but not significant effect on the derivatives usage (DERIV), thus Hypothesis 2a is **declined**. The proportion of managerial ownership is not a strong driving factor in the corporate use of derivatives. This is because the proportion of managerial ownership in the Indonesian firms is still relatively small.

The statistical test results of beta coefficients of 0.242 and sig-t = 0.088 indicate that the independence of board of commissioners gives a positive and significant effect on the derivatives usage, then Hypothesis 2b is **accepted**. The independence of board of commissioners has a positive influence, meaning that the greater proportion of independent commissioners in a firm leads to more intense use of firm's derivatives.

The statistical test results of the beta coefficient -0.296 and sig-t = 0.028 indicate that education of Commissioners (CE) brings a negative and significant effect on the derivatives usage (DERIV), thus Hypothesis 2c is **rejected**. Education background of the Commissioners shows a negative effect on the use of derivatives, because the higher level of education of the Commissioners will cause them to direct the



firms to use various techniques of risk management in addition to using derivatives.

The results of this study provide empirical contributions that the total assets turnover, is a major factor affecting the corporate financial performance in the decision to use derivatives as a risk management instrument. When the firms experience a drop in total assets turnover, they will have more intense use of derivatives. This finding supports the risk management theory and fit with previous findings of research by Bartram *et al.* (2009) and Nguyen (2011). However, the results of this study do not fit with previous research results from Haushalter (2000), Allayanis and Weston (2001) and Lantara (2012), that the current ratio, return on assets and debt to equity ratio correlate with the derivatives usage.

The summary of the regression test results of Equation Model 2 can be seen in Table 5. Based on Table 5, the regression equation can be written as follows:

$$\text{RISK} = 0,048\text{CR} - 0,131\text{ROA} - 0,101\text{DER} + 0,208\text{TAT} - 0,227\text{MO} + 0,105\text{IBC} + 0,294\text{CE} - 0,281\text{DERIV}$$

The R-square value of 0.333 and F-count of 2.813 with sig-F = 0.013 suggest that the independent variables in the model could explain by 33.3 percent on the 5% level of significance, while the rest 66.7 percent is explained by other variables not mentioned in the model.

The results of the statistical test suggest the beta coefficient of -0.050 and sig-t = 0.717, so that that the current ratio (CR) not significantly affects the firm risk (RISK) in a negative way, then Hypothesis 3a is **rejected**. Current ratio only brings the small influence on the risks encountered by the firms. This is because the risks are strongly influenced by external factors outside the firms.

The results of the statistical test of -0.131 beta coefficient and sig-t = 0.358 explain that the return on assets (ROA) has a negative yet not significant effect on the firm risk (RISK), and thus Hypothesis 3b is **rejected**. The firms' return on assets provide minor influence. This is because the risks that the firms would face are highly influenced by the external factors.

The results of the statistical test suggest the beta coefficient of -0.781 and sig-t = 0.439; it means that the debt to equity ratio (DER) affects the firm risk (RISK) insignificantly and negatively, then Hypothesis 3c is **rejected**. Debt to equity ratio has minor influence on the firm risk. This is because the firm risk is highly affected by external factors outside the firms.

The results of the statistical test show 0, 208 beta coefficients and sig-t = 0.162; it means the total assets turnover (TAT) has an insignificant and negative effect against the firm risk and thus Hypothesis 3d is **rejected**. Total assets turnover denotes a small influence on the firm risk. This is because the risks that the firms bear, are the impact of the external factors. However, the total assets turnover brings an indirect influence on the firm risk through the derivatives usage.

The results of the statistical test which indicate the beta coefficient of -0.227 and sig-t = 0.086 suggest that the managerial ownership give a negative and significant effect on the firm risk, then Hypothesis 4a is **accepted**. Managerial ownership proportion affects negatively; it means when the firms have share ownership from the managerial rank, there is a tendency for decreased firm risk.

The results of statistical test with 0.105 beta coefficients and sig-t = 0.440 describe that the independence of board of commissioners (IBC) affects in an insignificant and negative way on the firm risk (RISK), and thus Hypothesis 4b is **rejected**. The independence of board of commissioners has a quite small influence on the firm risk. However, it shows an indirect influence on the firm risk in the use of derivatives.

The results of the statistical test of 0.294 beta coefficients and sig-t = 0.029 indicate that commissioners education (CE) provides a positive and significant effect on the firm risk, then Hypothesis 4c is rejected. Education background of the Commissioner allows for an indirect influence to the firm risk through the use of derivatives. Higher education level of the Commissioners will correlate with the lower use of derivatives and thus, the business risks turn to be higher.

The results of the statistical test indicate the value of beta coefficient of -0.281 and sig-t = 0.050. This finding points out that the derivatives usage provides a significant and negative effect on the firm risk, then Hypothesis 5 is **accepted**. The derivatives usage suggests the negative effect, meaning when the firms use derivatives as a risk management instrument properly, the upcoming risks tend to decline.

The results of this study provide empirical contributions that the proportion of the independent Commissioners, is a major factor of corporate governance that affects firm decisions in the derivatives usage as a risk management instrument. The high proportion of independent Commissioners will enhance the derivatives usage. This finding supports the theory of corporate governance and risk management. The result of this research also fits with previous research by Borokhovich (2004) and Osuoha et al (2015).

However, it does not fit with previous research from Tufano (1996) and Lantara (2012), that the proportion of managerial ownership and education background of Commissioners can affect the derivatives usage.

The test on mediating role is carried out to identify whether a variable serves as a mediating variable between the dependent variable and the independent variable (Ghozali, 2011). To test the influence of the mediating variable, path analysis is used. If the results of the regression analysis on Equation 1 and Equation 2 are included in the research empirical model, the path analysis can be seen in Figure 3.

According to the path analysis, the Total Asset Turnover (TAT) and the independence of board of commissioners (IBC) have an indirect influence against the firm risk. Therefore, Hypothesis 6d and Hypothesis 7b are **accepted**. The research result provides empirical contribution that financial performance has an indirect influence on the firm risk. The study also found the mediating role of the derivatives usage on the relationship between total assets turnover and the firm risk. The total assets turnover is proven to be negatively and significantly influential on the derivatives usage. In addition, the derivatives usage is proven to have a negative and significant effect against the derivatives usage. Following these findings, there is a gradual influence between total assets turnover, derivatives usage, and the firm risk. The study also identifies the mediating role of the derivatives usage on the relationship between the independence of board of commissioners and the firm risk. The independence of board of commissioners is indicated to give a positive and significant influence on the derivatives usage. In addition, the derivatives usage appears to provide a negative and significant effect on the derivatives usage. Based on these findings, there has been an influence between the independence of board of commissioners, the derivatives usage, and the firm risk.

## 5. Conclusions and Recommendations

This research concludes that the total assets turnover has a negative and significant influence in the derivative usage. It shows that when the firms experience a decline in financial performance as seen from the activity ratio, they would respond it by enhancing the use of derivatives as a risk management tools. This research also finds that the independence of board of commissioners has a positive and significant influence on the use of derivatives. This reflects that the firms with bigger proportion of independent commissioners have a tendency to increase the derivatives usage as an instrument to manage the risks of the firm. Furthermore, the proportion of managerial ownership has a significant and negative impact against the firm risk. This shows that when the firms have higher proportion of managerial ownership, they tend to have a lower risk. This research also proves that the derivatives usage has a significant negative influence to the firm risk. It implies that the firms with higher derivatives usage tend to have lower level of risk. In addition, the study proves that the derivatives usage has mediating role on the relationship between total assets turnover and the firm risk. Hence, when the firms experience a drop in the total assets turnover, they tend to increase the use of derivatives, so that the potential risks could decline. Corporate governance, as measured by the independence of board of commissioners, has indirect influence against the firm risk, with the derivatives usage as the mediating variable. These findings reflect that the firms with higher proportion of independent commissioners tend to increase the derivatives usage, in the effort to anticipate and lower the potential risks of the firms.

Further research needs to consider other financial performance variables such as the dividend yield in influencing the use of derivatives and firm risk. Furthermore, the research should also pay attention to corporate governance variables such as the internal audit committee and institutional ownership in influencing the use of derivatives. In addition, the next researchers must review how the derivatives usage gives impact to the firm risk in other developing countries to generalize research findings and to compare the results with the case of Indonesia.

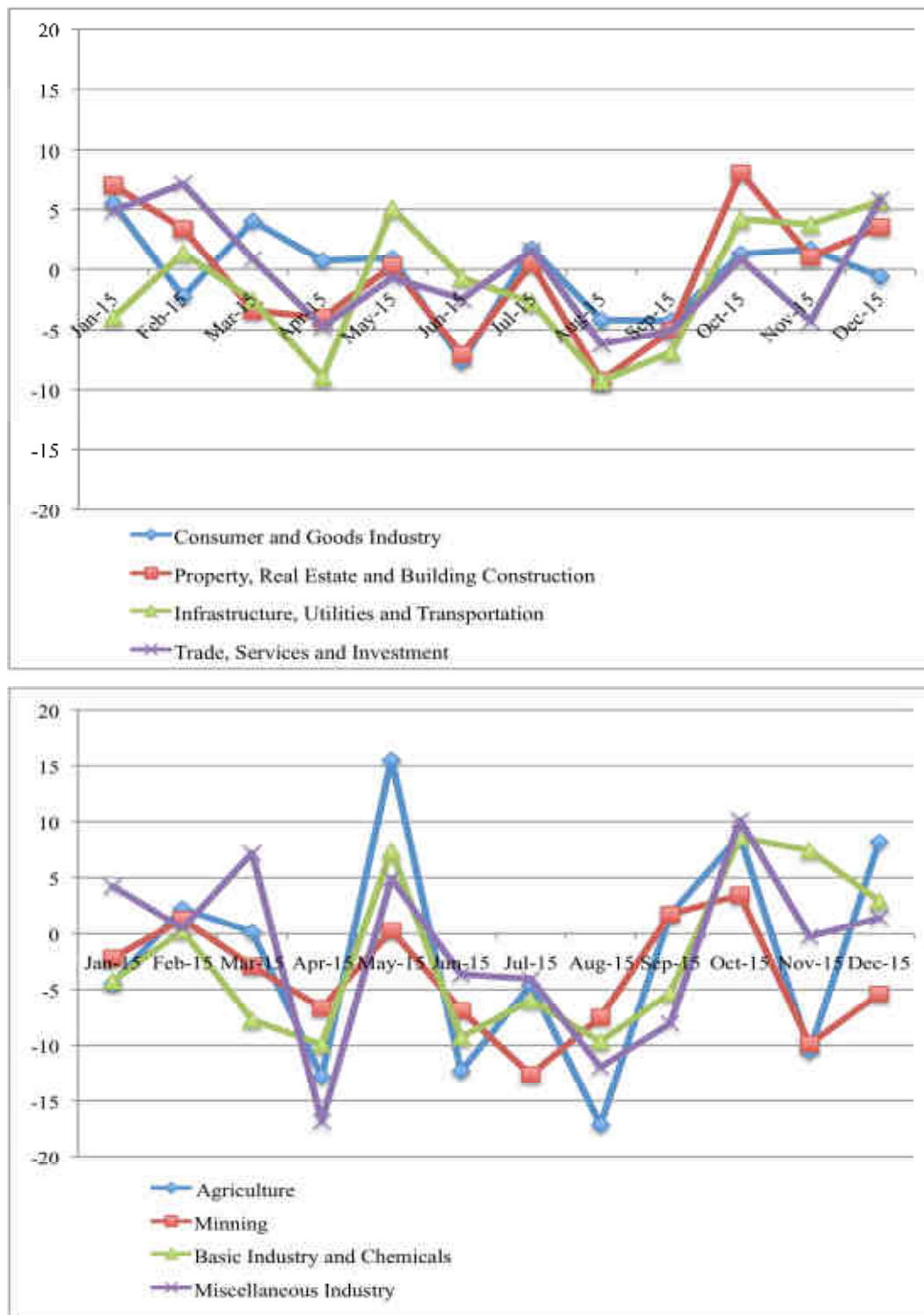
## References

- Allayannis, G. and Ofek, E. 2001. Exchange Rate Exposure, Hedging and The Use of Foreign Currency Derivatives. *Journal of International Money and Finance*, Vol. 20, pp. 273-296.
- Bartram, S.M., Brown, G.W. and Conrad, J. 2008. The Effects of Derivatives on Firm Risk and Value. *Munich Personal RePec Archive Paper*, No.9831.
- Beaver, H., Kettler, P., and Scholes, M. 1970. The association between market determined and accounting determined risk measures. *The Accounting Review*, Vol. 45 (3), pp. 654-682.
- Berkman, H. dan Bradbury, M.E. 1996. Empirical Evidence on the Corporate Use of Derivatives. *Financial*

- Management*, Vol. 25, pp. 5-13.
- Biase, P. and D'Apolito, E. 2012. The Determinants of Systematic Risk in the Italian Banking System: A Cross-Sectional Time Series Analysis. *International Journal of Economics and Finance*, Vol. 4(11), pp. 152-164.
- Borokhovich, K., Brunarski, K.R., Crutchley, C.E. dan Simskins, B.J. 2004. Board Composition and Corporate Use of Interest Rate Derivatives. *Journal of Financial Research*. Vol. 27, pp. 199-216.
- Brickley, J. A., Lease, R. C. and Smith Jr., C. W. 1988, Ownership structure and voting on antitakeover amendments, *Journal of Financial Economics*, Vol.20, pp. 267-91.
- Brigham, E.F. and Daves, P.R. 2007. *Intermediate Financial Management*. 9<sup>th</sup> edition. USA: Thomson Higher Education.
- Buckley, A. and Nat, M.V.D. 2003. Derivatives and Non-Executive Director. *European Management Journal*, Vol 21(3), pp. 389-397.
- Capozza, D.R. and Seguin, P.J. 2003. Inside Ownership, Risk Sharing and Tobin's  $q$ -Ratios: Evidence from REITs. *Real Estate Economics*, Vol. 31(3), pp.367-404.
- Carter, D.A. dan Sinkey, J.F. 1998. The Use of Interest Rate Derivatives by End-Users: The Case of Large Community Banks. *Journal of Financial Services Research*, Vol. 14, pp. 17-34.
- Chen, C.L, Fan, H.S. and Yang, Y.M. 2014. The Effects of Corporate Governance and Accounting Rule Changes on Derivatives Usage. *Review of Derivatives Research*, Vol. 17, pp. 323-353.
- Chen, C.R., Steiner, T.I., Whyte, A.M. 1998. Risk-Taking Behavior and Management Ownership in Depository Institutions. *Journal of Financial Research*, 19 (Spring1998), pp.1-16.
- Chun, Loo Sin, and Meharani Ramasamy, 1999. Accounting variabel as Determinants of Systematic Risk in Malaysian Common Stocks, *Asian Pasific Journal of Management*, Vol. 6(2), pp.339-350.
- Chung, K.H. and Pruitt, S.W. 1994. A Simple Approximation of Tobin's  $Q$ . *Financial Management*, Vol.23(3), pp.70-74.
- Daily, C.M., Dalton, D.R. and Cannella, A.A. 2003. Corporate Governance: Decades of Dialogue and Data. *The Academy of Management Review*, Vol. 28(3), pp. 371-382.
- Elloumi, F. and Gueyié, J.P. 2001, Financial Distress and Corporate Governance: An Empirical Analysis. *Corporate Governance*, Vol. 1(1), pp. 15-23.
- Fama, E.F. dan Jensen, M.C. 1983. Separation of Ownership and Control. *Journal of Law and Economics*, Vol. 26, pp. 301-325.
- Froot, K.A., Scharfstein, D.S. dan Stein, J.C. 1993. Risk Management: Coordinating Corporate Investment and Financing Policies, *Journal of Finance*, Vol. 48, pp. 1629-1658.
- Fox, R.C.W., Carroll, C. and Chiou, M.C. 1997. Determinants of Corporate Hedging and Derivatives: A Revisit. *Journal of Economics and Business*, Vol. 49, pp. 569-585.
- Gatopoulos, G. dan Louberge, H. 2013. Combined Use of Foreign Debt and Currency Derivatives under the Threat of Currency Crises: The Case of Latin American Firms. *Journal of International Money and Finance*. Vol. 35, pp. 54-75.
- Gay, G.D. dan Nam, J. 1998. The Underinvestment Problem and Corporate Derivatives Use. *Financial*

- Management*, Vol. 27, pp. 53-69.
- Guay, W.R. 1999. The Impact of Derivatives on Firm Risk: An Empirical Examination of New Derivatives Users. *Journal of Accounting and Economics*, Vol. 26, pp. 319-351.
- Hanafi, M.M. 2014. *Manajemen Risiko*, Edisi Ketiga, Yogyakarta: UPP STIM YKPN.
- Hardwick, P., and Adams, M. 1999. The Determinants of Financial Derivatives Use in the United Kingdom Life Insurance Industry, *Abacus*, Vol.35, No.2, pp.163-184.
- Haushalter, G.D. 2000. Financing Policy, Basis Risk, and Corporate Hedging: Evidence from Oil and Gas Producers. *Journal of Finance*, Vol. 55, pp. 107-152.
- Hentschel, L., and Kothari, S. P. 2001. Are corporations reducing or taking risks with derivatives? *Journal of Financial and Quantitative Analysis*, Vol. 36, pp. 93-118.
- Hull, J.C. 2009. *Options, Futures, and other Derivatives*. 7<sup>th</sup> edition. US: Pearson Education, Inc.
- Iqbal, Z. 2015. Financial Distress around Introduction of Hedging in the Oil and Gas Industry. *International Journal of Business*, Vol. 20(1), pp. 79-89.
- Jensen, M. and Murphy, K. 1990. Performance pay and top management incentives. *Journal of Political Economy*, Vol.98, pp.225-264.
- Kim, Y.S., Nam, J. and Thornton Jr, J.H. 2008. The Effect of Managerial Bonus Plans on Corporate Derivatives Usage. *Journal of Multinational Financial Management*, Vol. 18(2008), pp. 229-243.
- Lantara, I.W.N. 2012. The Use of Derivatives as a Risk Management Instrument: Evidence from Indonesian Non-Financial Firms. *International Journal of Business and Economics*, Vol. 11(1), pp. 45-62.
- Mandelker, Gershon N. and Rhee S. Ghon, 1984. The Impact of the Degree of Operating and Financial Leverage on the Systematic Risk of Common Stock, *Journal of Financial and Quantitative Analysis*, Vol. 19(March), pp.45-57.
- Mallin, C., Ow-Yong, K., dan Reynolds, M. 2001. Derivatives Usage in U.K Non-Financial Listed Companies. *European Journal of Finance*, Vol. 7, pp. 63-91.
- Marsden, A., dan Prevost, A. K. 2005. Derivatives Use, Corporate Governance, and Legislative Change: An Empirical Analysis of New Zealand Listed Companies. *Journal of Business Finance & Accounting*, Vol. 32(1), pp. 255–295.
- McDonald, R.L. 2006. *Derivatives Markets*, Second Edition. Pearson Education, Inc: USA.
- Modigliani, F., and M.H. Miller 1958. The Cost of Capital, Corporation Finance, and the Theory of Investment. *The American Economic Review*, Vol. 48(3), pp. 261-297.
- Modigliani, F. and Miller, M.H. 1963. Corporate Income Taxes and The Cost of Capital: A Correction. *The American Economic Review*, Vol. 53(3), pp. 433-443.
- Nguyen, H. dan Faff, R. 2003. Further Evidence on Corporate Use of Derivatives in Australia: The Case of Foreign Currency and Interest Rate Instrument. *Australian Journal of Management*, Vol. 28, pp. 307-317.
- Nguyen, H.V. 2011. Why Don Non-Financial Firms Select One Type of Derivatives Over Others? *Journal of Applied Business and Economics*, Vol. 12(3), pp. 91-109.

- Osuoha J. 2013. Financial engineering, corporate governance and Nigeria economic development. *Journal of Financial Risk Management*, Vol. 2(4), pp. 61-66. Scientific Research Publishers, (SCIRP) United States of America.
- Osuoha, J.I., Martin, S. and Osuoha, E.O. 2015. The Impact of Corporate Governance on Derivatives Usage-Empirical Evidence from African Non-Financial Firms. *British Journal of Economics, Management and Trade*, Vol. 8(1), pp. 19-31.
- Prevost, A.K., Rose, L.C. dan Miller, G. 2000. Derivatives Usage and Financial Risk Management in Large and Small Economies: A Comparative Analysis. *Journal of Business Finance and Accounting*. Vol. 27, pp. 733-759.
- Ross, S., Westerfield, R. and Jaffe, J. 2012. *Corporate Finance*, 10<sup>th</sup> edition. US: The McGraw-Hill Companies.
- Saunders, A. and Cornett, M.M. 2014, *Financial Institution Management: A Risk Management Approach*, New York: Mc Graw Hill.
- Schiozer R. F. dan R. Saito. 2009. The determinants of currency risk management in Latin American non-financial firms. *Emerging Markets Finance and Trade*, Vol. 45, pp. 49-71.
- Shu, P. dan Chen, H. 2003. The Determinants of Derivatives Use: Evidence from Non-Financial Firms in Taiwan, *Review of Pacific Basin Financial Markets and Policies*, Vol. 6, pp. 473-500.
- Smith, C.W. dan Stulz, R.M. 1996. Shareholders Activism by Institutional Investors: Evidence from CALPERS. *Journal of Finance*, Vol. 51, pp. 227-252.
- Subramanian, T. dan C. Paramasivan. 2009. *Financial Management*. India: New Age International (P) Limited, Publisher.
- Supanvanij, J. and Strauss, J. 2010. Corporate Derivative Use and the Composition of CEO Compensation. *Global Finance Journal*, Vol. 21(2010), pp. 170-185.
- Tsorhe, J. S., Aboagye, A. Q. Q., dan Kyereboah-Coleman, A. 2011. *Corporate Governance and Bank Risk Management in Ghana*. University of Ghana Business School.
- Trinh, T.H., Duyen, T.T.T. and Thao, N.T. 2015. The Impact of Corporate Governance on Financial Risk in Vietnamese Commercial Banks. *International Journal of Economics and Finance*, Vol. 7(7), pp. 123-130.
- Tufano, P. 1996. Who Manage Risk? An Empirical Examination of Risk Management Practise in the Gold Mining Industry. *Journal of Finance*, Vol. 51, pp. 1097-1137.
- Van Horne, J.C. and Wachowicz Jr., J.M. 2008. *Fundamentals of Financial Management*. 13<sup>th</sup> Edition. England: Pearson Education Limited.
- Yu, E. S. H., Chin, I. C. H., Hang, H. F. Y. dan Wai, G. L. C. 2001. Managing Risk by Using Derivatives: The Case of Hong Kong Firms. *Review of Pacific Basin Financial Markets and Policies*, Vol. 4, pp. 417 – 425.



\*source: www.idx.co.id (accessed on February 2016)

**Figure 1 Monthly Stock Returns of Non-financial Industries in 2015**

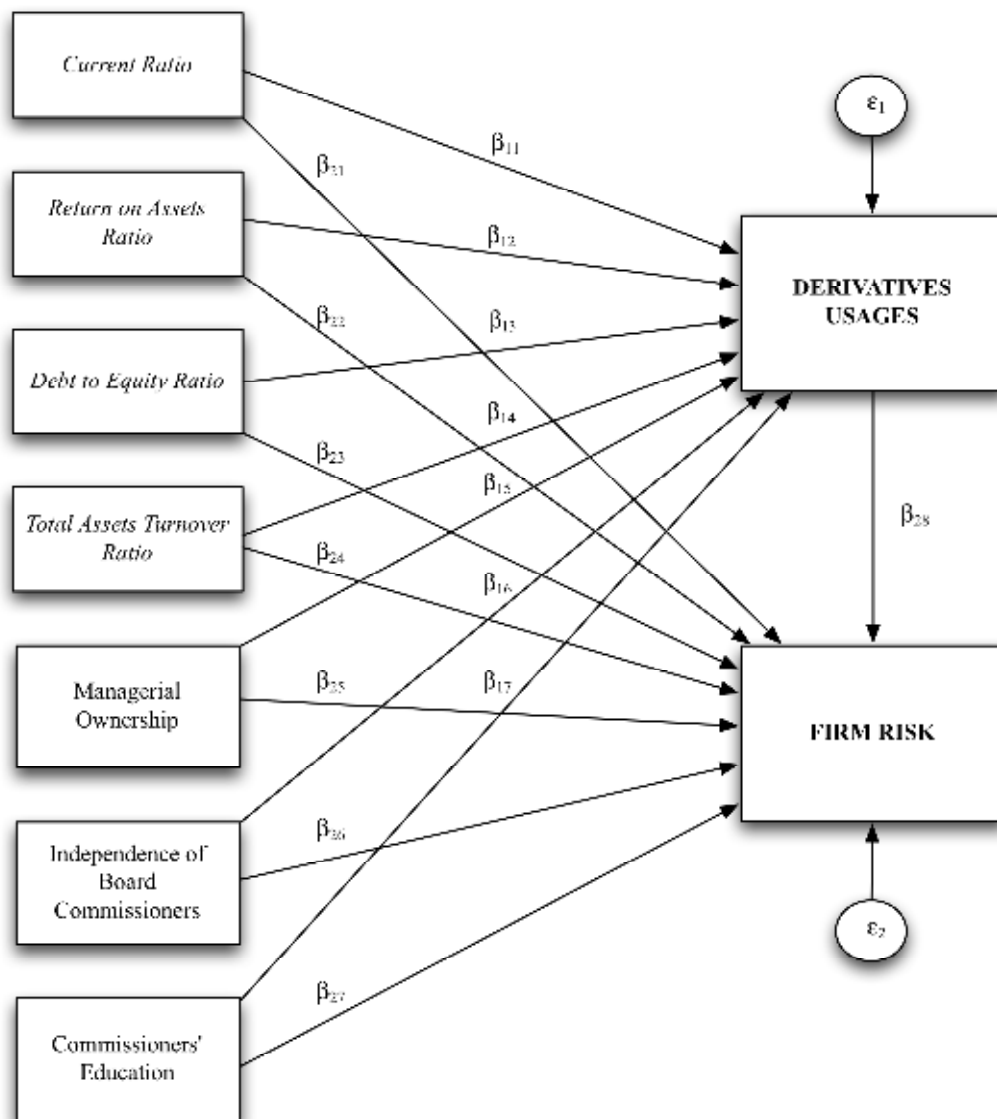


Figure 2. The Research Empirical Model

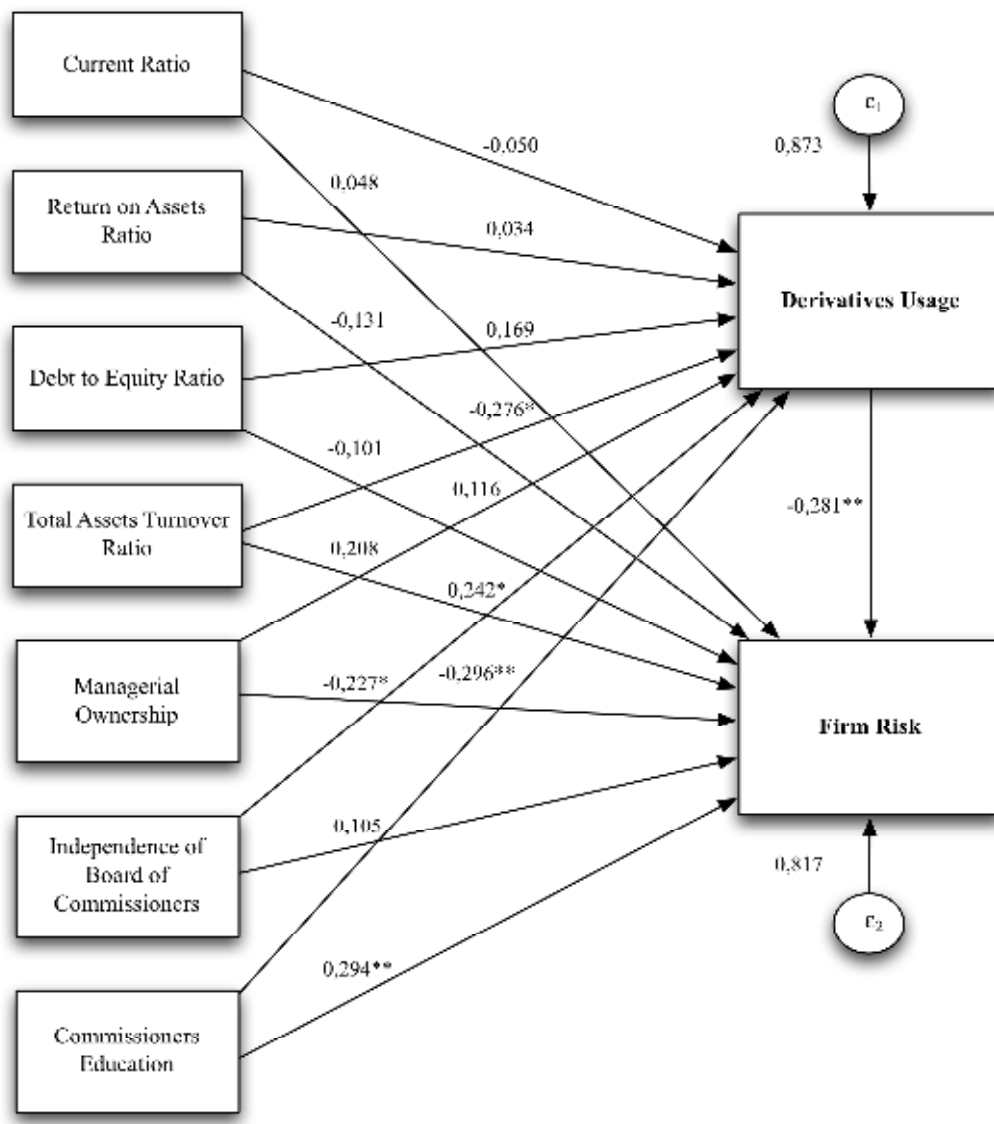


Figure 3. Path Analysis Result



**Table 1**  
**Proportion of the Derivative User Firms and the Non-Users in all Non-financial Industries in IDX by 2015**

Industry	Derivatives Users	Non-Derivatives Users
<i>Agriculture</i>	2 (9,52%)	19 (90,48%)
<i>Minning</i>	5 (11,63%)	38 (88,37%)
<i>Basic Industry and Chemicals</i>	8 (12,69%)	55 (87,31%)
<i>Miscellaneous Industry</i>	5 (11,90%)	38 (88,10%)
<i>Consumer and Goods Industry</i>	3 (7,89%)	35 (92,11%)
<i>Property, Real Estate and Bulding Construction</i>	8 (14,29%)	48 (85,71%)
<i>Infrastructure, Utilities and Transportation</i>	10 (18,87%)	43 (81,13%)
<i>Trade, Services and Investment</i>	13 (11,02%)	105 (88,98%)
Total	54 (12,44%)	434 (87,56%)

Source: [www.idx.co.id](http://www.idx.co.id)

**Table 2 Classical Assumptions Results Equation Model 1**

Independent Variable	Normality Test		Multicolinearity (VIF)	Heteroskedasticity Test	Autocorrelation Test (DW-test)
	Kolmogorov - Smirnov	Sig.			
Current Ratio (CR)	0.712	0.691	1,131	t= -0,833 ; sig= 0,409	1,767
Return on Assets (ROA)	0.712	0.691	1,344	t= 1,931 ; sig= 0,058	1,767
Debt to Equity Ratio (DER)	0.712	0.691	1,103	t= -1,372 ; sig= 0,177	1,767
Total Assets Turnover (TAT)	0.712	0.691	1,342	t= -0,420 ; sig= 0,676	1,767
Managerial Ownership (MO)	0.712	0.691	1,112	t= -1,749 ; sig= 0,087	1,767
Independence of Board of Commissioners (IBC)	0.712	0.691	1,158	t= -1,453 ; sig= 0,153	1,767
Commissioners Education (CE)	0.712	0.691	1,026	t= 0,064 ; sig= 0,949	1,767

**Table 3 Classical Assumptions Results Equation Model 2**

Independent Variable	Normality Test		Multicollinearity (VIF)	Heteroskedasticity Test	Autocorrelation Test (DW-test)
	Kolmogorov - Smirnov	Sig.			
Current Ratio (CR)	0.839	0.482	1,134	t= 0,111 ; sig= 0,912	1,767
Return on Assets (ROA)	0.839	0.482	1,346	t= -0,067 ; sig= 0,947	1,767
Debt to Equity Ratio (DER)	0.839	0.482	1,141	t= 1,701 ; sig= 0,096	1,767
Total Assets Turnover (TAT)	0.839	0.482	1,442	t= -0,127 ; sig= 0,899	1,767
Managerial Ownership (PKM)	0.839	0.482	1,130	t= 0,286 ; sig= 0,777	1,767
Independence of Board of Commissioners (PKI)	0.839	0.482	1,235	t= -0,195 ; sig= 0,846	1,767
Commissioners Education (PK)	0.839	0.482	1,141	t= -0,358 ; sig= 0,722	1,767
Derivatives Usage (DERIV)	0.839	0.482	1,313	t=-0,223 ; sig=0,824	1,767

**Table 4**  
**Summary of the Regression Test Results on Research Empirical Model of Equation 1**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	23.708	1.548		15.320	.000
CR	-.085	.233	-.050	-.365	.717
ROA	.008	.033	.034	.228	.821
DER	.203	.163	.169	1.248	.218
TAT	-.965	.521	-.276	-1.853	.070
MO	.018	.021	.116	.855	.397
IBC	5.050	2.893	.242	1.746	.088
CE	-.981	.432	-.296	-2.270	.028

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.488 <sup>a</sup>	.238	.122	2.39208

a. Predictors: (Constant), PKM, DER, PK, ROA, CR, PKI, TAT

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	82.274	7	11.753	2.054	.068 <sup>b</sup>
Residual	263.215	46	5.722		
Total	345.489	53			

a. Dependent Variable: DERIV

b. Predictors: (Constant), MO, DER, CE, ROA, CR, IBC, TAT

Source: Data *Output* SPSS 21

**Table 5**  
**Summary of the Regression Test Results of the Empirical Research in Equation 2**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.842	1.344		2.859	.006
CR	.031	.082	.048	.372	.711
ROA	-.011	.012	-.131	-.928	.358
DER	-.045	.058	-.101	-.781	.439
1 TAT	.270	.190	.208	1.420	.162
MO	-.013	.007	-.227	-1.755	.086
IBC	.818	1.050	.105	.779	.440
CE	.362	.160	.294	2.258	.029
DERIV	-.104	.052	-.281	-2.015	.050

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.577 <sup>a</sup>	.333	.215	.84105

a. Predictors: (Constant), DERIV, MO, ROA, CE, DER, CR, IBC, TAT

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	15.917	8	1.990	2.813	.013 <sup>b</sup>
Residual	31.831	45	.707		
Total	47.748	53			

a. Dependent Variable: RISK

b. Predictors: (Constant), DERIV, MO, ROA, CE, DER, CR, IBC, TAT

Source: Output Data of SPSS 21