

# THE ROLE OF DERIVATIVE INSTRUMENTS ON RISK RELEVANCE FROM EMERGING MARKET NON-FINANCIAL COMPANIES

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## Abstract

**How to cite this paper:** Firmansyah, A., Utami, W., Umar, H., & Mulyani, S. D. (2020). The role of derivative instruments on risk relevance from emerging market non-financial companies. *Journal of Governance & Regulation*, 9(2), 45-63.  
<http://doi.org/10.22495/jgrv9i2art3>

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**ISSN Print:** 2220-9352  
**ISSN Online:** 2306-6784

**Received:** 07.03.2020  
**Accepted:** 15.05.2020

**JEL Classification:** M41, G11, G14  
**DOI:** 10.22495/jgrv9i2art3

This study aims to investigate the effect of net income volatility, other comprehensive income volatility, and comprehensive income volatility on idiosyncratic volatility. Also, this study includes derivative transactions as moderation variable in testing the equation model. The hypothesis test employed multiple linear regression. The sample in this study is all non-financial companies listed on the Indonesia Stock Exchange from 2012 to 2017. Data used in this study are panel data sourced from [www.idx.co.id](http://www.idx.co.id) and [www.finance.yahoo.com](http://www.finance.yahoo.com). The sample selection in this study used a purposive sampling method with a total sample of 246 observations. The results of this study indicate that comprehensive income volatility, net income volatility, and other comprehensive income volatility are not associated with idiosyncratic volatility. Based on the test results suggest that the interaction between derivative transactions and comprehensive income volatility, net income volatility, as well as other comprehensive income volatility, have a positive effect on idiosyncratic volatility.

**Keywords:** Comprehensive Income, Derivatives, Idiosyncratic, Unsystematic Risk, Volatility

**Authors' individual contribution:** Conceptualization - A.F. and W.U.; Methodology - A.F., W.U., H.U., and S.D.M.; Formal Analysis - A.F.; Investigation - A.F.; Writing - Original Draft - A.F.; Writing - Review & Editing - W.U., H.U., and S.D.M.; Supervision - W.U., H.U., and S.D.M.

**Declaration of conflicting interests:** The Authors declare that there is no conflict of interest.

## 1. INTRODUCTION

Investment risk in the capital market is divided into a systematic risk that cannot be avoided, and unsystematic risk that actually can be avoided (Naomi, 2011). Systematic risk is the company's external risk, which reflects that the price movement of an investment (asset) is caused by changes in the overall market (Hotvedt & Tedder, 1978). Meanwhile, unsystematic risk is part of the movement in the value of investments caused by unique company factors such as labor demonstrations, company inventions, research and development, and other factors that cannot be diversified (Hotvedt & Tedder, 1978). Liu, Di Iorio, and De Silva (2014) asserted that unsystematic risk from now on, referred to as

idiosyncratic volatility is not a bottleneck in the imposition of risky asset prices because idiosyncratic volatility is assumed to be diversified. Ang, Hodrick, Xing, and Zhang (2009) concluded that idiosyncratic volatility is a pricing factor for returns from risky assets; even idiosyncratic volatility is a risk factor that is missing from the asset pricing model. Based on conventional financial portfolio theory, rational investors in capital markets, ideally diversify unsystematic risk by holding uncorrelated assets in their portfolios (Kumari, Mahakud, & Hiremath, 2017).

Liu et al. (2014) stated that research related to idiosyncratic volatility has been developing since 2000. Most of the topics discussed only focus on testing idiosyncratic volatility on stock returns

rather than testing factors that can explain idiosyncratic volatility using developing countries, e.g., Chang and Dong (2006), Brown and Kapadia (2007), Wang (2013), Bozhkov, Lee, Sivarajah, Despoudi, and Nandy (2018). Meanwhile, research that has examined idiosyncratic volatility mostly uses data from developed countries that were conducted by Zhou, Xie, and Li (2016) and Kumari et al. (2017). Furthermore, Khan and Bradbury (2014, 2016) introduced the concept of risk relevance, the expansion of value relevance, which only measures the strength of items in the financial statements on equity market prices or stock returns. However, the risk relevance is a test of the extent to which the risk of accounting data measured by comprehensive income volatility, including its components, namely net income volatility, other comprehensive income can affect company risk (Khan & Bradbury, 2014, 2016).

Research examining the net income volatility, other comprehensive income component volatility, and comprehensive income volatility on total risk as measured by stock return volatility has been conducted by Anggraita, Rossietta, Wardhani, and Wibowo (2020), Bamber, Jiang, Petroni, and Wang. (2010), Black (2014), Bloomfield, Nelson, and Smith (2006), Hodder, Hopkins, and Wahlen (2006), Khan and Bradbury (2014, 2016), Maines and McDaniel (2000). Meanwhile, other studies compare the level of volatility of other comprehensive income components (items) as conducted by Bamber et al. (2010), Barth, Landsman, and Wahlen (1995), Hodder et al. (2006), Khan and Bradbury (2014, 2016). Meanwhile, research examining the risk of accounting information using the quality of financial statements was conducted by Chang, Wang, Chiu, and Huang (2015), Rajgopal and Venkatachalam (2011), and Zhou et al. (2016).

Khan and Bradbury (2016) considered that net income volatility has historically been the most reliable accounting variable related to equity risk. A more volatile income statement shows the extreme net income that is easy to change so that it implies earnings to be less persistent (Dichev & Tang, 2009). With the significant net income volatility, investors and analysts do not fully understand future earnings, so net income cannot be fully used to predict future earnings. Meanwhile, other comprehensive income volatility needs to be examined in risk relevance framework because financial statement users, especially investors, consider that items from other comprehensive income are unstable and its relevance to the entity's core business results (Khan & Bradbury, 2016). It is deemed to confuse the users of the financial statements to cause a significant misinterpretation of the entity's performance. Khan and Bradbury (2016) stated that other comprehensive income items have different properties that are less controlled, challenging to predict, and can cause confusion among financial statements users. Furthermore, the comprehensive income testing in risk relevance because this component must be conducted because it is a total net income and other comprehensive income, which is provided by financial statements after IFRS Adoption was conducted in Indonesia. Thus, the volatility of net income, other comprehensive income, and

comprehensive income as the measurement of accounting risk (Beaver, Kettler, & Scholes, 1970).

This study aims to examine to investigate the effect of net income volatility, other comprehensive income volatility, and comprehensive income volatility on idiosyncratic volatility. The risk relevance test conducted by Anggraita et al. (2020), Khan and Bradbury (2014, 2016), Lucchese, Di Carlo, and Incollingo (2020) were the examining of the volatility of net income and comprehensive income on total risk and beta stocks. Whereas, Khan and Bradbury (2014, 2016) stated that net income volatility and comprehensive income volatility could be tested on idiosyncratic volatility. However, those studies did not examine it. Thus, this study complements those studies which examined net income volatility, other comprehensive income volatility, and comprehensive income volatility on idiosyncratic volatility in risk relevance framework.

Besides, in many previous studies, the volatility of the components of comprehensive income used annual time series data, whereas this study employed the elements of comprehensive income quarterly to obtain the volatility of components of comprehensive income yearly. Anggraita et al. (2020) employed the standard deviation of quarterly earnings for the five quarters calculated. However, this study employs a standard deviation of quarterly earnings for four quarters, that is annualized. Based on the research literature that has been conducted, research that examines the components of comprehensive income on firm risk rarely uses data on quarterly financial statements. Black (2014) recommended that the use of shorter financial data (quarterly comprehensive income report data/short windows) allows attracting investors' attention in describing the company's performance. The use of data from companies in Indonesia in testing idiosyncratic volatility attempts to complement the previous studies using objects of companies in developing countries, e.g., Anggraita et al. (2020), Kumari et al. (2017), and Zhou et al. (2016).

Furthermore, this research also includes derivative transactions to examine risk relevance. According to Pincus and Rajgopal (2002) and Oktavia and Martani (2013), derivative transactions are strongly related to earnings management actions. Besides, earnings management actions can increase idiosyncratic volatility as the results of tests conducted by Chang et al. (2015), Rajgopal and Venkatachalam (2011), and Zhou et al. (2016). On the other hand, Black (2016) suspected that the use of derivatives used for hedging purposes could reduce the effect of other comprehensive income volatility on firm risk. Black (2016) recommended the use of derivatives in risk relevance testing, although the study only highlights the other comprehensive income volatility. Based on previous studies, the presence of internal factors and external factors of the company resulting in the use of derivative instruments can trigger risks and cause harm to the company especially the ownership in developing countries (Cao, Chen, Goetzmann, & Liang, 2018; Huang, Kabir, & Zhang, 2017; Lau, 2016; Oktavia & Martani, 2013; Rajgopal & Venkatachalam, 2011). Thus, derivatives transactions are expected to enhance risk relevance.

Furthermore, this study includes financial leverage as a control variable. According to Rajgopal

and Venkatachalam (2011), financial leverage is closely related to the company's financial distress. Rajgopal and Venkatachalam (2011) have proven that financial leverage influences idiosyncratic volatility. The trade-off theory (Modigliani & Miller, 1958) predicted that companies with high volatility face the possibility of more considerable financial difficulties. The company will adjust its financial leverage lower when the company expects the issue of net income volatility to increase and vice versa.

This research consists of five parts. The first part contains an introduction that consists of research phenomena, research problems, research objectives, differences in this study with previous research, and the selection of variables used in testing this study. The second part contains the literature review and hypotheses development. The third part contains the research methodology, including the sampling conducted in this study and the proxy used to measure each variable in this study as well as the research model. The fourth part is the result and discussion that explains the results of this study both in statistical tests and reviews of research results. The fifth part is the conclusion, which is a summary of the discussion based on the research objectives as well as the limitations and implications of both the practical implications and the implications for further research.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### 2.1. Literature review

Based on the theory of efficient markets (Fama, 1970), especially in semi-efficient forms of efficient markets, financial statement information can indicate the response and market conditions of a company. The quality of financial statement information can be seen from the stability of the company's profit. Kothari (2001) stated that the capital market could be considered to be efficient if it applies to all stakeholders, such as investors, managers, standard-setting bodies, and other market participants. Information interest comes from the fact that stock prices determine the allocation of wealth between the company and the owner of the company. Meanwhile, agency theory (Jensen & Meckling, 1976) concluded that the relationship between agent and principal results in asymmetric information because the agent is in a position to have more information related to the company than the principal. In such conditions, agents can use their discretion to influence accounting information presented in financial statements. If the principal considers the information reported by the agent to the public still has the risk of openness, the agent will respond poorly to the value of the company through falling stock prices and high risk of stock returns. Besides, agents can make policies that lead to instability in company performance and risks that must be borne by the company.

Research examining the effect of other comprehensive income volatility on firm risk provides evidence for one of the drivers of value relevance, namely risk relevance. The value relevance is mostly measured by the strength of the influence of items in the financial statements and on market prices or stock returns. In contrast, the risk

relevance is usually measured by the strength of the relationship between the volatility of financial statement items and stock return volatility. Black (2016) and Maines and McDaniel (2000) concluded that non-professional investors could extract volatility from unrealized gains and losses of available for sale securities for insurance companies. This finding shows that other comprehensive income helps investors in assessing risks associated with unrealized gains and losses of available for sale securities. Barth et al. (1995) found the use of fair value in net income by including unrealized gains and losses of available for sale securities for sale more volatile compared with profit by using profits historical, but the incremental volatility is not priced by investors.

Meanwhile, Hodder et al. (2006) found that comprehensive income is more volatile compared to net income. The study also found that net income volatility and comprehensive income volatility can increase stock return volatility. However, comprehensive income volatility decreases stock beta, and net income volatility does not affect stock beta. Khan and Bradbury (2014) suggested that the volatility of incremental comprehensive income does not affect the stock return volatility and stock beta. Meanwhile, net income volatility and comprehensive income volatility have a positive effect on the stock return volatility and stock beta. Khan and Bradbury (2016) proved that the volatility of incremental comprehensive income does not affect the stock return volatility and stock beta. However, net income volatility and comprehensive income positive effect on the stock return volatility of the shares, but does not affect beta stocks. Black (2014) found that the volatility of unrealized gains and losses of available for sale securities and cash-flow hedges has a negative effect on the total risk of the company. Anggraita et al. (2020) examined the risk relevance of financial instruments of banking companies before and after the adoption of IFRS in Indonesia. The study uses net income volatility and comprehensive income on stock beta and stock return volatility in risk relevance testing. The study found that the risk relevance of financial instruments decreased after the adoption of IFRS. Lucchese et al. (2020) tested the risk relevance of net income and total comprehensive income by using company data in 15 European countries. The net income volatility and total comprehensive income in this study use the standard deviation of net income and total comprehensive income in the last three years, while the risk of a company is represented by beta stocks and stock return volatility. The study found that net income volatility and comprehensive income volatility have a positive effect on stock return volatility, but both have a negative effect on stock beta.

Associated with testing of company risk, several related studies have tested the volatility of the comprehensive income component on the stock return volatility (total risk) and beta stocks (systematic risk). None of these studies have examined the volatility of comprehensive income component on the unsystematic risk represented by idiosyncratic volatility. According to Liu et al. (2014), idiosyncratic volatility had attracted the attention of researchers since the 1990s when the importance of asset pricing was first reviewed. Campbell, Lettau,

Malkiel, and Xu (2001) stated that idiosyncratic volatility must be given a price because investors determine a higher rate of return to compensate for the level of idiosyncratic volatility that cannot be diversified. Ang et al. (2009), Liu and Di Iorio (2012), and Wang (2013) employed idiosyncratic volatility to be examined with stock returns.

Previous studies examined factors that explain idiosyncratic volatility, especially accounting information. Rajgopal and Venkatachalam (2011) found that the quality of financial statements negatively affects idiosyncratic volatility. Zhou et al. (2016) found that the quality of financial reporting negatively affected idiosyncratic volatility, but the quality of financial reporting did not affect the volatility of stock returns. This study also found that adopting accounting systems that have high standards can reduce the negative influence of idiosyncratic volatility. Liu et al. (2014) proved that dividend yield has a positive effect on idiosyncratic risk, while valuation, company size, leverage, and profitability have a negative effect on idiosyncratic risk. Wei and Zhang (2006) found that ROE negatively affects idiosyncratic volatility, and ROE variance positively influences idiosyncratic volatility. Kumari et al. (2017) proved that the size of the company, the momentum negatively affects the idiosyncratic volatility, while the book to market ratio, liquidity, cash flow to price adversely associated with idiosyncratic volatility. Testing idiosyncratic volatility by using the quality of accounting information represented by earnings management was conducted by Chang et al. (2015), Rajgopal and Venkatachalam (2011), and Zhou et al. (2016). Rajgopal and Venkatachalam (2011) concluded that poor earnings quality could increase idiosyncratic volatility. Meanwhile, Chang et al. (2015) found that accrual earnings management and real earnings management is positively associated with idiosyncratic volatility. Zhou et al. (2016) found that financial reporting quality negatively affects idiosyncratic volatility, but it does not affect the stock return volatility.

Furthermore, related to the testing of derivative instruments on risk has been conducted in several previous studies. Kang, Kondor, and Sadka (2014) proved that hedging trading activities could reduce idiosyncratic volatility. Chng, Fang, Xiang, and Zhang (2017) found that hedging was irrelevant to diversify portfolios if the aim was only to reduce the instability of idiosyncratic volatility. Lau (2016) stated that companies using derivatives to hedge effectively could reduce the company's financial risk. The use of derivatives allows companies to manage incremental financial risk better. Ayturk, Gurbuz, and Yanik (2016) found that derivative instruments do not affect firm value. Giraldo-Prieto, Uribe, Vesga, and Herrera (2017) concluded that in adverse economic conditions, hedging strategies negatively affect idiosyncratic volatility while in good economic conditions, idiosyncratic volatility has a positive effect on hedging performance. Bartram, Brown, and Conrad (2011) found strong evidence that the use of derivative instruments reduces both total risk and systematic risk. The study also found that the use of derivatives also has a positive effect on firm value because non-financial companies usually implement derivative policies with a motive to reduce risk.

Tessema (2016) found that the recognition and disclosure that is mandatory for ownership of derivatives with the aim of hedging has a negative effect on the total risk of the company. Huang et al. (2017) concluded that derivative instruments used by companies in developed countries such as in the UK could reduce the standard deviation of stock returns and systematic risk. Companies in developed countries use financial derivatives aimed at reducing financial exposure significantly to reduce the possibility of financial distress and mitigate the existence of under-investment problems. Cao et al. (2018) found that derivative transactions with the purpose of hedging owned by companies tend to have shares that are overvalued by investors so that derivative transactions with hedging purposes are strictly related to the degree of error in the imposition of stock prices. The study also concluded that derivative transactions to hedge to increase share prices and minimize risks must be owned by the company continuously, not temporary ones.

## **2.2. Hypothesis development**

The efficient market theory states that accounting information in financial statements must be able to show information on the condition of companies in the capital market. In PSAK 1 (IAI, 2018), comprehensive income is defined as changes in equity during one period resulting from transactions and other events, in addition to changes resulting from operations with owners in their capacity as owners. The component of comprehensive income consists of net income and other comprehensive income. Hirst and Hopkins (1998) stated that the comprehensive income presented in one report is more effective in communicating the value of relevant information than if reported in a statement of changes in equity. Maines and McDaniel (2000) concluded that the appearance of comprehensive income is essential for non-professional investors. Bamber et al. (2010), Hodder et al. (2006), Khan and Bradbury (2014) found that comprehensive income is more volatile compared to net income. When viewed from the risk of accounting information, changes in comprehensive income over time carry more accounting information risk than changes in net income over time. One of the triggers for this is the change in other comprehensive income items.

Hodder et al. (2006) found that comprehensive income has a positive effect on the stock return volatility, which shows the total risk of the company. Comprehensive income is a combination of activities that arise from normal operations and outside normal company operations. Management policies within the company determine both of these activities. If the policy chosen by the management is not appropriate, it can result in internal risk. Comprehensive income that appears in the financial statements since the adoption of IFRS conducted in Indonesia in 2012 is a composite component of both operating and non-operating activities. Comprehensive income volatility can reflect both the effect of the instability of the net income component and the variability of other comprehensive income components. The existence of accounting policies chosen by management in the company related to the normal activities of the company or not the normal operations of the company can be reflected

in the comprehensive income generated by the company during one period. Therefore, accounting policies made by companies that change for all company activities can result in company risk arising from policy mistakes taken by management within the company. Thus, the hypothesis in this study is as follows:

*H1: Comprehensive income volatility is positively associated with idiosyncratic volatility.*

The efficient market theory states that accounting information in financial statements must be able to show information on the condition of companies in the capital market. Beaver et al. (1970) stated that there are implications in evaluating the relationship between the two. First, alternative accounting measures are reported that have the highest level of influence on risk testing. Second, measurement of risk that might be able to adjust for differences in reporting methods carried out by companies from year to year. Third, there is the possibility of measurement that is not reported to reflect the level of accounting risk with a higher level of influence on risk measurement.

The measure of accounting risk can be considered as a substitute for the total variability of a company's stock returns (Beaver et al., 1970). The measurement of accounting risk is closely related to the net income volatility that is obtained by the company from time to time. Therefore, accounting measures reflect both systematic and idiosyncratic risk components. Khan and Bradbury (2014, 2016) found that net income volatility has historically been the accounting variable most related to firm risk. Both studies found that net income volatility had a positive effect on stock return volatility. In line with the study, Hodder et al. (2006) proved that net income volatility is positively associated with stock return volatility. The research demonstrated that net income is considered as the firm accounting risk to capture the overall risk of the company. Furthermore, Chang et al. (2015), Rajgopal and Venkatachalam (2011), and Zhou et al. (2016) found that the quality of financial statements is negatively associated with idiosyncratic volatility. The three studies proved that the existence of management discretion in both accrual and real activities increases idiosyncratic volatility.

Furthermore, agency theory states that the problem of the relationship between agents and principals can lead to information asymmetry. This problem causes the agent to freely use his incentives in determining accounting policies and other policies related to the company. The policies taken by the company can be reflected in the amount of net income obtained by the company in a certain period. If the income is unstable from time to time, it can indicate that the policy chosen by the company will cause uncertainty about the company's future conditions. This condition may be caused by the existence of specific policies from management that are opportunistic so that it results in instability of net income from period to period. Therefore, the policies taken by management in the company specifically related to the company's operating activities can cause uncertainty in the future of the company. Thus, the hypothesis in this study is as follows:

*H2: Net income volatility is positively associated with idiosyncratic volatility.*

Other comprehensive income is a component of comprehensive income generated from the non-operating activities of the company. However, other comprehensive income has a role in influencing changes in the equity of a company. Other comprehensive income arises from transactions or economic events in a reporting period other than transactions involving non-company owners. Another comprehensive income component is an item that only emerged after the adoption of IFRS in Indonesia since 2012. Based on the efficient market theory, if the amount of other comprehensive income that is unstable every year can lead to the potential instability of the company's condition in the future. It is relevant to agency theory due to the information asymmetry that causes the agent/management to take specific policies that have an impact on other comprehensive income that is not stable. Khan and Bradbury (2016) stated that readers of financial statements assume that items from other comprehensive income that are unstable occur due to the impact of the company's core business that can confuse users of financial statements and cause significant misinterpretations of the entity's performance. The cause of financial statement user confusion in using financial statements is that other comprehensive income items have different properties, are less controlled, challenging to predict, and cannot be linked to management performance. Khan and Bradbury (2016) found evidence that when fluctuations in net income and comprehensive income are not proven, the market will consider that other comprehensive income information can mislead financial statements users.

Maines and McDaniel (2000) found that other comprehensive income has a positive effect on stock return volatility. Black (2014) proved that other comprehensive income has a negative impact on stock return volatility. However, Khan and Bradbury (2014, 2016) concluded that other comprehensive income does not affect stock return volatility and stock beta. Risk-taking management policies can also trigger company uncertainties that can be avoided. Investors will view the company as having increasing company risk. Other comprehensive income arises as a result of the non-operating companies. If the amount of other comprehensive income is not stable every period, it suggests that the company's policy for non-operating activities changes. Besides, investors who have a poor understanding of other comprehensive income items will consider that information disadvantage for them in decision-making. Therefore, the instability of other comprehensive income can trigger the emergence of unsystematic risk due to management policies within the company. Thus, the hypothesis in this study is as follows:

*H3: Other comprehensive income volatility is positively associated with idiosyncratic volatility.*

The implication of the adoption of IFRS in financial accounting standards in Indonesia, net income is not the only measure of company performance for users of financial statements. However, there is also comprehensive income, which is a combination of net income components and other comprehensive income. Chng et al. (2017) found that companies that have derivatives with hedging purposes are not relevant for diversifying

portfolios if the aim is only to reduce the instability of idiosyncratic volatility. Ayturk et al. (2016) stated that most companies limit information on the use of derivatives. In weak economic conditions, ownership of derivatives with hedging purposes negatively affects idiosyncratic volatility (Zhao & Brown, 2013). Bartram et al. (2011) concluded that the use of financial derivatives reduces both total risk and systematic risk. Tessema (2016) found evidence that the recognition and disclosure required by financial accounting standards for the ownership of derivative instruments for hedging purposes has a negative effect on the total risk of the company.

The use of derivative instruments with hedging purposes used by companies as a tool for risk mitigation must be seen in the country where they are used because Cao et al. (2018), Huang et al. (2017), and Lau (2016) found that the use of derivative instruments with hedging purposes could improve company performance only occur in developed countries. Conversely, the use of derivative instruments in developing countries can cause a decline in the value of the company. Weak institutions and governance have triggered conditions in developing countries and derivative markets in less liquid developing countries. This condition resulted in a lack of effectiveness of the derivatives used by the company. Derivative instruments ownership is best used with the purpose of hedging when used in developing countries has the same potential as the purpose for speculative, not used for risk mitigation. Although in Indonesia, the actual implementation of derivatives has been regulated in PSAK 55 (IAI, 2018) and PSAK 60 (IAI, 2018), so derivative ownership is required only for hedging purposes. Also, derivative transactions carried out by companies are closely related to earnings management activities that can lead to company risk due to company policy choices.

If the ownership of derivative instruments is used for hedging which actually can align the interests between the agent and the principal with the hope that the company can run well in the future, low idiosyncratic volatility can be influenced by low comprehensive income volatility because the policies taken by managers within the company are more defined. Investors assume that companies that have derivative instruments with hedging purposes are more guaranteed for them because the company is trying to get a comprehensive income that is stable over time. The instability of comprehensive income can be affected by net income and other comprehensive income in one period. The unsystematic risk could arise from an instability in comprehensive income. It becomes worse if the company has a derivative transaction for any purpose. Investor understanding of derivative instruments in Indonesia is still limited, and there is still no transparent market for these instruments in Indonesia, resulting in unclear derivative ownership objectives in Indonesia. Therefore, the hypothesis in this study is:

*H4: Derivative transactions strengthen the positive effect of comprehensive income volatility on idiosyncratic volatility.*

The company has risks from many types of financial risks that arise from carrying out its business functions - financial risks associated with financial policies implemented by the company.

Also, there are operational risks, which are risks of financial losses caused by inadequate or failure of internal processes, people and systems such as employee fraud against company assets and impairment of inventory, or from external events such as natural disasters that might damage company assets. Through variations in company assets and liquidity, operational risk and financial risk can lead to volatility in cash flows and earnings. If managers prefer to minimize profits and cash flow, companies must use derivative instruments with different hedging purposes (Attia, 2012).

The company is considered to make investments to trade derivatives with high risk. As a result, investors assume that companies that have derivatives of this type will result in future income, and loss becomes uncertain. It can also impact the company's uncertainty in the future. Murwaningsari, Utama, and Rossieta (2015) stated that managers could manage profitability volatility by making adjustments to cash flow and accrual volatility. In this regard, Lev and Zarowin (1999) stated that information in accrual income has a lower quality than cash flow information. Accrual earnings provide management with more significant discretion opportunities, which results in the accuracy, validity, and reliability of financial statements being low. As a result, the market response will be higher for information related to net income derived from cash flow compared to the accrual component.

According to Oktavia and Martani (2013), the existence of derivative uncertainty in Indonesia is closely related to earnings management practices. It is in line with Guay and Kothari (2003), which stated that the use of derivatives is not the only way to manage risk. There are other possible risk management tools carried out by non-financial companies. Therefore, derivatives used by companies do not always result in a decrease in company risk. Ayturk et al. (2016) also stated that most companies limit information on the use of derivatives. Therefore, many investors find it challenging to read risk management policies and hedging strategies from financial statements and use this information for the benefit of the investment decision process. The unclear disclosure of derivative information by users of financial statements is what results in the ownership of derivatives that can be dangerous for the company.

Zhao and Brown (2013) found that in adverse economic conditions, ownership of derivatives with a hedging objective can reduce idiosyncratic volatility. In contrast, in good economic conditions, ownership of derivative instruments with a hedging purpose increases idiosyncratic volatility. Meanwhile, Bartram et al. (2011) found that the use of financial derivatives reduces both total risk and systematic risk. Tessema (2016) found that the recognition and disclosure required by financial accounting standards for ownership of derivatives with the aim of hedging has a negative effect on company risk.

The existence of asymmetric information between agents and principals in the disclosure of derivatives in developing countries, including in Indonesia, can be dangerous for companies. Although the ownership of derivative instruments is best used with the purpose of hedging when used in

developing countries has the same potential as the purpose for speculative because ownership of the derivative is considered not used to mitigate risk. Although in Indonesia, the actual implementation of derivatives has been regulated in PSAK 55 (IAI, 2018) and PSAK 60 (IAI, 2018), so derivative ownership is required only for hedging purposes. Also, derivative ownership is closely related to earnings management practices that can disadvantage the company itself because of the decline in the quality of the company's information loss. Furthermore, ownership of derivatives for any purpose results in a risk for companies to bear losses from the ownership of such types of derivatives in the future because the use of effective derivatives to reduce risk is mostly carried out by developed countries. Meanwhile, the use of derivatives in developing countries is the opposite. Meanwhile, in developed countries, the use of derivatives for effective hedging purposes as a tool to mitigate risk if owned persistently, so that ownership of derivatives for hedging purposes can be considered dangerous for the company. Thus, the hypothesis in this study is as follows:

*H5: Derivative transactions strengthen the positive effect of net income volatility on idiosyncratic volatility.*

Derivative transactions are the discretion of company policy carried out by management. The policy might result in asymmetric information between agents and principals. Giraldo-Prieto et al. (2017) concluded that companies that have derivatives for hedging purposes have a positive influence on the market value of the company. Bartram et al. (2011) found strong evidence that the use of financial derivatives reduces both total risk and systematic risk. However, the derivatives are thought to be more for hedging activities, because derivatives with speculative purposes have a higher risk due to profit-taking by the company. The other comprehensive income volatility and idiosyncratic volatility is caused by risky company policies or uncertain internal factors. Guay and Kothari (2003) stated that the use of derivatives is not the only way to manage risk. There are other possible risk management tools carried out by non-financial companies. Therefore, derivatives used by companies do not result in a decrease in company risk.

Cao et al. (2018) concluded that derivatives with hedging purposes that can increase share prices and minimize risk are derivatives with hedging purposes that are owned by the company continuously, not temporary ones. Therefore, if ownership of a derivative instrument with a purpose of hedging by a company that is not persistent or continuous is the same as ownership of a derivative instrument for speculative purposes, the ownership of derivative instruments which tend to be speculative purposes will increase profitability volatility because it can lead to higher market risk and potential financial distress (Murwaningsari et al., 2015).

Agency problems that occur between agents and principals can result in asymmetric information included in the disclosure of derivative instruments owned by companies in developing countries, including in Indonesia. The trend that occurs in developing countries, even though financial

accounting standards only allow the derivatives ownership for hedging purposes, but the ownership of derivative instruments does not mean that they are always used to mitigate corporate risk. Therefore, ownership of derivative instruments is suitable for hedging purposes if used in developing countries has the same potential as derivative instruments with speculative purposes. The accounting rules in PSAK 55 (IAI, 2018) and PSAK 60 (IAI, 2018) issued by IAI are to regulate the accounting for ownership of derivative instruments by companies that must only be used for hedging purposes. However, in line with the findings in previous studies, the company's goal of ownership of derivative instruments in Indonesia tends not to be used for risk mitigation. Therefore, derivative transactions can threaten the existence of the company in the future.

The ownership of derivative instruments in Indonesia certainly has an impact on companies that also have other comprehensive income instability, bearing in mind these items are not generated from the normal activities of the company. Also, the choice of company policy in the ownership of derivative instruments for any purpose causes investors to worry about the future condition of the company. Investor understanding of derivative instruments in Indonesia is still limited, also triggered by the absence of a transparent derivative market in Indonesia. Other comprehensive income that changes from period to period results in the assumption of investors that the company has a higher risk based on the policies chosen by the company. Items that appear as part of other comprehensive income related to the choice of company policy from non-operating activities result in the company having to bear a higher risk. Based on the description, the hypothesis in this study is as follows:

*H6: Derivative transactions strengthen the positive effect of other comprehensive income volatility on idiosyncratic volatility.*

### 3. RESEARCH METHODOLOGY

The research method used in research is quantitative methods. The object of research uses companies listed on the Indonesia Stock Exchange. The population used in the study is non-financial companies listed on the Indonesia Stock Exchange. Data was collected using the documentation method through the official website of the Indonesia Stock Exchange, namely [www.idx.co.id](http://www.idx.co.id) and [finance.yahoo.com](http://finance.yahoo.com). Information data from the financial statements used in this study for components of comprehensive income using quarterly financial statement data, while other data use annual data. The technique in selecting the sample used is using a non-random sampling technique (purposive sampling). In this study, samples were taken with several criteria. First, companies used in the sample are non-financial companies that have registered their shares on the Indonesia Stock Exchange before January 1, 2011. Although the data used began in 2012, sample selection started in 2011 because there was a basis for calculating the portfolio in the idiosyncratic volatility variable by using The Fama-French Model uses data from the previous year. Also, company

selection began on September 1, 2018. This study eliminated companies that conduct IPOs after January 1, 2011. Second, this study removed financial companies from the sample because the characteristics of asset structure and liabilities generate high leverage. Third, this study removed non-financial companies that have incomplete financial statements, including information on comprehensive income components and data needed in this study from the period January 1, 2012, to December 31, 2017. Fourth, non-financial companies have disclosure data of at least 1 type of derivative transaction either for hedging purposes or for speculative purposes or which have both from January 1, 2012, to December 31, 2017. Based on the calculation of data for each variable, this study excludes one company because it has outlier data that have anomalous value. The amount of the company that can be used in this study is 41 companies so that the sample is 246 observations (firm-year).

In this study, the dependent variable is idiosyncratic volatility. The proxy for idiosyncratic volatility follows Hotvedt and Tedder (1978) and Herskovic, Kelly, Lustig, and Van Nieuwerburgh (2014) using the Market Model, with the following equation:

$$R_{it} = \beta_0 + \beta_1 R_{mt} + \varepsilon_{it} \quad (1)$$

The common factor in idiosyncratic volatility.

Where:

$R_{it}$  = the company's monthly stock return  $i$  at time  $t$ ;

$R_{mt}$  = monthly stock return from the Composite Stock Price Index (CSPI) as used by Liu et al. (2014);

$\varepsilon_{it}$  = residual of the regression equation for the company  $i$  at time  $t$ .

Based on the equation, annual idiosyncratic volatility results from residual of standard deviation for 12 months. According to Kaplan (2013), standard deviations based on daily, weekly, monthly, or quarterly stock return data can be annualized by making a standard deviation of these data by multiplying by the root of the amount of daily, weekly, monthly and quarterly data so that they become standard deviations or annual volatility (Finance Train, n.d.). Therefore, in line with this study, to obtain annual idiosyncratic volatility, the monthly residual of standard deviation from the equation needs to be multiplied by  $\sqrt{12}$  to obtain idiosyncratic volatility in one year.

This study uses comprehensive income volatility, net income volatility, and other comprehensive income volatility as independent variables. Comprehensive income volatility, net income volatility, and other comprehensive income volatility in this study follow the proxy used by Anggraita et al. (2020), Black (2014), Khan and Bradbury (2014, 2016), Lucchese et al. (2020). The comprehensive income volatility, net income volatility, and other comprehensive income volatility are calculated by the quarterly components during one year divided by the market value of equity at the beginning of the period. The volatility of the components in one year is generated from the standard deviation of comprehensive income generated every three months divided by the market value of equity at the beginning of the period, and multiplied by  $\sqrt{4}$ .

Furthermore, this study uses derivative transactions as a moderation variable. The proxy in this study follows Oktavia and Martani (2013). The proxy used for derivatives transactions is the absolute value of the fair value of derivative assets reduced by derivative liabilities for both hedging and speculative purposes, which are described as follows:

$$DERIV_{it} = \frac{\text{The absolute value of the fair value of derivatives}}{\text{Total assets}_{it-1}} \quad (2)$$

where:

$DERIV_{it}$  = fair value of derivative assets (liabilities) for the company  $i$  year  $t$ ;

The fair value of derivatives = absolute fair value of derivative assets (liabilities);

Total assets<sub>t-1</sub> = total company assets  $i$  in year  $t-1$ .

Also, this study employs financial leverage as a control variable. In this study, financial leverage as measured by total liabilities divided by total equity each year as used by (Khan & Bradbury, 2014, 2016).

$$FINLEV = \frac{\text{Total liabilities}}{\text{Total equity}} \quad (3)$$

To test  $H1$  and  $H4$ , the regression equation model is:

Model 1

$$IdioVolMM_{it} = \beta_0 + \beta_1 CIVol_{it} + \beta_2 ERIV_{it} + \beta_3 CIVol_{it} * DERIV_{it} + \beta_4 FINLEV_{it} + \varepsilon_{it} \quad (4)$$

Meanwhile, to test  $H2$ ,  $H3$ ,  $H5$ , and  $H6$ , which are the expansion models of Equation (4) are:

Model 2

$$IdioVolMM_{it} = \beta_0 + \beta_1 NIVol_{it} + \beta_2 OCIVol_{it} + \beta_3 DERIV_{it} + \beta_4 NIVol_{it} * DERIV_{it} + \beta_5 OCIVol_{it} * DERIV_{it} + \beta_6 FINLEV_{it} + \varepsilon_{it} \quad (5)$$

where:

$IdioVolMM_{it}$  = idiosyncratic volatility using the Market Model for the company  $i$  in year  $t$ ;

$NIVol_{it}$  = net income volatility for the company  $i$  in year  $t$ ;

$OCIVol_{it}$  = other comprehensive income volatility for the company  $i$  in year  $t$ ;

$CIVol_{it}$  = quarterly comprehensive income for the company  $i$  in year  $t$ ;

$DERIV_{it}$  = derivative transactions for the company  $i$  in year  $t$ ;

$FINLEV_{it}$  = financial leverage for the company  $i$  in year  $t$ ;

$\varepsilon_{it}$  = residual equation.

Model 3

$$IdioVolMM_{it} + 1 = \beta_0 + \beta_1 CIVol_{it} + \beta_2 ERIV_{it} + \beta_3 CIVol_{it} * DERIV_{it} + \beta_4 FINLEV_{it} + \varepsilon_{it} \quad (6)$$

To test  $H2$ ,  $H3$ ,  $H5$ , and  $H6$ , which are the expansion of Equation (6) above in the first sensitivity test, the equation model is:

Model 4

$$IdioVolMM_{it} + 1 = \beta_0 + \beta_1 NIVol_{it} + \beta_2 OCIVol_{it} + \beta_3 DERIV_{it} + \beta_4 NIVol_{it} * DERIV_{it} + \beta_5 OCIVol_{it} * DERIV_{it} + \beta_6 FINLEV_{it} + \varepsilon_{it} \quad (7)$$

where:

$IdioVolMM_{it}$  = idiosyncratic volatility using the Market Model for the company  $i$  in year  $t-1$ ;

$NIVol_{it}$  = net income volatility for the company  $i$  in year  $t-1$ ;

$OCIVol_{it}$  = other comprehensive income volatility for the company  $i$  in year  $t-1$ ;

$CIVol_{it}$  = quarterly comprehensive income for the company  $i$  in year  $t-1$ ;

$DERIV_{it}$  = derivative transactions for the company  $i$  in year  $t-1$ ;

$FINLEV_{it}$  = financial leverage for the company  $i$  in year  $t-1$ ;

$\varepsilon_{it}$  = residual equation.

The second sensitivity test is the same as the primary equation model but replaces the idiosyncratic volatility variable by using the Fama-French Model as used by Ang et al. (2009), Liu et al. (2014). The proxy used in these studies uses the standard deviation of the residual regression of the Fama and French (1993) model. For the second sensitivity test, several steps were carried out to determine idiosyncratic volatility following the Fama-French Model. The first step is to create a company category based on market capitalization  $t-1$  (size factor) for the current year, which is

A sensitivity test is performed to compare the results of the main equations in the study. The sensitivity test in this study was conducted in two ways. The first sensitivity test is testing using the independent variable  $t-1$ , which aims to see investor responses to the previous year's accounting information reporting. To test  $H1$  and  $H4$  of the first sensitivity test, the equation model is:

hereinafter called Small Minus Big (SMB). Portfolio size distribution consists of 50 percent of large companies based on market capitalization, and the remaining 50 percent is categorized as small companies (size factor). The second step and book to market equity  $t-1$  (value factor) are to use a book market equity ratio (BM) consisting of 1/3 including big companies, 1/3 including medium companies and 1/3 including in the low company, hereinafter referred to as High Minus Low (HML). Every year  $t$ , companies are ranked and sorted into portfolios according to the size of their capitalization and book to market equity ratio in December of year  $t-1$ . Returns from the monthly size factor portfolio are calculated as monthly returns from large portfolios reduced by monthly returns from small company portfolios. The monthly return from the value factor is calculated as the monthly return of the company's large portfolio book to market equity ratio minus the company's low book to market equity ratio. To determine the SMB portfolio, this study excludes companies that do not have complete stock price information per month as Liu et al. (2014) and companies with negative equity.

Then monthly regression is performed for the following equation:

$$R_t - R_{ft} = \beta_0 + \beta_1 (R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t \quad (8)$$

where:

$R_t$  = company's monthly stock return  $i$ ;

$R_{ft}$  = risk-free using monthly yields on 10-year government bonds as used by Naomi (2011);

$R_{mt}$  = monthly stock return from the Composite Stock Price Index (CSPI) as used by (Liu et al., 2014);

$SMB$  = monthly returns of small size portfolios minus the daily returns of large size portfolios. For SMB portfolios are grouped into 2 by the previous year's market capitalization as Liu et al. (2014) and Kumari et al. (2017).

$HML$  = HML is calculated by the high group portfolio minus the small group portfolio as

Liu et al. (2014) and Kumari et al. (2017). The portfolio is divided into 3 with the previous year's book to market equity into three groups, namely high, medium, and low.

$\varepsilon_t$  = residual of the equation.

Idiosyncratic volatility is an annual estimate of the residual standard deviation of the regression equation results above. Similar to Equation (1), to obtain annual idiosyncratic volatility, the standard monthly residual deviation from the above equation needs to be multiplied by  $\sqrt{12}$ . To test  $H1$  and  $H4$ , in the second sensitivity test, the equation model is:

Model 5

$$IdioVol_{it}FF = \beta_0 + \beta_1 CIVol_{it} + \beta_2 ERIV_{it} + \beta_3 CIVol_{it} * DERIV_{it} + \beta_4 FINLEV_{it} + \varepsilon_{it} \quad (9)$$

Meanwhile, to test  $H_2$ ,  $H_3$ ,  $H_5$ , and  $H_6$ , which are the expansion of Equation (9) above in the second sensitivity test, the equation model is:

Model 6

$$IdioVolFF_{it} = \beta_0 + \beta_1 NIVol_{it} + \beta_2 OCIVol_{it} + \beta_3 DERIV_{it} + \beta_4 NIVol_{it} * DERIV_{it} + \beta_5 OCIVol_{it} * DERIV_{it} + \beta_6 FINLEV_{it} + \varepsilon_{it} \tag{10}$$

where:  
 $IdioVolFF_{it}$  = idiosyncratic volatility using FF Model for the company  $i$  in year  $t$ ;  
 $NIVol_{it}$  = net income volatility for the company  $i$  in year  $t$ ;  
 $OCIVol_{it}$  = other comprehensive income volatility for the company  $i$  in year  $t$ ;

$CIVol_{it}$  = quarterly comprehensive income for the company  $i$  in year  $t$ ;  
 $DERIV_{it}$  = derivative transactions for the company  $i$  in year  $t$ ;  
 $FINLEV_{it}$  = financial leverage for the company  $i$  in year  $t$ ;  
 $\varepsilon_{it}$  = residual equation.

#### 4. RESULTS AND DISCUSSION

Based on data analysis conducted on 41 companies from 2012 to 2017, the descriptive statistical components used in this research are the mean,

median, maximum value, minimum value, and standard deviation. Table 1. shows the results of descriptive statistics that describe information on variable characteristics in this study.

Table 1. Descriptive statistics summary

	VOL IDMM	VOL IDFF	NIVOL	OCIVOL	CIVOL	DERIV	FINLEV
Mean	33,41%	28,79%	3,27%	2,23%	4,75%	0,61%	168,48%
Median	28,95%	23,87%	1,82%	0,25%	2,11%	0,036%	105,1%
Max.	184,92%	178,65%	39,78%	125,58%	150,66%	6,82%	148,13%
Min.	5,505%	4,06%	0,075%	0%	0,1%	0%	18,72%
Std. Dev.	22,12%	19,81%	4,96%	9,17%	11,29%	1,35%	198,39%
Obs.	246	246	246	246	246	246	246

A summary of the results of the coefficient of determination test, the model determination test, the partial test (t-test) Equation (4) (primary model test), Equation (6) (sensitivity 1), and Equation (9) (sensitivity 2) are as follows in Table 2.

A summary of the results of the coefficient of determination test, model permanence test, partial test (t-test) Equation (5) models (primary model test), Equation (7) (sensitivity 1), and Equation (10) (sensitivity 2) are as follows in Table 3.

Table 2. Determination coefficient test results, Model assistance test, Partial test model Equation (4) (Main model), Equation (6) (Sensitivity 1), and Equation (9) (Sensitivity 2)

	Main Model				Sensitivity 1				Sensitivity 2			
	Coef.	T-Stat.	Prob.		Coef.	T-Stat.	Prob.		Coef.	T-Stat.	Prob.	
Cons	0.3142	12.491	0	***	0.267	9.024	0	***	0.267	11.459	0	***
CIVol	-0.167	-1.295	0.098	*	0.464	1.560	0.060	*	-0.102	-0.848	0.198	
Deriv	-1.412	-0.950	0.171		2.046	1.200	0.115		-0.23	-0.166	0.433	
CIVol*Deriv	90.584	5.178	0	***	-21.893	-1.016	0.155		47.901	2.929	0.002	***
Finlev	0.005	0.599	0.274		0.0254	2.677	0.004	***	0.007	0.9157	0.180	
Adj R2	0.118				0.047				0.043			
F-Stat.	9.215				3.557				3.751			
Prob. (F)	0.000				0.008				0.006			

Table 3. Determination coefficient test results, Model assistance test, Partial test model Equation (5) (Main model), Equation (7) (Sensitivity 1), and Equation (10) (Sensitivity 2)

	Main Model				Sensitivity 1				Sensitivity 2			
	Coef.	T-Stat.	Prob.		Coef.	T-Stat.	Prob.		Coef.	T-Stat.	Prob.	
Cons	0.318	12.399	0	***	0.263	8.848	0	***	0.274	11.498	0	
NIVol	-0.168	-0.556	0.289		0.731	2.245	0.012	**	-0.275	-0.976	0.330	
OCIVol	-0.172	-1.014	0.155		0.284	0.577	0.282		-0.053	-0.334	0.738	
Deriv	-2.125	-1.293	0.098	*	1.033	0.560	0.287		-1.412	-0.921	0.358	
NIVol*Deriv	72.598	2.041	0.021	**	31.348	0.801	0.211		64.023	1.923	0.055	*
OCIVol*Deriv	100.28	4.186	0.000	***	-36.951	-1.135	0.128		50.398	2.247	0.025	***
Finlev	0.003	0.441	0.329		0.021	2.203	0.014	**	0.006	0.763	0.445	
Adj R2	0.136				0.0641				0.059			
F-Stat.	7.454				3.332				3.600			
Prob. (F)	0.000				0.003				0.002			

#### 4.1. The effect of comprehensive income volatility on idiosyncratic volatility

The result of hypothesis testing suggests that comprehensive income volatility is not associated with idiosyncratic volatility. The result of this study is in line with the findings of Dhaliwal, Subramanyam, and Trezevant (1999). Furthermore, the result provides a similar effect on idiosyncratic volatility using the Fama-French Model. This result confirms idiosyncratic volatility testing using the Market Model. However, testing using comprehensive income volatility in the previous year is positively associated with idiosyncratic volatility. Even though the previous year's comprehensive income information is not as reliable as the previous year's income statement, the previous year's comprehensive income information is quite attractive to investors considering that the average comprehensive income consists of 98.5 percent of the net income component. Therefore, information on comprehensive income is greatly influenced by net income information. In line with net income information, investors need a considerable amount of time to understand and respond to the quarterly comprehensive income information for four periods in one year contained in the financial statements starting in 2012. Comprehensive income information from the previous year can be used in assessing the company's stock information in the capital market, especially unsystematic risk. The result of this study proves PSAK 1 (IAI, 2018), which states that financial statements can be used to predict the condition of the company in the future can be verified from the test result in this study.

The result of this study is also different from Hodder et al. (2006). In Hodder et al. (2006), comprehensive income information is essential in decision making, especially for issuers' risk information in the capital market. Meanwhile, in this study, comprehensive income information for the current year cannot be used as a tool in assessing the risk of company stock in the capital market, especially unsystematic risk. The contribution of net income in comprehensive income is very significant, so in this study, it is evident that investors' response to comprehensive income will follow the income and loss information in making investment decisions in the capital market. It is also supported by investor knowledge in responding to accounting information sourced from the financial statements of the income statement. Comprehensive income, which is a combination of components of net income and other elements of comprehensive income, will follow the conditions of both components. Still, the component that contributes significantly to comprehensive income is net income. Therefore, investors respond to information on comprehensive income similar to the pattern of investor response to net income, especially related to information both of them can be used as a tool to predict the condition of the company, especially relevant to the information on systematic risk of company shares in the capital market.

The result of this study is not in line with the findings of Khan and Bradbury (2014, 2016). The test in this study uses company data in Indonesia, which is a developing country and uses quarterly comprehensive income data in one year. In contrast,

the data used by Khan and Bradbury (2014, 2016) is developed country companies data and uses annual comprehensive income data for several years. With IFRS-based financial accounting standards used by companies in Indonesia, investors may be more interested in using annual accounting information data such as comprehensive income information than quarterly accounting information data. Moreover, quarterly comprehensive income information consists of 4 financial statements in one year, which requires more time to interpret the information. Therefore, investors may prefer to use annual financial statement data as a basis for analysis in decision making related to company risk. Thus, the result of testing in this study proves that there is the usefulness of financial statements related to the prediction of company conditions as PSAK 1 (IAI, 2018) can be fulfilled from the previous year's comprehensive income information which was interpreted in advance by users of financial statements, the fulfillment of market-based frameworks accounting research that shows the previous year's accounting information can be used as a valuation of information on the company's shares in the following year and proven Black (2014) predictions that the shorter financial data that is quarterly comprehensive income information can attract investors' attention in Indonesia is verified even though the information is used to predict the company's unsystematic risk in the coming year.

#### 4.2. The effect of net income volatility on idiosyncratic volatility

From the result of hypothesis testing, it suggests that net income volatility is not associated with idiosyncratic volatility. The result differs from Chang et al. (2015), Rajgopal and Venkatachalam (2011), Zhou et al. (2016). The result of this study indicates that accounting information has the power to be used as a basis for conducting analyzes related to company stock information on the capital market, primarily related to the unsystematic risk inherent in the company's shares. Differences in the result of testing in this study with these studies can occur due to differences in accounting information used. Chang et al. (2015), Rajgopal and Venkatachalam (2011), Zhou et al. (2016) stated that the accounting information used to determine earnings management calculations is the annual financial statements in the form of components related to profit or loss and operating cash flow. Meanwhile, in this study, the quality of financial statements or the risk of accounting information is represented by quarterly net income volatility in one year, which illustrates the volatility of the company's operating performance quarterly. Thus, the response of investors is more likely to use annual financial statements than just seeing changes in the company's operating performance quarterly.

The result of this study is also not in line with Khan and Bradbury (2014, 2016) used volatility of annual income for several years, while in this study using quarterly net income in one year. Testing the quarterly earnings volatility data in this study follows the recommendation of Black (2014), which stated that shorter financial statement data might attract investors' attention in describing the company's performance. Therefore, investors, as

users of financial statements, do not use quarterly earnings movement information in determining company risk.

Idiosyncratic volatility, which is an unsystematic risk, can be caused by the existence of management policy choices in the company that can endanger the company's condition. One such policy option is the accounting policies in preparing financial statements. Rajgopal and Venkatachalam (2011), Chang et al. (2015) and Zhou et al. (2016) suggested that the current year's earnings quality is closely related to unsystematic risk, so information about earnings management activities can be used as a basis for decision making on company stock information regarding its unsystematic risk. Meanwhile, the result of this test concludes that the profitability volatility does not affect idiosyncratic volatility is possible that the volatility of quarterly net income does not reflect earnings management activities in one period. Earnings management information in the financial statements is reflected in the annual financial statements. Therefore, even with the use of financial statements by IFRS-based financial accounting standards, the volatility of the current quarterly net income is a change in quarterly net income information that requires further analysis and interpretation, so that net income volatility is not information that can be used by investors in determining the systematic risk of company shares in the capital market in the current year.

The same test result is generated using idiosyncratic volatility using the Fama-French Model. The result of this study confirms that quarterly net income volatility is not a cause for the emergence of unsystematic risk in the current year, so testing using the Fama-French Model confirms the test result using the Market Model. Furthermore, the result of the previous year's accounting information testing on the company's unsystematic risk indicates that the net income volatility of the previous year has a positive effect on idiosyncratic volatility. The result of this test suggests that changes/movements in the quarterly net income of the current year require time for further interpretation and analysis related to the data and information which cannot be used to determine the systematic risk of the current year. With the adoption of IFRS in financial accounting standards in Indonesia has resulted, users of financial statements including investors, need time to be able to understand the accounting provisions by the new financial accounting standards. Therefore, the interpretation of the previous year's income statement concluded by investors can indicate idiosyncratic volatility of the current year, so that investors' reaction to accounting information, especially the quarterly net income of the previous year, occurred in the following year in determining the unsystematic risk of company shares in the capital market.

Based on the result of testing in this study, using the context of companies and the Indonesian capital market, the semi-efficient market theory does not apply because net income information cannot be used as a basis for decision making, especially in assessing risk systematically. In the context of a semi-efficient market, financial statement data should be able to be used in investment decision making related to company risk,

including unsystematic risk. This research proves that there is no difference between a more volatile quarterly net income statement and less volatile quarterly net income for investors in the assessment of the company's investment risk, especially unsystematic risk. Based on descriptive statistics in this study, the risk of accounting information, as indicated by the level of net income volatility in Indonesia, is relatively low, and only a few companies have high-income volatility. It is similar to Anggraita et al. (2020). Therefore, this information could not be used to describe the current unsystematic risk conditions of the company.

This finding of the study suggests that net income volatility information in the current year looks reasonable for the company. However, it is possible in the preparation of net income information that there is an opportunistic managerial discretion. Information on quarterly net income in the current year cannot be used as decision making related to investment risk, especially unsystematic risk. Investors may be more careful in responding to the movement of quarterly net income information in the current year which may not necessarily be used in investment decision making in the capital market. Also, users of financial statements, especially investors, need time to be able to understand the company's activities that are reflected in net income including the policies chosen by the company in determining revenue and expenses every quarterly period in one year. Changes in IFRS-based financial accounting standards implemented by companies in Indonesia, starting in 2012 is not an easy thing for investors to interpret. Net income information is still used by investors in making decisions regarding the information on company risk, given that investors are familiar with net income information using previous accounting standards. However, with the change in IFRS-based financial accounting standards, investors need time to interpret them, let the information on quarterly net income consisting of 4 periods in one year. Therefore, the financial statements still have benefits, especially for the previous year's net income information, because the information can be used in determining unsystematic risk.

#### **4.3. The effect of other comprehensive income volatility on idiosyncratic volatility**

From the result of hypothesis testing, it suggests that other comprehensive income volatility is not associated with idiosyncratic volatility. The result of this study indicates that information on the instability of other comprehensive income of a company cannot reflect the company's unsystematic risk. Other comprehensive income items that emerged after the adoption of IFRS in financial accounting standards in Indonesia since 2012 have not come to the attention of investors because they are not a regular activity of a company that could endanger the company. The amount is relatively low compared to net income. Also, users of financial statements, especially investors, do not necessarily understand comprehensive income items originating from activities outside the company's normal operations. The result of other comprehensive

income volatility test for idiosyncratic volatility with the Fama-French Model shows the same result. Therefore, the result of idiosyncratic volatility testing with the Fama-French Model also confirms idiosyncratic volatility testing using the Market Model. The existence of management policies in the company related to activities outside the company's operations that result in the emergence of other comprehensive income items is not too responded to by users of financial statements, especially investors. The different test result, the other comprehensive volatility the previous year did not affect idiosyncratic volatility. Therefore, information on other comprehensive income for the current year and the previous year cannot be used by investors in evaluating the information on a company's stock in the capital market, especially concerning the unsystematic risk inherent in the company's shares.

The test result in this study is relevant to the effect of a test conducted by Khan and Bradbury (2016). Other comprehensive income items are not a problem for users of financial statements because they appear as an impact due to changes in financial accounting standards in Indonesia. The emergence of other comprehensive items is different from the net income component that can be done, which is partly an accrual component, which is a regular activity of the company is a risky action for users of financial statements, especially investors. In addition to the value of other comprehensive income is lower than net income, investors do not necessarily understand other comprehensive income items that arise as a result of changes in accounting standards starting in 2012. Still, investors do not consider these items dangerous for the company's survival.

Investors may consider items of other comprehensive income to be unstable and of relevance to low entity core business results so that investors do not respond too much to that information. Also, quarterly other comprehensive income information in one year could confuse users of financial statements and cause significant misinterpretations of the entity's performance (Khan & Bradbury, 2014, 2016). Based on this, investors in Indonesia are thought to be unfamiliar with other comprehensive income items that appeared in the financial statements after the adoption of IFRS in Indonesia in 2012 especially since the numbers are relatively low compared to the total profit or loss in the comprehensive income component (1.5%). Although other elements of comprehensive income are regulated in IFRS-based financial accounting standards, it is not an easy thing for investors to interpret the activities that arise in these other comprehensive income items.

In agency theory, the existence of agency problems results in the policies that are carried out by managers, in general, are not known by the principal as the owner of the company so that asymmetric information arises. Changing policies implemented by companies, one of which can lead to ups and downs in the value of other comprehensive income in one period. However, investors consider company policies that result in instability in other comprehensive income is not something that needs to be questioned because it does not endanger the company. Investors in Indonesia consider all policies taken by good managers that result in other comprehensive income is not the main focus of their

primary concern. Other comprehensive income volatility that does not affect idiosyncratic volatility also confirms the findings of Bima and Afri (2017), which stated that comprehensive income information is less able to provide information on better quality financial information.

The test result in this study is not in line with the findings of Maines and McDaniel (2000), which stated that the volatility of other comprehensive income could capture the presence of company risk. The conclusions of this study indicate that investors may not understand the information on other comprehensive income. The emergence of comprehensive income items and the amount is unstable and relatively low, resulting in a lack of investor response to the information to the company's unsystematic risk information. Also, the test result in this study is not in line with those conducted by Black (2014), who found that when a company has comprehensive income items that are not stable in several periods, the company's risk increases. Also, the test result in this study does not prove the prediction of Black (2014), which stated that the use of shorter data could better capture company risk and be more attractive to investors, especially other comprehensive income.

#### **4.4. Derivative transactions do not strengthen the positive effect of comprehensive income volatility on idiosyncratic volatility**

The result of empirical testing shows that the interaction variable between derivative transactions and comprehensive income volatility has a positive effect on idiosyncratic volatility. It indicates that the volatility of comprehensive income that has derivative transactions results in the risk of systematic failure. The result of this study suggests that users of financial statements, especially investors, see comprehensive income information for companies that have derivative transactions. The existence of IFRS adoption conducted in Indonesia starting in 2012 has resulted in users of financial statements that are still new in interpreting financial statements, especially comprehensive income that arises after the adoption of IFRS. However, when companies that have higher volatility of comprehensive income with ownership of derivative transactions will react that the information can be responded negatively by investors as users of financial statements.

According to Lau (2016), the use of derivatives when used with the purpose of hedging can improve company performance and can reduce risks caused by the company's operational performance. Companies that use derivative instruments are more able to generate sales from any given level of assets compared to companies that do not use derivative instruments for hedging purposes. However, the use of derivatives is less effective if done in developing countries (Lau, 2016). The existence of weak institutions and governance in developing countries and derivative markets in less liquid developing countries results in a less active role of the derivatives used by companies. In developed countries, derivatives used by companies can reduce the standard deviation of stock returns and systematic risk because companies in developed countries use financial derivatives for risk

management compared to trading purposes (Chen, Huang, & Jha, 2012). Also, companies that employ financial derivatives to reduce business exposure significantly can reduce the possibility of financial distress and mitigate investment problems (Huang et al., 2017). The accounting information available after the adoption of IFRS is applied in financial accounting standards in Indonesia, specifically related to company performance, and information on the impact of policies taken by the company is reflected in comprehensive income. The instability of comprehensive income can be caused by both the normal activities of the company's operations and activities outside the company's regular changing business. Therefore, users of financial statements, especially investors, look at company policies directly related to comprehensive income and income, given the different sources of net income and other comprehensive income activities. Also, derivative ownership that tends to endanger the company is only directly related to net income and other comprehensive income activities.

Although the company implements a derivative transaction policy with the purpose of hedging, the policy is closely related to the level of error in the imposition of stock prices (Cao et al., 2018). It is supported by the fact that there are still not many companies in Indonesia that have derivatives with the aim of hedging in the long term to be able to correct mistakes in the imposition of share prices in a non-instant process. In line with this, compulsory recognition and disclosure of derivative instruments with the aim of hedging can reduce the company's total risk exposure (Tessema, 2016). Under conditions for companies in Indonesia, derivative arrangements for hedging purposes are regulated in PSAK 55 (IAI, 2018) and PSAK 60 (IAI, 2018). After implementing the recognition and disclosure of derivative instruments and the hedging activities required by financial accounting standards, the company can be prudent in reducing policies that result in increased volatility in profit or loss. Ideally, the application of standards governing the recognition and disclosure of derivative instruments for hedging purposes can force companies that enter the competitive industry to be more careful in taking significant risks. Therefore, ownership of derivatives for hedging purposes should reduce the positive influence of comprehensive income volatility on idiosyncratic volatility.

The behavior of companies that have derivative transactions is considered users of financial statements that are dangerous for the company in the future. The information is not only imposed only related to management policies within the company regarding the company's normal activities that are reflected in profit or loss as well as activities outside the company's operations that are reflected in other comprehensive income but also reflected in the combination of the two. Investors might assume that companies that have derivatives with any purpose are more likely to speculative purposes that are vulnerable to financial distress. The information is subject to not only net income volatility and other comprehensive income volatility but also to the comprehensive income volatility, which is a combination of both. With IFRS-based financial accounting standards in Indonesia, starting in 2012, it is not an easy thing for users of financial

statements to be able to understand activities that lead to other comprehensive income items. It is different from the activities of companies that are included in the net income component because users of financial statements are familiar with net income before the adoption of IFRS is carried out in financial accounting standards in Indonesia. Therefore, users of financial statements need to differentiate the treatment of information in profit or loss and other comprehensive income.

#### **4.5. Derivative transactions do not strengthen the positive effect of net income volatility on idiosyncratic volatility**

The result of empirical testing shows that the interaction variable between derivative transactions and profitability volatility has a positive effect on idiosyncratic volatility. It indicates that the volatility of net income that has a derivative transaction results in the unsystematic risk. From the company side, derivative transactions treated by companies in Indonesia are not used as a tool to mitigate risk, whereas from the investor's side accounting information in the form of disclosure of derivative transactions in notes to financial statements for whatever purpose their use is considered as derivatives whose nature tends to be the same as derivatives for purposes speculative. Therefore, investors in Indonesia are suspected of only knowing derivative transactions, not as a tool for risk management in reducing the uncertainty of the company in the future. Still, derivative transactions are considered to endanger the company's condition.

The use of derivatives by companies in Indonesia is in line with Lau (2016), which states that the use of derivative instruments in developing countries tends to cause a decline in the value of the company. Weak institutions and governance in developing countries and derivative markets in less liquid developing countries are triggers for the ineffective use of derivatives. This condition results in the lack of effectiveness of the derivatives used by companies and different functions when used by companies in developed countries. The use of derivatives used by companies in developed countries can reduce company risk because companies in developed countries use financial derivatives more for risk management compared to trading purposes (Huang et al., 2017). Also, the use of derivative instruments in developed countries aims to significantly reduce financial exposure to minimize the possibility of financial distress and mitigate under-investment problems (Huang et al., 2017). Therefore, the use of derivative transactions in Indonesia as a developing country can strengthen the positive influence of net income instability on non-systematic risk.

Based on the result of a test in this study indicates that the net income volatility in companies that have instruments/derivative transactions triggers the emergence of unsystematic risk because investors are worried about the condition of the company in the future considering the company must bear the potential losses on the ownership of derivatives used to tend speculatively. Investors consider the net income instability due to company ownership of derivative instruments is considered because the company uses these

instruments/transactions for management purposes only. The problem of information asymmetry also encourages the assumption that derivative ownership for any purpose can be considered by users of financial statements, especially investors, endangering the company. Investors are not informed of the real meaning of management policy in the use of derivatives. The policy is considered that investors are not in line with the interests of investors. As a result, the behavior of companies that have derivatives has the potential to endanger the sustainability of the company in the future because the company can bear a significant loss associated with derivative ownership. Therefore, ownership of derivatives with speculative purposes is vulnerable to financial distress, especially by looking at the instability of a company's income statement from time to time (Murwaningsari et al., 2015).

According to Cao et al. (2018), derivative transactions owned by companies when used with hedging purposes tend to result in shares that are valued too low by investors, so ownership of derivative transactions is closely related to the level of error in the imposition of stock prices. However, ownership of derivative transactions, in the long run, can increase and correct mistakes in the imposition of stock prices in a process that is not instant. Derivatives to hedge to boost share prices and minimize risks must be owned by the company continuously, not temporary ones (Cao et al., 2018). Associated with the inconsistency of companies in holding derivatives for hedging purposes, based on data on disclosure of derivative information in the notes to the financial statements, companies in Indonesia in this research sample that have derivatives with hedging purposes consistently from 2012 to 2017 only by 21.9 percent. Therefore, ownership of derivatives with hedging purposes by companies in Indonesia is ineffective, and even tends to be the same as derivative ownership with speculative purposes.

#### **4.6. Derivative transactions do not strengthen the positive effect of other comprehensive income volatility on idiosyncratic volatility**

The result of empirical testing shows that the interaction variable between derivative transactions and other comprehensive income volatility has a positive effect on idiosyncratic volatility. It indicates that the other comprehensive income volatility that has derivative transactions results in an unsystematic risk. Based on the test result in this study suggests that the ownership of derivative transactions in Indonesia is not treated for hedging purposes and tends to be used for speculative purposes. Also, if a company implements derivative transactions with the purpose of hedging in the hope of reducing the company's risk, then that objective will not be effectively carried out in Indonesia. Meanwhile, investors in Indonesia are suspected of still not understanding the company's intentions in the ownership of derivatives assuming that ownership of derivatives by the company could endanger the company in the future. Disclosure of the fair value of derivative instruments using the fair value in the notes to the financial statements is set in PSAK 60 (IAI, 2018).

Investors in Indonesia are less able to differentiate between derivatives for hedging and speculative purposes, so ownership of derivatives for hedging purposes is also considered investors can endanger the condition of the company in the future as a result of potential losses that must be borne by the company in meeting its obligations. Investors assume that other comprehensive income that is not stable can lead to risks for the company that can disrupt the continuity of the company in the future if the company has derivative instruments. The test result in this study indicates that the other comprehensive income volatility can have a positive effect on idiosyncratic volatility if the company has derivatives. The use of derivative instruments is presumed to be still not used as stipulated in PSAK 55 (IAI, 2018) and PSAK 60 (IAI, 2018), where companies tend to have derivatives, not for purely hedging purposes. In essence, the use of derivatives for hedging purposes is closely related to the company's strategy in mitigating risk. Policy managers in companies in Indonesia may use derivative instruments in general, and it is still aimed at the interests of investors in the hope of getting profits in the future. Therefore, the use of derivative transactions by companies in Indonesia is not effectively used as a tool for risk mitigation.

The use of derivative instruments for any purpose in developing countries tends to cause a decline in the firm value (Lau, 2016). It is due to weak institutions and governance in developing countries and derivative markets in less liquid developing countries. Therefore, the effectiveness of derivatives plays a less role in mitigating risk, derivative ownership tends to be harmful to the company. The opposite condition occurs when the use of derivatives in developed countries, the use of derivative ownership, can reduce the standard deviation of stock returns and systematic risk because companies in developed countries' financial derivatives are more aimed at risk management compared to trading objectives (Huang et al., 2017). Different company conditions in developing countries such as Indonesia with developed countries in treating derivatives are also different. The result of this study indicates that ownership of derivative instruments tends to increase the positive influence of other comprehensive income volatility on idiosyncratic volatility in Indonesia. Other comprehensive income items that arise as a result of company policy can create unsystematic risk if the company has derivatives. The instability of other comprehensive income items appearing from management policies within the company rather than from the normal activities of the company can pose an unsystematic risk to the company if the company has derivative transactions.

They are related to the instability of other comprehensive income, which results in an unsystematic risk if the company has derivative instruments in developing countries (Lau, 2016). Also, the ownership of derivative instruments with the purpose of hedging owned by the company is not continuous, considered not as a strategy in reducing company risk. Hedge derivative instruments owned by companies tend to cause the company's shares to be overvalued by investors, so ownership of derivative transactions with hedges is closely related to the level of error in the imposition of stock prices (Cao et al., 2018). Mandatory

recognition and disclosure of derivative instruments for hedging can reduce company risk exposure including internal risk or idiosyncratic volatility (Tessema, 2016). The use of derivative instruments with a protective objective can ideally reduce the positive influence of other comprehensive income volatility on idiosyncratic volatility. Other comprehensive income items and idiosyncratic risks arise because of policies taken by companies that have a higher risk. This study proves that the ownership of derivative instruments, although used for hedging purposes, tends to increase the positive effect of other comprehensive income volatility on idiosyncratic volatility.

The test result in this study also showed that derivatives tend to trigger risks that occur due to the instability of other comprehensive income. Derivative transactions that are designated as hedging instruments receive special accounting treatment because the company can match the gains or losses of derivatives with the underlying items. Conversely, derivatives that are not designated as speculative or ineffective hedges significantly affect the amount of company revenue, resulting in a mismatch between the advantages and disadvantages of the derivatives as well as the losses and gains from the underlying assets. When the company does not have derivatives with speculative purposes, investors will not respond to information about other comprehensive income to be used as a tool in investment decision making. Investors assume that items from other comprehensive income are considered unstable, and their relevance to the entity's core business results will confuse users of financial statements and cause significant misinterpretations of the entity's performance (Khan & Bradbury, 2016). Investors in Indonesia consider that information related to other comprehensive income items is new in the financial statements after the company applies IFRS-based accounting standards. Also, other comprehensive income items have different properties, are less controlled, challenging to predict, and cannot be linked to management performance (Khan & Bradbury, 2016). Also, items in other comprehensive income are not very understandable by investors in Indonesia initially did not get an investor response. However, when a company has a derivative transaction, the investor considers that the instability of other quarterly comprehensive income in the current year indirectly triggers the company to have an increasingly systematic risk. Thus, the result of testing in this study proves that investors do not use the usefulness of accounting information in the form of other quarterly comprehensive income in the financial statements in the current year in assessing the company's condition. Still, the disclosure of accounting information in the form of derivative transactions in the notes to the financial statements as stipulated in PSAK 60 (IAI, 2018) results in a negative response from investors in assessing the condition of the company's current year as well as share information on the capital market, especially unsystematic risk.

## 5. CONCLUSION

Based on the test results and discussion in the previous section, comprehensive income volatility is not associated with idiosyncratic volatility. The value

of comprehensive income for the year is strongly influenced by net income because its component includes 98.5% of comprehensive income. Although for investors, it is not easy to interpret net income information using IFRS-based financial accounting standards, investors have known net income information using previous financial accounting standards so that investors respond to comprehensive income information the same as investors' responses to net income. Net income volatility is not associated with idiosyncratic volatility. However, information on the volatility of the quarterly net income from the previous year can be used as a basis for assessing a company's idiosyncratic volatility. Changes in IFRS-based financial accounting standards cause users of financial statements, especially investors, to take time to interpret and evaluate accounting information related to management policies of operating activities reflected in net income information. Other comprehensive income volatility current year and previous year are not associated with idiosyncratic volatility. Other comprehensive income items originating from activities outside the company's regular operations do not become too attractive information for investors. Therefore, accounting information on the volatility of other comprehensive income in the current year or the previous year is not used to assess the company's systematic risk.

Furthermore, finding the study indicates that the interaction variables between derivative transactions and comprehensive income volatility have a positive effect on idiosyncratic volatility. It shows that the volatility of comprehensive income that has derivative transactions results in the risk of systematic failure. Investors may be more interested in information on comprehensive annual income than information on quarterly comprehensive income. However, if the company has a derivative transaction, unstable quarterly comprehensive income information results in investor concern related to the emergence of unsystematic risk. The interaction variables between derivative transactions and other comprehensive income volatility have a positive effect on idiosyncratic volatility. It suggests that the volatility of net income that has a derivative transaction results in the unsystematic risk. This finding suggests that investors are concerned about the information about the instability of net income that occurs in companies that disclose the ownership of derivative instruments that tend to be used for speculative purposes. The interaction variable between derivative transactions and other comprehensive income volatility has a positive effect on idiosyncratic volatility. It shows that the volatility of other comprehensive income that has a derivative transaction results in the unsystematic risk. Other comprehensive income information is information contained in financial statements after companies in Indonesia apply IFRS-based financial accounting standards starting in 2012. Other comprehensive income item information is new information for users of financial statements, so users of financial statements need time to be able to understand items other comprehensive income items. Information on other quarterly comprehensive earnings volatility was initially not responded to by investors in decision making.

This study has several limitations. First, this study examines the risk of accounting information due to IFRS adoption in Indonesia, which began in 2012 against unsystematic risk as indicated by idiosyncratic volatility. Therefore, the scope of data and information is only limited to the condition of companies in Indonesia. Thus, the results obtained in this study cannot generalize the results for data from other developing and developed countries. Second, the ownership of derivatives in Indonesia is quite low. It might be due to the lack of a formal derivatives market in Indonesia or the lack of liquid derivatives markets in Indonesia. Third, considering that IFRS adoption has only been started in 2012 in Indonesia, financial statement data that have a net income, other comprehensive income, and comprehensive income information can only use the company's financial statement data starting in 2012, so that the time horizon used in this study is not too long.

Therefore, future studies can be developed using data from other emerging country companies - ASEAN countries, and also developed countries both by using data and information on net income, other comprehensive income and comprehensive income both quarterly and annually which is expected to be able to compare the results of this study. Future studies can also test net income volatility by using data before and after the IFRS adoption to compare the results of testing against idiosyncratic volatility. Furthermore, the future study can examine the role of derivative transactions as a moderating variable by using other developing countries because derivative transactions do not have a transparent and less liquid market in Indonesia. Moreover, corporate governance disclosure variables can be used as a moderating variable in subsequent studies in testing net income volatility, other comprehensive income volatility, and comprehensive income volatility against idiosyncratic volatility, which is expected to reduce the relationship between comprehensive income volatility and idiosyncratic volatility.

Based on the results of this study, investors must better understand financial accounting

standards in Indonesia because changes in financial accounting standards can result in different understandings and interpretations in financial statements using prior financial accounting standards. Therefore, a good knowledge of IFRS-based financial statements is in line with the benefits of financial statements in making investment decisions in the capital market. Also, a good understanding of IFRS-based financial accounting standards results in an investor's interpretation and analysis of information in financial statements more easily and quickly. Based on the findings in this study, investors, as users of financial statements, need time to interpret information in financial statements, especially information on comprehensive income components. Therefore, investors must improve their ability and understanding of net income items by IFRS-based financial accounting standards.

Based on the results of this study, the Indonesian Institute of Accountants (IAI) is expected to continue to be able to improve the rules of financial accounting standards, especially related to the policy of disclosure of activities included in comprehensive income to increase the usefulness of financial statements for users of financial statements. IAI needs to improve the quality of financial accounting standard settings so that information in financial statements can be better understood and more useful for investors. Also, IAI needs to increase access to the availability of financial accounting standards for users of financial statements for both existing investors and potential investors, given the changes in IFRS-based financial accounting standards are quite dynamic so that investors can use accounting information in making investment decisions on the capital market. Furthermore, IAI needs to coordinate with the Indonesia Financial Services Authority related to the ownership of derivative instruments by companies listed on the IDX so that the companies should follow the provisions in the actual financial accounting standards that are used for hedging rather than being used for speculative. This action is a good step for investor protection in Indonesia.

## REFERENCES

1. Ang, A., Hodrick, R. J., Xing, Y., & Zhang, X. (2009). High idiosyncratic volatility and low returns: International and further U.S. evidence. *Journal of Financial Economics*, 91(1), 1-23. <https://doi.org/10.1016/j.jfineco.2007.12.005>
2. Anggraita, V., Rossietta, H., Wardhani, R., & Wibowo, B. (2020). IFRS adoption on value-relevance and risk-relevance of accounting information among Indonesian banks. *Pertanika Journal of Social Sciences and Humanities*, 28(1), 515-532. Retrieved from <https://scholar.ui.ac.id/en/publications/ifrs-adoption-on-value-relevance-and-risk-relevance-of-accounting>
3. Attia, M. B. R. (2012). Accounting income smoothing, hedging and corporate governance. *Global Business and Management Research: An International Journal*, 4(2), 149-163. Retrieved from <http://www.gbmrjournal.com/vol4no2.htm>
4. Ayturk, Y., Gurbuz, A. O., & Yanik, S. (2016). Corporate derivatives use and firm value: Evidence from Turkey. *Borsa Istanbul Review*, 16(2), 108-120. <https://doi.org/10.1016/j.bir.2016.02.001>
5. Bamber, L. S., Jiang, J. X., Petroni, K. R., & Wang, I. Y. (2010). Comprehensive income: Who's afraid of performance reporting? *The Accounting Review*, 85(1), 97-126. <https://doi.org/10.2308/accr.2010.85.1.97>
6. Barth, M. E., Landsman, W. R., & Wahlen, J. M. (1995). Fair value accounting: Effects on banks' earnings volatility, regulatory capital, and value of contractual cash flows. *Journal of Banking and Finance*, 19(3-4), 577-605. [https://doi.org/10.1016/0378-4266\(94\)00141-0](https://doi.org/10.1016/0378-4266(94)00141-0)
7. Bartram, S. M., Brown, G. W., & Conrad, J. (2011). The effects of derivatives on firm risk and value. *Journal of Financial and Quantitative Analysis*, 46(4), 967-999. <https://doi.org/10.1017/S0022109011000275>
8. Beaver, W., Kettler, P., & Scholes, M. (1970). The association between market determined and accounting determined risk measures. *The Accounting Review*, 45(4), 654-682. Retrieved from <https://www.jstor.org/stable/244204>
9. Bima, P. G., & Afri, Y. E. N. (2017). Dampak pengungkapan pendapatan komprehensif lain terhadap manajemen laba pada perusahaan manufaktur di Indonesia. *Diponegoro Journal Of Accounting*, 6(1), 1-15. Retrieved from

- <https://ejournal3.undip.ac.id/index.php/accounting/article/view/18290>
10. Black, D. E. (2014). *Essays on other comprehensive income* (Doctoral dissertation, Duke University). Retrieved from <https://hdl.handle.net/10161/9393>
  11. Black, D. E. (2016). Other comprehensive income: A review and directions for future research. *Accounting and Finance*, 56(1), 9-45. <https://doi.org/10.1111/acfi.12186>
  12. Bloomfield, R. J., Nelson, M. W., & Smith, S. D. (2006). Feedback loops, fair value accounting and correlated investments. *Review of Accounting Studies*, 11, 377-416. <https://doi.org/10.1007/s11142-006-9003-2>
  13. Bozhkov, S., Lee, H., Sivarajah, U., Despoudi, S., & Nandy, M. (2018). Idiosyncratic risk and the cross-section of stock returns: The role of mean-reverting idiosyncratic volatility. *Annals of Operations Research*, 1-34. <https://doi.org/10.1007/s10479-018-2846-7>
  14. Brown, G., & Kapadia, N. (2007). Firm-specific risk and equity market development. *Journal of Financial Economics*, 84(2), 358-388. <https://doi.org/10.1016/j.jfineco.2006.03.003>
  15. Campbell, J. Y., Lettau, M., Malkiel, B. G., & Xu, Y. (2001). Have individual stock become more volatile? An empirical exploration of idiosyncratic risk. *Journal of Finance*, 56(1), 1-43. <https://doi.org/10.1111/0022-1082.00318>
  16. Cao, C., Chen, Y., Goetzmann, W. N., & Liang, B. (2018). Hedge funds and stock price formation. *Financial Analysts Journal*, 74(3), 54-68. <https://doi.org/10.2139/ssrn.2121495>
  17. Chang, E. C., & Dong, S. (2006). Idiosyncratic volatility, fundamentals, and institutional herding: Evidence from the Japanese stock market. *Pacific Basin Finance Journal*, 14(2), 135-154. <https://doi.org/10.1016/j.pacfin.2005.09.001>
  18. Chang, S.-H., Wang, T.-S., Chiu, A. A., & Huang, S. Y. (2015). Earnings management and idiosyncratic risk-evidence from the post-Sarbanes-Oxley Act period. *Investment Management and Financial Innovations*, 12(2), 117-126. Retrieved from [http://www.irbis-nbu.gov.ua/cgi-bin/irbis\\_nbu/cgiirbis\\_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP\\_meta&C21COM=S&S21P03=FILE=&S21STR=imfi\\_2015\\_12\\_2\\_\(contin.\)\\_3](http://www.irbis-nbu.gov.ua/cgi-bin/irbis_nbu/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASP_meta&C21COM=S&S21P03=FILE=&S21STR=imfi_2015_12_2_(contin.)_3)
  19. Chen, C., Huang, A. G., & Jha, R. (2012). Idiosyncratic return volatility and the information quality underlying managerial discretion. *Journal of Financial and Quantitative Analysis*, 47(4), 873-899. <https://doi.org/10.1017/S002210901200018X>
  20. Chng, M. T., Fang, V., Xiang, V., & Zhang, H. F. (2017). Corporate hedging and the high idiosyncratic volatility low return puzzle. *International Review of Finance*, 17(3), 395-425. <https://doi.org/10.1111/irfi.12109>
  21. Dhaliwal, D., Subramanyam, K. R., & Trezevant, R. (1999). Is comprehensive income superior to net income as a measure of firm performance? *Journal of Accounting and Economics*, 26(1-3), 43-67. [https://doi.org/10.1016/S0165-4101\(98\)00033-0](https://doi.org/10.1016/S0165-4101(98)00033-0)
  22. Dichev, I. D., & Tang, V. W. (2009). Earnings volatility and earnings predictability. *Journal of Accounting and Economics*, 47(1-2), 160-181. <https://doi.org/10.1016/j.jacceco.2008.09.005>
  23. Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383-417. <https://doi.org/10.2307/2325486>
  24. Fama, E. F., & French, K. R. (1993). Common risk factors in the returns stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56. [https://doi.org/10.1016/0304-405X\(93\)90023-5](https://doi.org/10.1016/0304-405X(93)90023-5)
  25. Giraldo-Prieto, C. A., Uribe, G. J. G., Vesga, C. B., & Herrera, D. C. F. (2017). Financial hedging with derivatives and its impact on the Colombian market value for listed companies. *Contaduría y Administración*, 62(5), 1572-1590. <https://doi.org/10.1016/j.cya.2017.04.009>
  26. Guay, W., & Kothari, S. P. (2003). How much do firms hedge with derivatives? *Journal of Financial Economics*, 70(3), 423-461. [https://doi.org/10.1016/S0304-405X\(03\)00179-X](https://doi.org/10.1016/S0304-405X(03)00179-X)
  27. Herskovic, B., Kelly, B. T., Lustig, H., & Van Nieuwerburgh, S. (2014). *The common factor in idiosyncratic volatility: Quantitative asset pricing implications* (NBER Working Paper No. 20076). <https://doi.org/10.3386/w20076>
  28. Hirst, D. H., & Hopkins, P. E. (1998). Comprehensive income reporting and analysts' valuation judgments. *Journal of Accounting Research*, 36, 47-75. <https://doi.org/10.2307/2491306>
  29. Hodder, L. D., Hopkins, P. E., & Wahlen, J. M. (2006). Risk-relevance of fair-value income measures for commercial banks. *The Accounting Review*, 81(2), 337-375. <https://doi.org/10.2308/accr.2006.81.2.337>
  30. Hotvedt, J. E., & Tedder, P. L. (1978). Systematic and unsystematic risk of rates of return associated with selected forest products companies. *Journal of Agricultural and Applied Economics*, 10(1), 135-138. <https://doi.org/10.1017/s0081305200014242>
  31. Huang, P., Kabir, M. H., & Zhang, Y. (2017). Does corporate derivative use reduce stock price exposure? Evidence from UK firms. *Quarterly Review of Economics and Finance*, 65, 128-136. <https://doi.org/10.1016/j.qref.2017.02.004>
  32. Ikatan Akuntansi Indonesia. IAI. (2018). *SAK Efektif Per 1 Januari 2018*. Retrieved from <http://iaiglobal.or.id/v03/standar-akuntansi-keuangan/sak-efektif-15-sak-efektif-per-1-januari-2018>
  33. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
  34. Kang, N., Kondor, P., & Sadka, R. (2014). Do hedge funds reduce idiosyncratic risk? *Journal of Financial and Quantitative Analysis*, 49(4), 843-877. <https://doi.org/10.1017/S0022109014000556>
  35. Kaplan, P. D. (2013). What's wrong with multiplying by the square root of twelve. *Journal of Performance Measurement*, 17(2), 9.
  36. Khan, S., & Bradbury, M. E. (2014). Volatility and risk relevance of comprehensive income. *Journal of Contemporary Accounting & Economics*, 10(1), 76-85. <https://doi.org/10.1016/j.jcae.2014.01.001>
  37. Khan, S., & Bradbury, M. E. (2016). The volatility of comprehensive income and its association with market risk. *Accounting and Finance*, 56(3), 727-748. <https://doi.org/10.1111/acfi.12108>
  38. Kothari, S. P. (2001). Capital markets research in accounting. Paper presented at the *JAE Rochester Conference April 2000*. <https://doi.org/10.2139/ssrn.235798>
  39. Kumari, J., Mahakud, J., & Hiremath, G. S. (2017). Determinants of idiosyncratic volatility: Evidence from the Indian stock market. *Research in International Business and Finance*, 41, 172-184. <https://doi.org/10.1016/j.ribaf.2017.04.022>
  40. Lau, C. K. (2016). How corporate derivatives use impact firm performance? *Pacific-Basin Finance Journal*,

- 40(Part A), 102-114. <https://doi.org/10.1016/j.pacfin.2016.10.001>
41. Lev, B., & Zarowin, P. (1999). The boundaries of financial reporting and how to extend them. *Journal of Accounting Research*, 37(2), 353-385. <https://doi.org/10.2307/2491413>
  42. Liu, B., & Di Iorio, A. (2012). *Idiosyncratic volatility, Australian stock returns and economy conditions: Role of idiosyncratic volatility in asset pricing for Australian stock markets* (European Financial Management Association 2012 Annual Meeting, pp. 1-37). Retrieved from <https://pdfs.semanticscholar.org/8c9b/dca8394fb4f356e02ea99cc18242ce951bd8.pdf>
  43. Liu, B., Di Iorio, A., & De Silva, A. (2014). *Do stock fundamentals explain idiosyncratic volatility? Evidence for Australian stock market* (23rd Annual Meeting of the European Financial Management Association, pp. 1-31). Retrieved from <https://ro.uow.edu.au/buspapers/1025/>
  44. Lucchese, M., Di Carlo, F., & Incollingo, A. (2020). Risk relevance and volatility of other comprehensive income in the banking sector: Evidence from European countries. *Corporate Ownership & Control*, 17(3), 187-197. <https://doi.org/10.22495/cocv17i3art15>
  45. Maines, L. A., & McDaniel, L. S. (2000). Effects of comprehensive-income characteristics on non-professional investors' judgments: The role of financial-statement presentation format. *Accounting Review*, 75(2), 179-207. <https://doi.org/10.2308/accr.2000.75.2.179>
  46. Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3), 261-297. Retrieved from <https://www.jstor.org/stable/1809766>
  47. Murwaningsari, E., Utama, S., & Rossieta, H. (2015). The combined effects of financial derivatives and discretionary accruals on the value relevance of earnings and the book value of equity. *Gadjah Mada International Journal of Business*, 17(2), 179-198. <https://doi.org/10.22146/gamaijb.6909>
  48. Naomi, P. (2011). Risiko idiosinkratik dan imbal hasil saham pada bursa saham Indonesia. *Finance and Banking Journal*, 13(2), 128-138. Retrieved from <http://journal.perbanas.id/index.php/jkp/article/view/253>
  49. Oktavia, O., & Martani, D. (2013). Tingkat pengungkapan dan penggunaan derivatif keuangan dalam aktivitas penghindaran pajak. *Jurnal Akuntansi Dan Keuangan Indonesia*, 10(2), 129-146. <https://doi.org/10.21002/jaki.2013.07>
  50. Pincus, M., & Rajgopal, S. (2002). The interaction between accrual management and hedging: Evidence from oil and gas firms. *The Accounting Review*, 77(1), 127-160. <https://doi.org/10.2139/ssrn.171393>
  51. Rajgopal, S., & Venkatachalam, M. (2011). Financial reporting quality and idiosyncratic return volatility. *Journal of Accounting and Economics*, 51(1-2), 1-20. <https://doi.org/10.1016/j.jacceco.2010.06.001>
  52. Tessema, A. M. (2016). Accounting for derivatives and risk management activities: The impact of product market competition. *International Journal of Accounting and Information Management*, 24(1), 82-96. <https://doi.org/10.1108/IJAIM-05-2015-0028>
  53. Wang, M. S. (2013). Idiosyncratic volatility and the expected stock returns for exploring the relationship with panel threshold regression. *Asia-Pacific Financial Markets*, 20(2), 113-129. <https://doi.org/10.1007/s10690-012-9161-0>
  54. Wei, S. X., & Zhang, C. (2006). Why did individual stocks become more volatile? *Journal of Business*, 79(1), 259-292. <https://doi.org/10.1086/497411>
  55. Zhao, A., & Brown, M. P. (2013). Idiosyncratic risk and performance of hedge funds. *The Journal of Investing*, 22(2), 120-127. <https://doi.org/10.3905/joi.2013.22.2.120>
  56. Zhou, T., Xie, J., & Li, X. (2016). Financial reporting quality and idiosyncratic return volatility: Evidence from China. *Emerging Markets Finance and Trade*, 53(4), 835-847. <https://doi.org/10.1080/1540496X.2016.1142200>
  57. Finance Train. (n.d.). *How to calculate annualized standard deviation*. Retrieved from <https://financetrain.com/calculate-annualized-standard-deviation/>