

A SURVEY ON THE USE OF DERIVATIVES IN INDONESIA

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This paper provides survey evidence on the use of derivatives among firms listed on the Indonesian Stock Exchange. The finding shows that the participation rate in the use of derivatives is 28.8 percent, much lower than those found in developed countries. For the derivatives non-users, insignificant risk exposure is reported as the most important rationale for not using derivatives. Consumer goods industry constitutes the largest proportion of firms using derivatives. The majority of respondents utilize derivatives to hedge against financial risks rather than to speculate. Foreign currency risk and interest rate risk are the most important types of risks faced with by respondents. Using the Chi-square and the Fisher's exact tests, the result corroborates the size effect hypothesis, where the use of derivatives is more popular among large firms than small firms.

Keywords: derivatives; hedging; risk management

Category: Risk Management

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Introduction

Financial crisis that hit a number of Asian countries in the mid-1997 brought an invaluable lesson on the importance of risk management to protect firms from losing values and from bankruptcy risk. For the Indonesian case, the severe impact of the crisis was related to a vulnerable financial system and triggered by a sudden and high volatility of exchange rate (Sharma 2003). During that time, many of Indonesian firms were faced with an enormous currency risk exposure due to their huge short-term foreign debts without sufficient hedging position.

As one of the main countries in Southeast Asia, Indonesia is characterized by its relatively high volatility along with promising growth.¹ Accordingly, risk exposure and the types of risk sources faced with by the market participants in Indonesia will increase, which then raise the need for the availability of more types of derivatives instruments to hedge against risks. Meanwhile, for some parties the derivatives securities could also be harnessed as a means of speculation to yield higher return. Furthermore, the opening of the Jakarta Futures Exchange (JFX) in December 2000 as the first Indonesian exchange that trades futures and the Indonesian Commodities and Derivatives Exchange (ICDX) in March 2010 have also facilitated

many firms in Indonesia to be able to buy and sell derivatives through the exchange floors.

Although firms all over the world have been using derivatives for decades, more evidence on the practical aspect of the use of derivatives is still needed in order to better understand the intensity of usage as well as the reasons why and how firms employ derivatives. Numerous studies have been conducted around the world to highlight the real world of the use of derivatives, especially for the cases of developed countries. Some among others used a survey methodology, such as Bodnar et al. (1996; 1998) in the U.S., Bodnar and Gebhardt (1998) in Germany, Ceuster et al. (2000) in Belgium, Mallin et al. (2001) in the U.K., Berkman and Bradbury (1996) in New Zealand, Heaney et al. (1999) in Japan, and Yu et al. (2001) in Hong Kong. However, evidence on the cases of developing countries is very limited, such as Schiozer and Saito (2009) in Brazil. This study contributes to the literature by showing evidence on the practice of risk management with the use of derivatives from other developing countries in Asia, especially Indonesia.

The objective of this study is to provide evidence from the real world of derivatives usage by Indonesian firms. Specifically, the study answers

¹ As reported in the World Bank Report (2010) on "Indonesian Economic Quarterly: Continuity Amidst Volatility," Indonesian market is characterized by its promising growth and relatively high volatility in terms of capital inflows/outflows, the fluctuation of exchange rates, and commodity prices.

some interesting questions, such as: (1) how large the participation rate is of the use of derivatives by Indonesian firms; (2) the differences (if any) in the intensity of derivatives usage by Indonesian firms subject to different firm size (large vs. small firms) as well as different industries; (3) reasons that motivate Indonesian firms to use or not to use derivatives; (4) the types of risks being managed; (5) the types of derivatives used to mitigate risks; (6) the method used to measure risk exposure, and (7) the organization, information systems, and monitoring procedures of the use of derivatives.

The questionnaires were sent to 413 firms listed on the Indonesian Stock Exchange (IDX) in June 2010, containing principally similar questions to Bodnar et al.'s (1996) survey study, with only a few modifications to adjust with the Indonesian market. In total, 104 responses were obtained from the respondents. However, differently from other previous surveys, where paper questionnaires were distributed and collected via the regular post mail, this study utilizes the electronic webpage survey. E-mails were sent to the respondents, inviting them to participate in the survey by clicking the web link on the survey webpage.

The findings show that the participation rate of derivatives use in the

whole sample is 28.8 percent, which is much lower than the findings in developed countries.² For the non-users of derivatives, the main rationales for not using derivatives are insignificant risk exposure and the costs of employing derivatives that exceed the expected benefits. There is also a tendency of so-called "size effect" in derivatives usage, where larger firms are more likely to use derivatives than small firms.³ In terms of industry categories, consumer goods industry has the highest participation rate of the use of derivatives compared to other industries. Foreign currency risk and interest rate risk are reported to be the most important types of risks faced with by respondents. It is also found that foreign currency forward and currency swap are the most intensive types of derivatives being used. In addition, Value-at-Risk (VaR) and scenario analysis are the most common methods utilized to measure the risk exposure. Finally, most of the derivatives user respondents indicate that they do not have a predetermined reporting schedule of the derivatives transactions to the board of directors.

This paper proceeds as follows. Section 2 reviews relevant theory and some previous studies on derivatives usage. Section 3 discusses data sources and the characteristics of respondents.

² See, for instance, the percentage of derivatives users of 50 percent in the U.S. (Bodnar et al. 1998); 60 percent in U.K. (Mallin et al. 2001); 60 percent in Japan (Heaney et al. 1999); or 37 percent in Hong Kong (Yu et al. 2001).

³ The percentage of derivatives users for the group of large firms in this study is 48.9 percent, much higher compared to small firms group (9.6%). The results of Pearson Chi-square and Fisher's exact tests also statistically support the hypothesis.

Section 4 presents the results, including descriptive analysis and statistical test results of the size effect hypothesis on the use of derivatives. Section 5 concludes.

Literature Review

The negative impact of economic crisis mainly caused by the volatility of exchange rates and input prices could affect firm value significantly or even lead companies to bankruptcy. The calamity did befall many companies during the crisis, including corporations in Indonesia in the mid of 1997, when many Indonesian firms were thwarted by huge exchange rate risk exposure with insufficient hedging position.

Before the introduction of risk management tools and techniques, stockholders were willing to accept market sentiment fluctuation or input price changes as the explanations for poor company performance. However, investors nowadays expect managers to effectively manage every type of risk in order to minimize losses. Smith and Stulz (1985) argue that the application of risk management benefits the firm since it will increase firm value through tax deductibility effect, the mitigation of financial distress costs, and the improvement in performance as a consequence of reduced financial risk. Stulz (2004) suggests that derivatives can also be used as another alter-

native to mitigating the types of risks that cannot be alleviated using traditional methods (diversification or insurance), such as foreign exchange risk, interest rate risk, commodity price risk, or weather risk.

Despite the positive side of derivatives utilization as part of corporate risk management, a vast array of terrible stories on the misuse of derivatives have been prevalent and caused enormous losses to many companies. Some cases, such as Sumitomo Corporation, Kashima Oil and Daiwa Bank in Japan, Barings Bank in Singapore, or Orange County in the U.S., are some among many bad fairy tales (Karpinsky 1998). However, it is not appropriate to generalize that derivatives securities always render massive losses or even lead firms to bankruptcy. If we look at the worst cases more carefully, the real problem was more likely to lie in the incorrect way on using derivatives. Firms have to make sure that they trade derivatives aptly, meaning that the risk of derivatives position has to be measured and monitored precisely (Stulz 2004).

Survey studies on the practical use of derivatives have been conducted in across countries; most of them were done in developed countries.⁴ A remarkable prior survey study on the use of derivatives was documented by Bodnar et al. (1998) in the U.S. Their survey covered 2,000 random non-financial firms, using postal mail dis-

⁴ A summary of previous survey studies can be seen in Table 1. The summary can also be used as a brief comparison of the findings across countries including the finding of this study.

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tributed in November 1994, with a response rate of 20.7 percent. The main finding of their survey is that 50 percent of the overall responding firms use derivatives, mostly the large sized firms (83%), and only a small fraction (12%) among small firms. In terms of industry categories, they find that the most intensive user of derivatives is the primary product industry.

Bodnar and Gebhart (1998) mailed questionnaires to 368 non-financial firms in Germany in Spring 1997, with a response rate of 34.2 percent. They conclude that derivatives usage in

Germany from the overall sample is more widespread (78%) relative to those found in the U.S. (50%) by Bodnar et al. (1998). Different from the case in the U.S., they report that the services industry constitutes the highest participation rate of derivatives.

For the case of the U.K., Mallin et al. (2001) performed a survey study using postal mail questionnaires. Their sample was comprised of 800 non-financial firms, and 230 responded to the questionnaires. Overall, 60 percent of the respondents acknowledge their uses of at least one type of deriva-

Table 1. Summary of Some Survey Evidence on the Use of Derivatives

PANEL A. Authors and Methodologies

Authors	Bodnar et al. (1998)	Mallin et al. (2001)	Bodnar and Gebhardt (1998)	Alkeback and Hagelin (1999)	Ceuster et al. (2000)
Country (year) surveyed	USA (1997)	U.K. (1997)	Germany (1997)	Sweden (1996)	Belgium (1997)
Industry coverages	Non-financial firms	Non-financial firms	Non-financial firms	Non-financial firms	Non-financial firms
Samples (respond rate)	2,000 (20.7%)	800 (28.8%)	368 (34.2%)	213 (76.6%)	334 (21.9%)
Data collection method	Questionnaire (postal mail)	Questionnaire (postal mail)	Questionnaire (postal mail)	Questionnaire (postal mail)	Questionnaire (postal mail)

Authors	Heaney et al. (1999)	Yu et al. (2001)	Schiozer and Saito (2009)	Lantara (2010)
Country (year) surveyed	Japan (1999)	Hong Kong (1998)	Brazil (2004)	Indonesia (2010)
Industry coverages	All industries	All industries	Non-financial firms	All industries
Samples (respond rate)	913 (33%)	140 (54.3%)	378 (19.6%)	413 (25.2%)
Data collection method	Questionnaire (postal mail)	Questionnaire (postal mail)	Questionnaire (E-mail)	Questionnaire (E-mail)

Continued from Table 1

PANEL B. Main Findings					
Derivatives user (overall)	50%	60%	78%	52%	65.8%
Users by large (small) firms	83% (12%)	100% (29%)	75% (50%)	86% (18%)	86.9% (65.2%)
Industry with highest user	Primary product	Utilities	Service	Manufacture	Chemical industry
Most important risk being exposed	FX risk; Interest rate risk	FX risk; Interest rate risk	FX risk; Interest rate risk	FX risk; Interest rate risk	FX risk; Interest rate risk
Most intensive derivatives being used	Foreign currency derivatives	FX forward; Interest rate swap	FX forward; Interest rate swap	FX forward; Interest rate swap	FX forward; Interest rate swap
Most important reasons why not use derivatives	Small risk exposure; Cost exceed benefit	Not significant exposure; Cost of derivatives	Not significant exposure; Availability of other instruments	N.A	Policy restriction; Availability of other instruments
Main purpose of using derivatives	Hedging	Hedging	Hedging	Hedging	Hedging
Most common method of risk measurement	VaR	Scenario Analysis; VaR	Scenario Analysis; VaR	N.A	VaR; Scenario Analysis
Derivatives user (overall)	60%	37%	57%	28.8%	
Users by large (small) firms	N.A	N.A	91.9% (21.6%)	48.1% (9.6%)	
Industry with highest user	N.A	N.A	N.A	Consumer Goods	
Most important risk being exposed	FX risk; Interest rate risk	FX risk; Interest rate risk	FX risk; Interest rate risk	FX risk; Interest rate risk	
Most intensive derivatives being used	FX forward; Interest rate swap	FX forward; Interest rate swap	FX forward; Interest rate swap	FX forward; Currency swap	
Most important reasons why not use derivatives	N.A	Cost exceed benefit; Not familiar with derivatives	N.A	Insignificant risk exposure; Cost exceed benefit	
Main purpose of using derivatives	Hedging	Hedging	Hedging	Hedging	
Most common method of risk measurement	Mark-to-market amount	VaR; Building Block	N.A	VaR; Scenario Analysis	

tives. Their finding also supports the size effect hypothesis, where 100 percent of larger firms are derivatives users, absolutely much higher than the participation rate among small firms (29%).

Alkeback and Hagelin (1999) carried out a survey study on 213 non-financial firms in Sweden. With a high response rate (76.6%), they find evidence that 52 percent of the sample are derivatives users, with manufacturing industry being the most intensive industry that uses derivatives. The size effect is also confirmed, shown by the fact that 86 percent of large firms are derivatives users, much higher compared to the rate of the group of small firms (18 percent). However, their study did not reveal the reasons why almost half of the sample firms did not use derivatives. Moreover, their study also did not disclose the most common methods used to measure risk exposure.

Evidence from Asian countries is provided by Heaney et al. (1999) for the case of Japanese firms and Yu et al. (2001) for the case of Hong Kong. Their findings show that the percentage of derivatives usage by Japanese firms is much higher (60%) vis-à-vis that by Hong Kong firms (37%). Both studies covered sample not only from non-financial industries, but also from financial industry. They find that currency and interest rate risks are considered the most important types of risks. With respect to main hedging instruments, their study reports that currency forward and interest rate swap

contracts are the most popular instruments.

For the case of developing countries, Schiozer and Saito (2009) conducted a survey study in Brazil. They used electronic mail questionnaires distributed to 378 non-financial firms listed on the Brazilian Stock Exchange. Surprisingly, the finding shows a high percentage of derivatives usage (54%), with 92 percent of them belong to the sample of large firms, and only 21.6 percent to the sample of small firms. Consistent with findings in other countries, they provide evidence that currency risk and interest rate risk are considered the most pivotal types of risks, and currency forward and interest rate swap contracts are the most popular instruments to mitigate the risks. However, they did not investigate the reasons behind the decisions of respondents not using derivatives.

Some previous studies also highlighted the existence of size effect on the use of derivatives. It is hypothesized that the larger the firm size, the higher the tendency to use derivatives. Many empirical studies have found evidence on the positive association between firm size and the use of derivatives, such as Borokovich et al. (2004) in the U.S., Berkman and Bradbury (1996) in New Zealand, Nguyen and Faff (2002), and Brailsford et al. (2003) in Australia, Yosano and Lantara (2010) in Japan, and Lantara (2010) in Indonesia. Some other survey studies also support the size effect hypothesis, such as the study by Bodnar et al. (1998) in the U.S., Mallin et al.

(2001) in the U.K., Alkeback and Hagelin (1999) in Sweden, or Schiozer and Saito (2009) in Brazil.

The basic argument behind the size effect hypothesis is the existence of economies of scale, where larger firms are assumed to have better resources to deal with the application of derivatives programs (Smith and Stulz 1985). Larger firms are also more feasible to bear the costs of derivatives programs, which involve initial setup cost, operating cost, and monitoring cost of hedging strategies (Brailsford et al. 2005). Therefore, this study conjectures that the larger the firm, the more likely that it uses derivatives.

Methodology

Data in this study were obtained from all 413 firms listed on the Indonesian Stock Exchange (IDX) in June 2010, covering all nine industries according to the IDX industry classification. The respondents consisted of finance directors, risk managers, and/or corporate secretaries⁵ of the sample firms who were assumed to have more than sufficient knowledge of the practical aspect of derivatives usage in their firms.

The questionnaire⁶ is comprised of 23 questions, containing principally similar questions to Bodnar et al.'s

(1998) survey study, such as: the industry to which the firm belongs, whether or not the firm uses derivatives, the reasons why it decides not to use derivatives, the types of risks faced with, the types of derivatives instruments used, risk assessment methods, and controlling and reporting procedures. At first, the pilot test was conducted by sending questionnaires to 30 randomly chosen companies listed on the Indonesian Stock Exchange, and six companies responded. Based on the responses obtained from the pilot test, few questions in the questionnaire set were modified in order to adjust with the Indonesian market respondents.

In order to increase the response rate, the distribution of the questionnaires was carried out in two consecutive periods. The first phase of distribution was conducted in June 2010, followed by the second distribution three months after the first wave by sending a reminder message to the non-responding respondents. The total fully responded questionnaires are 104 (71 responses obtained from the first distribution and 33 from the second phase), indicating a response rate of 25.2 percent. The profiles of respondents based on their hierarchical positions in their respective firms are: 26 finance directors (25%), 16 risk

⁵ Under the Indonesian Company Law (1995), a publicly listed company is required to appoint a corporate secretary. Corporate secretary serves as an investor relations officer as well as a compliance officer and keeper of corporate documents. One of the members of the Board of Directors might be designated as a corporate secretary.

⁶ The detailed questionnaire can be obtained from the author.

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managers (15%), and 62 corporate secretaries (60%).

Different from previous surveys where paper questionnaires were distributed and collected via regular post mail, this survey study utilizes the electronic webpage survey. All respondents were contacted by e-mail messages, inviting them to participate in the survey by clicking the web link on the survey webpage. The main advan-

tage of this method is that all the responses from respondents can be collected efficiently and instantly as the respondents fill out the questionnaires. It is also easier for the researcher and respondents to communicate whenever needed, such as when a certain respondent requests for further clarification on particular questions in the questionnaire set.

Table 2. Description of Firm Size (in billions of Indonesian Rupiahs)

PANEL A: All Sample (104 firms)				
	Mean	Minimum	Maximum	Std. Dev.
Total Asset	16,805.6	17	394,617	50,556.5
MVEBVL	22,536.7	25.3	456,890	65,580.8
Total Sales	6,014.3	1	98,526	13,504.9
PANEL B: Large Firms (52 firms)				
Total Asset	33,045.9	1,623	394,617	67,999.6
MVEBVL	44,442.9	1860.8	456,890	87,790.2
Total Sales	11,722.9	1271	98,526	17,372.7
Small Firms (52 firms)				
Total Asset	565.3	17	1,609	509.5
MVEBVL	630.6	25.3	1,808.2	565.3
Total Sales	305.7	1	988	285.8

This table shows the mean, minimum, maximum, and standard deviation values of the whole sample (104 firms), as well as the groups of large firms (52 firms) and small firms (52 firms). The values are in billions IDR. MVEBVL stands for Market Value of Equity plus Book Value of Liabilities.

This study also investigates the existence of size effect on the use of derivatives for the case of Indonesia. At first, the sample firms were ranked and divided into two equal numbers of groups (large vs. small firms) based on three proxies for firm size: (1) total assets; (2) total market value of equity plus total book value of liabilities; and (3) total sales. The value of 1 is given to the sample firm that reports the use of derivatives, and 0 otherwise. The study utilizes the chi-square test and the Fisher's exact test to examine the differences in derivatives usage between the two groups.

The description of the firm size in this study are presented in Table 2. As shown in the table, the average value of total assets of large firms is 59 times larger than that of small firms group. In terms of market value of equity plus book value of liabilities, large firms have the value of 71 times bigger than that of small firms. The same pattern is

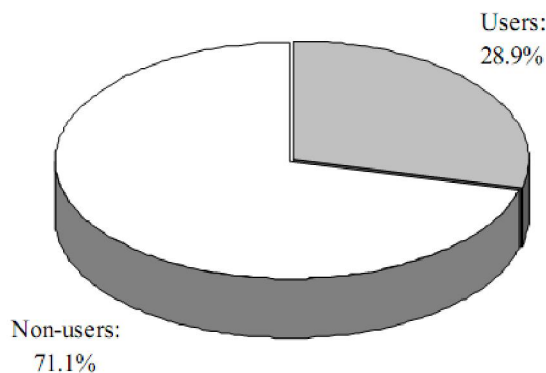
also found in terms of total sales, where large firms show 38 times larger sales than that of small firms group.

Results

Users vs. Non-users of Derivatives

The participation rate of derivatives securities in this study is calculated from the 104 sample firms responding to the questionnaires. As shown in Figure 1, the finding reveals that 28.8 percent (30 firms) are derivatives users, while the rest of the sample (71.1%) report that they have not employed any derivatives securities. The result is much lower compared to those found in Western countries, such as 50 percent in the U.S. (Bodnar et al. 1998), 60 percent in the U.K. (Mallin et al. 2001), or 65.8 percent in Belgium (Ceuster et al. 2000). The result is also inferior when compared to the find-

Figure 1. Participation Rate of the Use of Derivatives



The participation rate is calculated by dividing the total number of respondents reported to use derivatives to total respondents. Of the total 104 respondents, 30 respondents are classified as derivatives users and 74 firms are non-users.

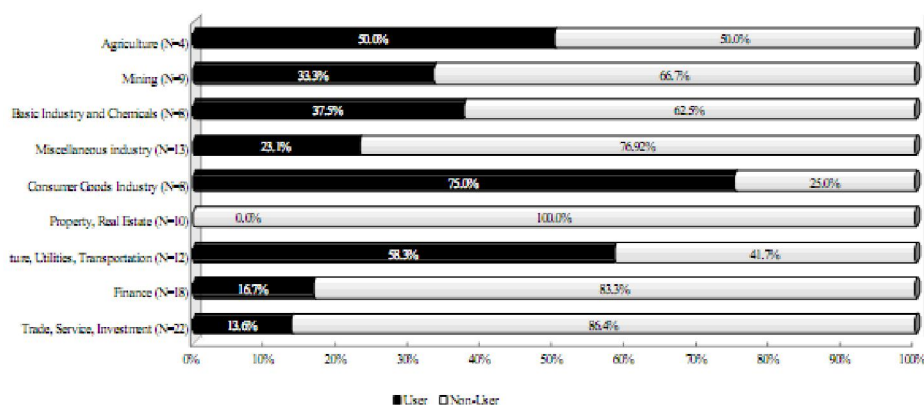
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ings in the developed countries in Asia, such as 60 percent in Japan (Heaney et al. 1999) and 37 percent in Hong Kong (Yu et al. 2001), or even when compared to the finding in Latin America, such as 57 percent in Brazil (Schiozer and Saito 2009). The relatively low participation rate of the use of derivatives in this study indicates that the development of derivatives market in Indonesia is still in the stage of infancy.⁷ This fact supports the mapping result by Hohensee and Lee (2003) on the level of derivatives market development among several countries in the Asian region. They conclude that Hong Kong and Singapore have the most advanced derivatives markets, whereas other countries such as Philippines,

China and Indonesia are still in the very early stage of development.

This study also investigates the use of derivatives across various industry categories and between large firms and small firms. As shown in Figure 2, consumer goods industry constitutes the highest percentage of derivatives users (75%), followed by infrastructure, utilities and transportation industry (58.3%), and agricultural industry (50%). This finding is inconsistent with the finding in the U.S. (Bodnar et al. 1998), who find the primary product at the top of the rank, or in the U.K. by Mallin et al. (2001), who document that the utilities industry is the most intensive industry that trades derivatives. The fact that the

Figure 2. The Use of Derivatives Across Industry Categories



Industry categorization in this study is based on the Indonesian industry classification taken from the IDX Fact Book 2010, which splits all the firms listed on the IDX into nine different industry categories. *N* on the parentheses stands for the total number of firms belonging to a particular industry.

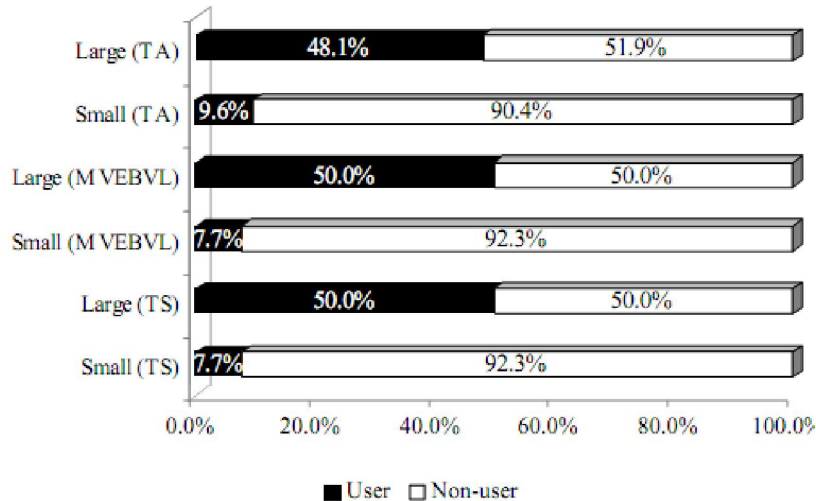
⁷ The establishment of the Indonesian derivatives market is in the very early stage compared to those running in developed countries. According to the IDX Fact Book (2010), stock options and index futures were introduced in 2004, with the total transaction of less than 2 percent compared to the total transaction in the equity market. For the commodity derivatives market, the Jakarta Futures Exchange (JFX) was introduced in December 2000, and the Indonesian Commodities and Derivatives Exchange (ICDX) was established recently in March 2010.

consumer goods industry⁸ contains the greatest percentage of derivatives users might be related to the nature of the industry per se, where it is incessantly challenged by relatively high currency risk exposure as the consequence of its operations of importing inputs from foreign countries or exporting products to foreign nations.

By firm size, the finding shows that derivatives usage is more common for large firms than for small firms. Using three proxies for the firm size, the results indicate that the use of derivatives is more popular in the group

of large firms relative to the sample of small firms. As exhibited in Figure 3, using total assets as the proxy for firm size, the evidence indicates that 48.9 percent of large firms are derivatives users, much higher than that for small firms (9.6%). The same pattern is also found when the second and the third proxies for firm size are employed, where large firms are much superior in terms of the participation rate of derivatives usage (50%) compared to that for small firms (7.7%). The finding signifies the size effect hypothesis, where larger firms are more likely to

Figure 3. Percentage of Derivatives Usage for the Samples of Large and Small Firms



This figure illustrates the percentage of derivatives usage among large firms and small firms. Firstly, the whole sample (104 firms) were ranked based on the values of three proxies for the firm size: (1) total assets (TA); (2) market value of equity plus book value of liabilities (MVEBVL); and (3) total sales (TS). Next, the sample was divided into two separate groups (large vs. small firms) according to each proxy. Each group consists of 52 firms. The percentage of derivatives users is calculated by dividing the number of companies reported to use derivatives to the total number of firms in each group.

⁸ Based on the Indonesian Industry Classification in IDX, consumer goods industry consists of firms operating in certain businesses such as food and beverages; tobacco manufacturers; pharmaceuticals; cosmetics and households; and house wares.

use derivatives than small firms. This also corresponds with the results of previous studies, such as Bodnar et al. (1998) in the U.S., Mallin et al. (2000) in the U.K., Alkeback and Hagelin (1999) in Sweden, or Schiozer and Saito (2009) in Brazil.

To examine the existence of the size effect, this paper employs the chi-square and the Fisher's exact tests. As shown in Table 3, the results substantiate the size effect hypothesis using

all three proxies for firm size, with a significance level of 1 percent. In other words, based on the results of the Pearson Chi-square and the Fisher's exact tests, there is a strong indication that the use of derivative by large firms is significantly higher than that by small firms. Again, this evidence is in line with the findings provided by Ceuster et al. (2000) for the case of Belgium and Schiozer and Saito (2009) in Brazil.

Table 3. Statistical Test Results of the Size Effect Hypothesis on Derivatives Usage

Size = Total Assets					
N = 104	User	Non-user	Total	Pearson Chi2	Fisher's Exact
Large firms	25	27	52		
Small firms	5	47	52		
Total	30	74	104	18.74*	0.00*
Size = MVEBVL					
Large firms	26	26	52		
Small firms	4	48	52		
Total	30	74	104	22.68*	0.00*
Size = Sales					
Large firms	26	26	52		
Small firms	4	48	52		
Total	30	74	104	22.68*	0.00*

* Statistically significant at 1 percent confidence level.

This table shows the results of crosstab between size of the sample firms (large vs. small firms) and the derivatives usage (users vs. non-users of derivatives). *N* stands for the number of sample firms. There are 104 sample firms in total, where 52 firms belong to large firms group and 52 firms to the small firms group. To test the mean difference in the number of users vs. non-users in both size groups, this study utilizes the Pearson Chi-square and Fisher Exact tests.

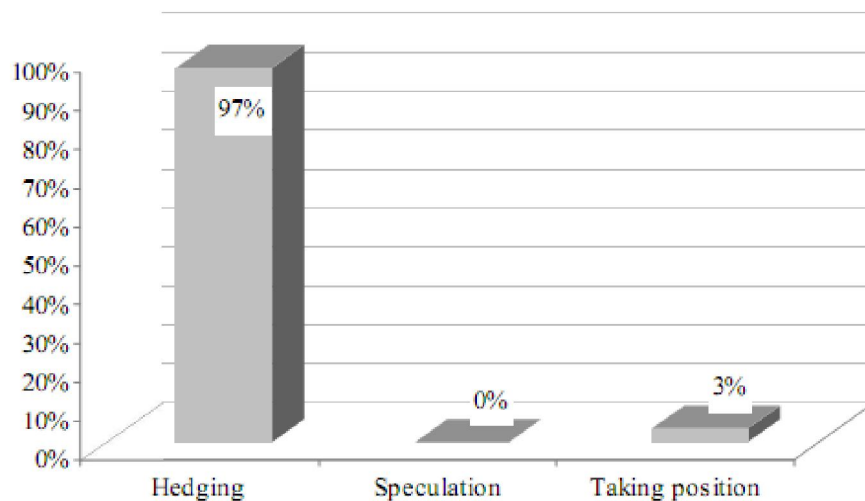
The Purposes of Using Derivatives and the Usage Intensity

The purposes of using derivatives are an interesting fact to be investigated in this study. For the derivatives user respondents, they were asked to stipulate what their purposes of using derivatives were, whether for hedging, speculation, or merely taking a position. 30 answers were gathered from the derivatives user respondents. As illustrated in Figure 4, most of the derivatives user respondents (97%) state that they utilize derivatives for hedging purposes, and only one firm claims to have a position-taking purpose. As anticipated, this finding is consistent with the results from previ-

ous survey studies, such as Bodnar et al. (1998), Heaney et.al (1999), Mallin et al. (2001), or Schiozer and Saito (2009). Moreover, for the case of Indonesian firms,⁹ it is sometimes mentioned explicitly in the firm’s policy that the use of derivatives instruments for speculation purposes is prohibited.

Another interesting aspect intertwined with the motivation to use derivatives is the perception of respondents on the importance of derivatives as a risk management instrument. In total, 30 responses were gotten for this question. As shown in Figure 5, more than 95 percent of the answers tend to perceive derivatives as an important instrument to manage risks. The result corroborates the finding in Hong Kong by Yu et al. (2001), where they find

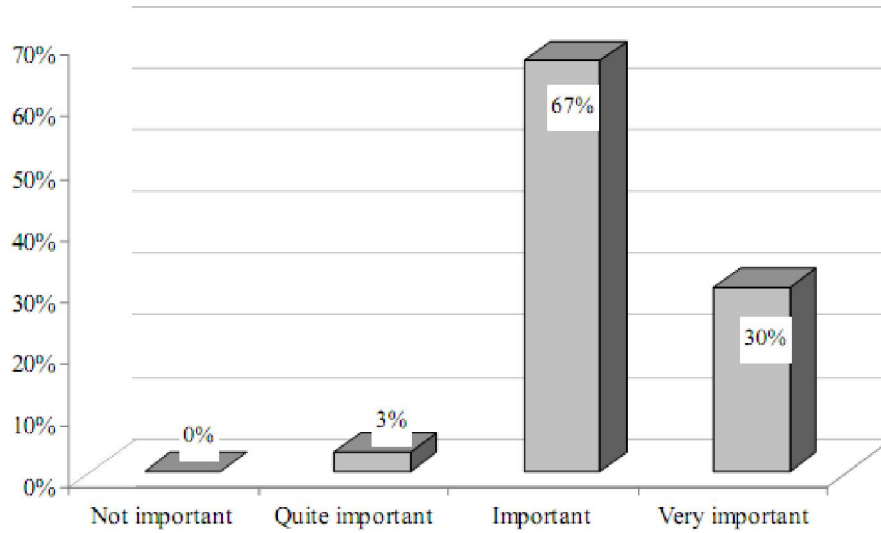
Figure 4. **The Purposes of Using Derivatives**



This figure illustrates the replies from derivatives user respondents on what the purposes of using derivatives are. In total, 30 answers were obtained from the respondents.

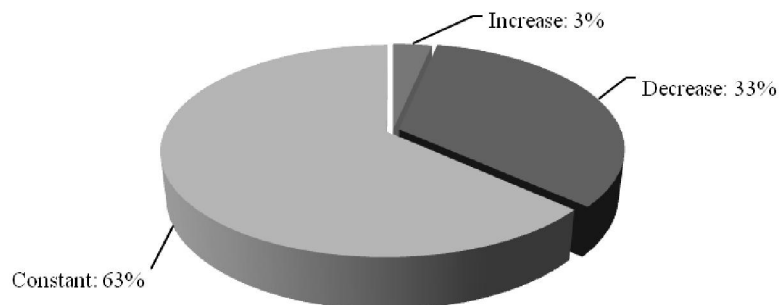
⁹ Upon observing the annual reports of several derivatives users from the sample in this study, it is commonly found that most of the sample firms declare that the use of derivatives is only for hedging purposes, and speculation is certainly prohibited.

Figure 5. The Perception of Derivatives User Respondents on the Importance of Derivatives



The result is calculated from 30 replies of derivatives user respondents. The respondents were asked to indicate their perception on how important the use of derivatives is as part of a risk management strategy.

Figure 6. Trend of the Magnitude of Derivatives Usage in the Current Year Compared to the Previous Year



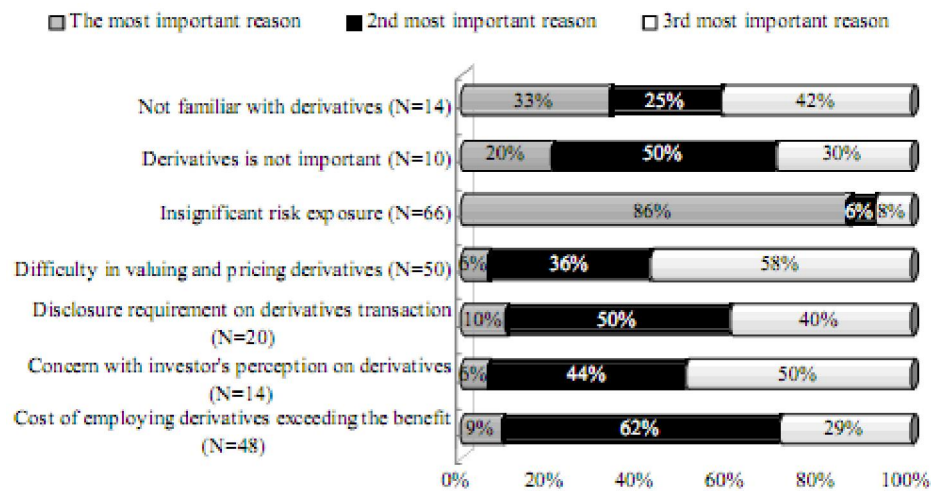
This figure illustrates the answers of 30 derivatives user respondents when they were asked to designate the intensity of derivatives usage in the recent year compared to the preceding period.

that more than 60 percent indicate the use of derivatives as an important aspect in risk management.

Figure 6 depicts the response to the question of how the intensity of derivatives usage is in the present year compared to that in the preceding year. This question was asked to the firms using derivatives. From the total 30 responses, 63 percent report that the intensity of derivatives usage is constant, 33 percent declare a decreasing trend, and only 3 percent of the answers reveal that the intensity is increasing. The result indicates that the trend of the magnitude of derivatives usage tends to be constant or even decrease over the period of this study. This could also imply that most of the respondents to this question are reluc-

tant to increase the magnitude of derivatives transactions. Some most recent horrible stories on the excessive use of derivatives which caused severe financial problems, such as the bankruptcy of Lehman Brothers, could also spread the fear on the companies in Indonesia such that they became more cautious in using derivatives. The finding is consistent with the conclusion of Lantara (2010), who conducted an empirical study on the determinants of derivatives usage by non-financial firms listed on the IDX over the period of 2005-2009. One of the main findings shows that there is a slightly decreasing pattern in the magnitude of derivatives usage by Indonesian firms especially after 2008.

Figure 7. The Reasons Why Respondents Decided Not to Use Derivatives



This figure illustrates the most important reasons behind the decisions of respondents on not to use derivatives. Non-user derivatives respondents were asked to choose three most important explanations why their firms did not use derivatives. *N* on the parentheses stands for the number of responses from the derivatives non-user respondents.

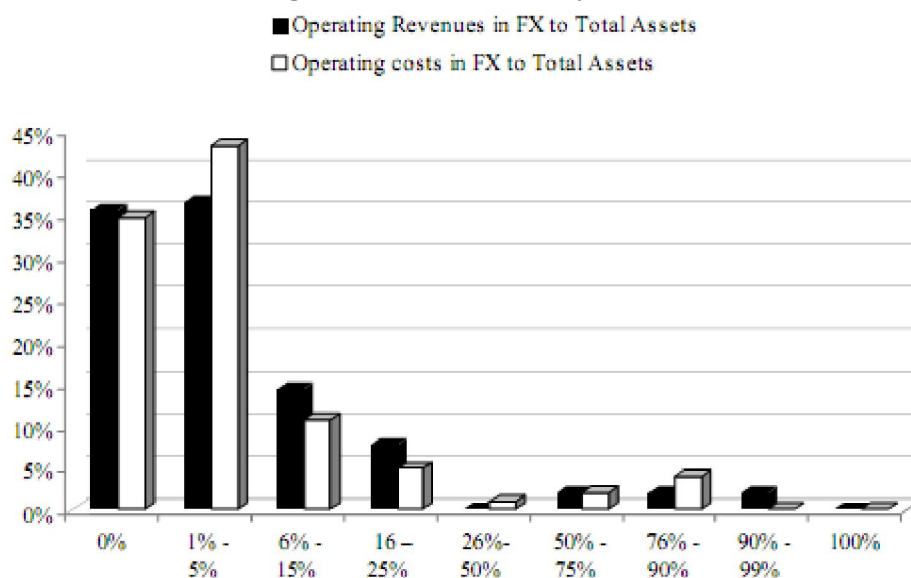
Reasons Why Not to Use Derivatives

Respondents who acknowledged their not using derivatives were asked to choose three most important out of seven possible reasons why they decided not to use derivatives. As revealed in Figure 7, the most salient reason according to the answers of respondents is that the risk exposure is insignificant. The second and the third most important reasons are the costs to implement derivatives programs exceeding the benefits and the difficulty in valuing and pricing derivatives, respectively. The findings of this study are consistent with the conclusion of

previous studies, such as Bodnar and Gebhardt (1998) in Germany and Mallin et al. (2001) in the U.K.

Two questions in the questionnaires also asked the respondents to indicate the proportion of their firms' operating revenues and operating costs denominated in foreign currencies over total assets. As illustrated in Figure 8, more than 70 percent of the answers from respondents affirm that the fraction of their firms' operating revenues denominated in foreign currencies compared to total assets range from 0 percent to 5 percent, and only less than 10 percent of respondents declare that the fraction is more than 25 percent of

Figure 8. Percentage of Operating Revenues and Operating Costs Denominated in Foreign Currencies Scaled by Total Assets



The results are obtained from the answers of respondents on how much their firms' operating revenues and operating costs are denominated in foreign currencies compared to total assets. In this question, respondents were asked to choose only one option from the possible answers. Total answers from respondents were 104.

total assets. The same pattern is also observed in terms of how much the respondents' operating costs designated in foreign currencies are relative to total assets, where 78 percent of respondents choose the range between 0 and 5 percent. The relatively low ratios of operating revenues and operating costs in foreign currencies to total asset might be related to the finding that respondents perceive insignificant risk exposure as the foremost reason why they do not use derivatives.

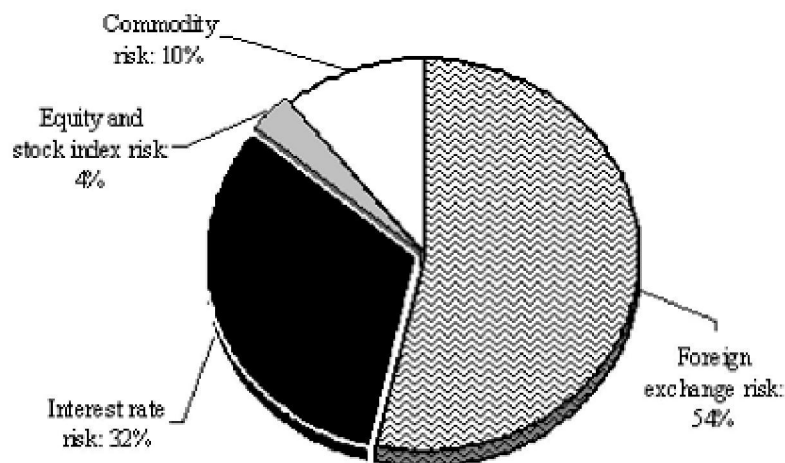
Types of Risks Being Exposed to and Types of Derivatives used

When asked about the types of risks being managed, the majority of respondents perceive foreign currency risk (54%) followed by interest rate

risk (32%) and commodity risk (10%), as illustrated in Figure 9. This finding is consistent with the conclusion of previous studies, such as Bodnar et al. (1998) in the U.S., Bodnar and Gebhardt (1998) in Germany, Mallin et al. (2001) in the U.K., Ceuster et al. (2000) in Belgium, or Heaney et al. (1999) in Japan.

Many types of derivatives instruments are available to mitigate certain types of risks being faced by the firms. One of the questions on the questionnaires also inquired respondents to indicate what types of derivatives being used to mitigate risks. As depicted in Figure 10, the furthestmost answers belonged to forward contract (35%), followed by currency swap (34%) and interest rate swap (27%). There is a link when we connect the pattern of the finding on this question

Figure 9. What Types of Risks Are the Respondents Being Exposed to?



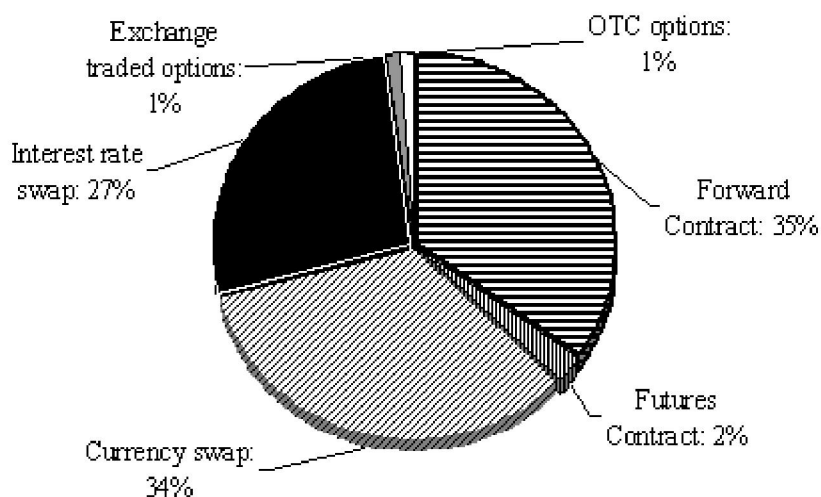
The result is obtained from the answers of the entire 30 derivatives user respondents on the types of risks being faced with. In this question, respondents were allowed to choose more than one answer whenever needed, and in total 56 answers were collected.

(in Figure 10) and the result on the question of what types of risks being managed (in Figure 9). In order to mitigate foreign currency risks and interest rate risks, the respondents claimed that the most common types of derivatives being used are: forward contract, followed by currency swap and interest rate swap. In general, the result of this study is consistent with the finding of Bodnar et al. (1998), Ceuster et al. (2000), or Yu et al. (2001).

This study also further examines the complexity of derivatives instruments used by the respondents. Derivatives users were required to indicate as to what types of derivatives they had used. As shown in Figure 11,

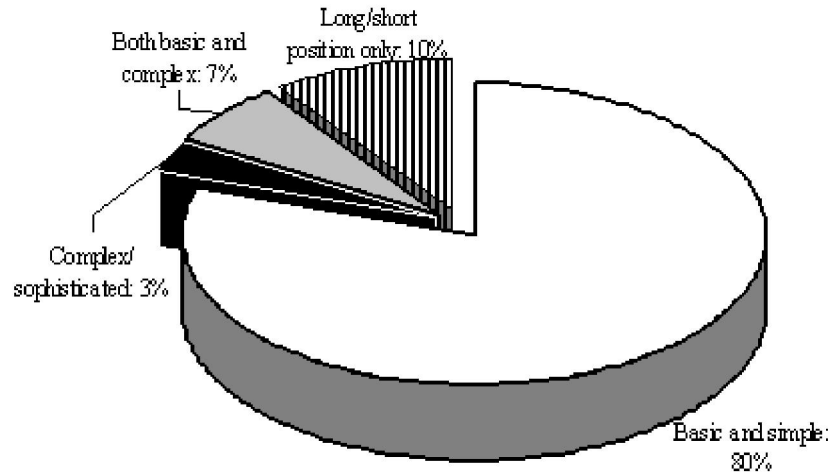
the majority of respondents (80%) indicate that they have employed basic and simple types of derivatives, followed by taking long/short positions (10%), using both basic and complicated derivatives (7%), and only 3 percent claim to use sophisticated derivatives. The result is strongly comparable with the findings of previous studies on the use of derivatives, such as Bodnar et al. (1998), Ceuster et al. (2000), Mallin et al. (2001) or Yu et al. (2001). The pattern that a large number of respondents only utilize simple and basic types of derivatives instruments confirms the finding in Figure 10, where forward and currency swap contracts are the most common types of derivatives used.

Figure 10. What Types of Derivatives Are Being Used?



The result is obtained from the answer of respondents on what types of derivatives are being used. This question is aimed to the derivatives user respondents. In this question, respondents are allowed to choose more than one answers whenever needed, and in total 86 answers were obtained.

Figure 11. **How Complicated Are the Types of Derivatives Being Used?**



The result is drawn from the answers of respondents on how complex the types of derivatives being used are. In this question, derivatives user respondents were required to choose only one possible answer, and 30 answers were obtained.

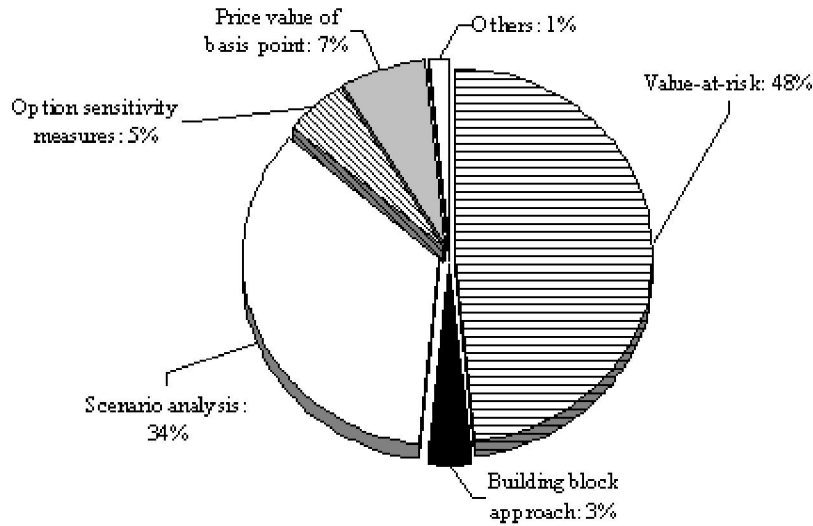
Methods Used to Measure Risk Exposure

The ability of a firm to appraise the magnitude of risk exposure being faced with is also a crucial part of risk management strategy. There are many kinds of methods available to help firms assess the enormity of risk exposure, such as Value-at-Risk (VaR), scenario analysis, building block approach, options sensitivity, or price-value of basis point method. In order to obtain the real-world representation of the methods used to measure risk exposure, the respondents of derivatives users were asked to specify one or more risk exposure measurement methods practiced in their firms. As shown in Figure 12, of the 58 answers obtained, the most popular method is VaR (48%), followed by scenario analysis (34%), and price value of

basis point. This finding is in line with those of Bodnar et al. (1998), Ceuster et al. (2000) and Yu et al. (2001), who also find that VaR is the most popular method used by their respondents. However, the result of this study does not support the finding of Heaney et al. (1999), who discover marked-to-market amount as the most popular method instead of VaR.

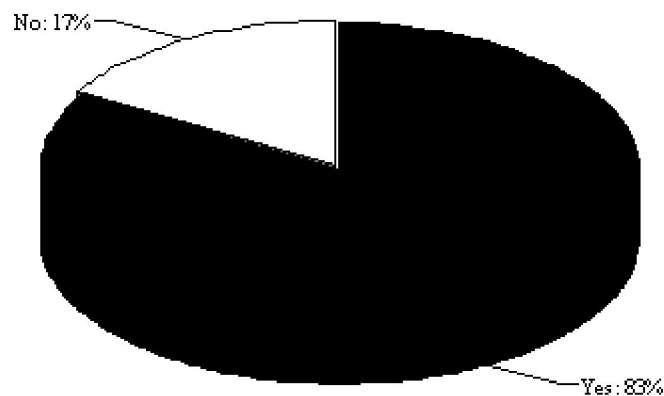
Figure 13 illustrates the replies from derivatives user respondents when asked about whether they utilized certain software to help measure the risk exposure. Of total 30 answers obtained, the result shows that nearly 83 percent of respondents report that they use certain software packages to help measure the riskiness of their firms' portfolios. The result of this study is contradictory with the finding of Alkeback and Hagelin (1999), who

Figure 12. The Methods Used to Measure the Magnitude of Risk Exposure



The result is obtained from the replies of derivatives user respondents on the measurement methods used to assess the magnitude of risk exposure. In this question, respondents might choose more than one answer whenever necessary. In total, 58 answers were obtained.

Figure 13. The Proportion of Respondents Who Utilize Certain Software Packages to Measure the Enormity of Risk Exposure



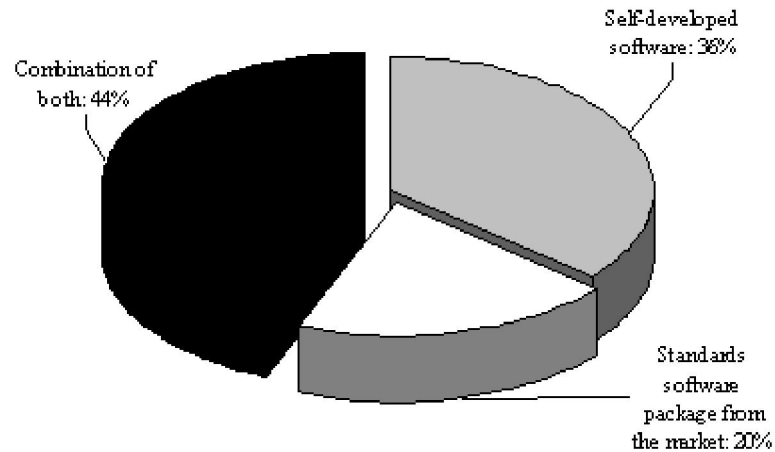
The result is calculated from 30 responses of derivatives user respondents on the question of whether the respondents utilize specific software packages in measuring the magnitude of risk exposure.

find that only less than 30 percent of respondents harness specific software packages in measuring the risk exposure. A possible justification behind this gap is due to the divergence of the timeframe of the surveys; it is relatively easier and cheaper nowadays to obtain software packages either from the market or self-developed compared to the circumstances in the preceding periods.

Furthermore, for respondents of derivatives users who stated that they utilize a specific software package were next asked what kind of software packages being used. In this study, it is also interesting to investigate further whether they just take it for granted of the standards software available in the

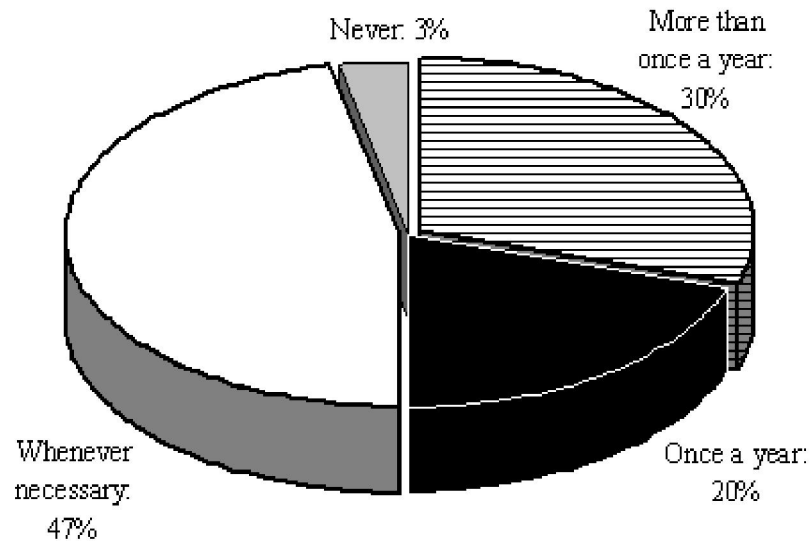
market, or whether they utilize self-developed software, or the combination of it. As it can be seen from Figure 14, most of the respondents answered they adopt standard software and then modify it to adjust with their internal need (44%), while the rest stated that they develop their own software (36%), and 20 percent of the respondents depicted that they utilize the software available in the market as it is. The finding indicates that majority of respondents are not taking the software as it is taken from the market, but they need to do some modification before using the software. This finding is somewhat comparable with the finding of Yu et al. (2001) for the case of Hong Kong.

Figure 14. **The Proportion Respondents Who Utilize Certain Software Packages to Measure the Magnitude of Risk Exposure**



The result is calculated from 30 responses of derivatives user respondents on the question whether the respondents utilize specific software packages in measuring the magnitude of risk exposure.

Figure 15. How Frequent the Firms Review the Methods and Software Packages Used to Measure the Magnitude of Risk Exposure



The figure shows the responses from 30 responses of derivatives user respondents on the question of how frequent their firms revise the software packages used to assess the magnitude of risk exposure.

The derivatives user respondents were next asked to indicate how frequent their firms reviewed the methods, methodologies, or software packages used to measure the risk exposure. As shown in the Figure 15, the majority of respondents mention a non-regular review (47%), 30 percent state at least twice a year, and 20 percent indicate an annual review activity. Only a small fraction of respondents (4%) say that they never review the methods and software packages. In general, the result indicates that the majority of respondents perceive the reviewing process of measurement methods and software packages as necessary.

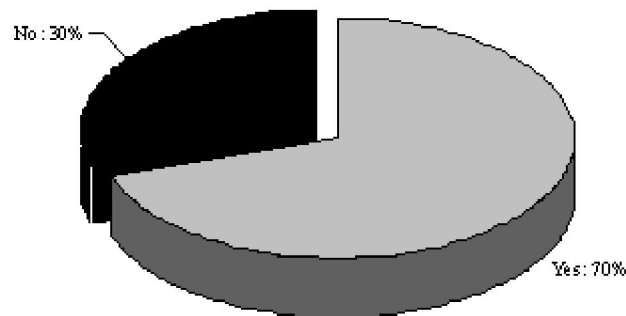
The Organization, Information Systems, and Monitoring Procedures

The organization, information systems, and monitoring procedures are very essential components in the employment of derivatives. As can be learned from some disastrous cases of the use of derivatives, such as Barings Bank in Singapore, the fruitlessness of internal control could lead a firm to bear severe losses and finally destroy the value of the firm. This study also investigates the internal control procedures inside the sample of derivatives users. The first question in this section

is whether the firms have a written formal policy regarding the use of derivatives. The result in Figure 16 shows that 70 percent of respondents claim to have a formal written rule regarding the use of derivatives, and only a few firms (30%) state that they do not have a documented policy. The result indicates that the respondents are aware of

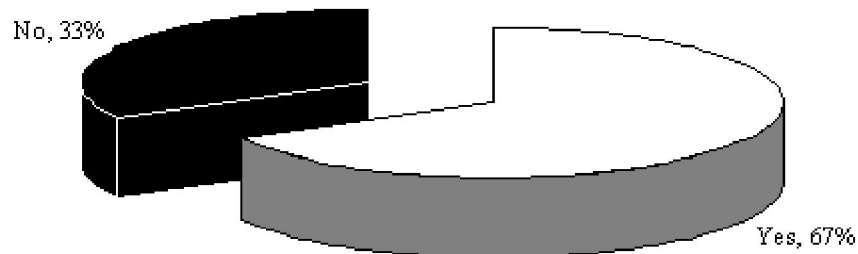
the importance of a formal written policy as guidance in using derivatives. The finding is comparable with the evidence provided by Bodnar et al. (1998) and Mallin et al. (2001), who find that the proportion of the sample that have a documented policy is more than 70 percent.

Figure 16. **Does the Firm Have a Formal Written Policy Regarding the Use of Derivatives?**



The figure shows the replies from 30 responses of derivatives user respondents on the question of whether their firms have a documented policy on derivatives usage.

Figure 17. **Does the Risk Management Department Have a Certain Level of Independent Authority Over Derivatives Usage?**



The figure reveals the answers from 30 responses of derivatives user respondents on the question of whether they have a certain level of independency in the decision-making process of derivatives usage.

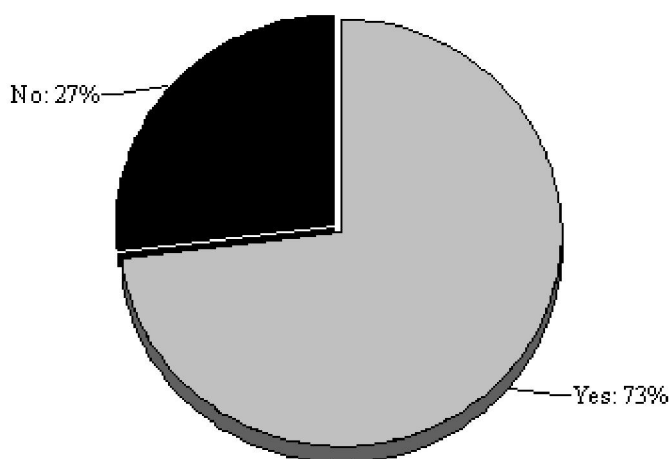
The next question is pertaining to the independency of the risk management department with respect to derivatives usage. As shown in Figure 17, of the 30 responses, most of the respondents indicate that, to some extent, the risk management department has the authority to make decisions on derivatives usage. The result is somewhat comparable to the finding of Yu et al. (2001) for the case of Hong Kong.

Subsequently, this study examines whether the derivatives user firms embrace the risk limit as part of the whole strategy in derivatives usage. The presence of risk limit, to some extent, could be used to control the magnitude of derivatives usage. As shown in Figure 18, a large fraction of respondents (73%) state that their firms

have a certain risk limit. Again, the result is comparable to the finding of Yu et al. (2001).

Figure 19 shows the responses from the total of 30 derivatives user respondents when they were asked about the frequency of monitoring activities over the risk limit. The result depicts that most of the respondents (67%) do not have a regular period of monitoring the risk limit. There are some other firms (30%) that state that they monthly monitor the risk limit, and only one firm (3%) reports that they check the risk limit daily. The pattern found in this query supports the finding of Bodnar et al. (1998), but somewhat contrasts with the finding of Yu et al. (2001) where they find that 85 percent of the respondents monitor the risk limit daily.

Figure 18. **The Presence of Risk Limit**

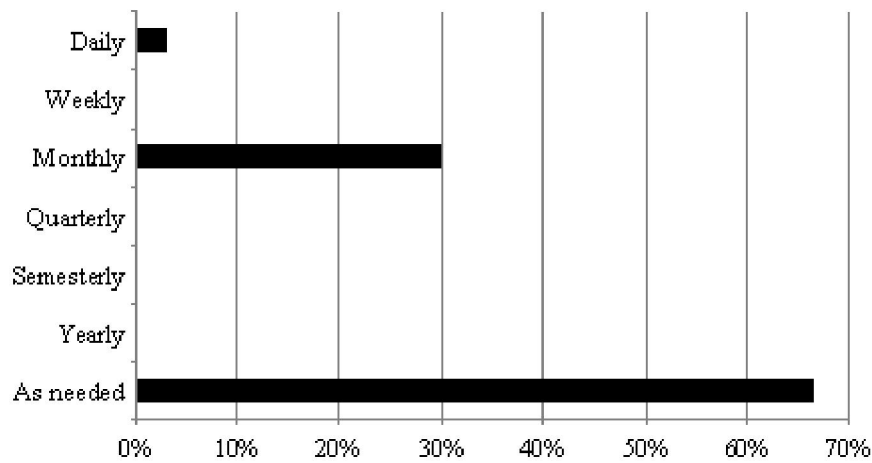


The figure shows the proportion of the answers from 30 responses of derivatives user on the question of whether they have a certain risk limit.

The last section of the question asked to the derivatives users is about the frequency of reporting derivatives transactions to the board of directors. As revealed in Figure 20, more than 50 percent of respondents indicate that they do not have a customary time to report the derivatives transactions to the board of directors. More than 20 percent of respondents designate that they report to the board monthly, and only a small fraction of respondents

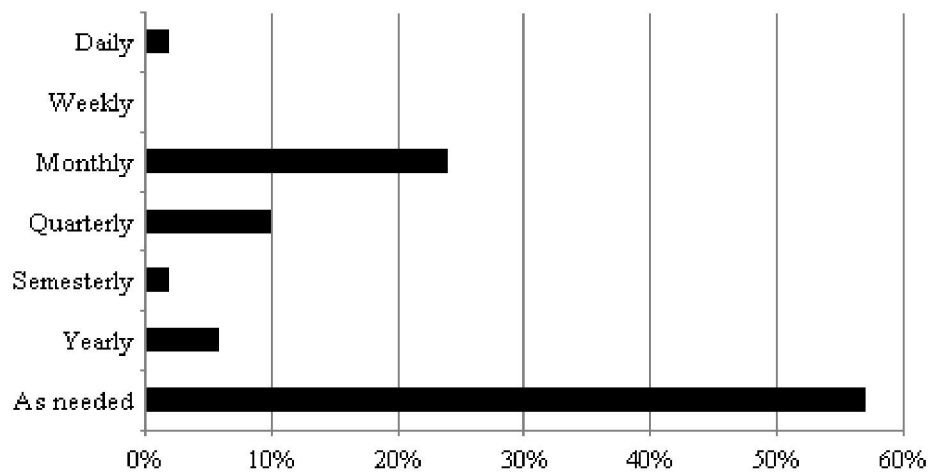
state a different period of reporting time. The result offers a support to the finding of Bodnar et al. (1998) where they find that five percent of the respondents do not schedule the reporting period to the board of directors. However, the pattern in this study is on the contrary to the finding of Ceuster et al. (2000), who document that the majority of respondents report the derivatives transactions to the board of directors every month.

Figure 19. How Frequent the Monitoring Activities Over the Risk Limit Is?



The figure illustrates the pattern of monitoring activities over the risk limit. The proportion is calculated from the answers from 30 responses of derivatives users.

Figure 20. **How Frequent the Reporting of Derivatives Activities to the Board of Directors Is?**



The figure demonstrates the answers of 30 derivatives user respondents when asked about the frequency of the reporting activities of derivatives transactions.

Conclusion

This paper reports the results of a survey study on the real-world practices of derivatives usage by Indonesian firms. The main objective of the study is to reveal the description of several aspects of the use of derivatives, such as the participation rate of derivatives usage in Indonesia, the major reasons why firms decide not to use derivatives, the types of risks faced with and what kinds of derivatives harnessed to mitigate the risks, the methods used to appraise the magnitude of risk exposure, and the monitoring systems over the use of derivatives practiced by the firms. This study also examines the existence of size effect on the use of derivatives.

The main finding reveals that 28.8 percent of respondents are derivatives users. The result is much lower than those in developed countries, indicating that the development of derivatives market in Indonesia is still at a very early stage. The main reasons stated by the non-users of derivatives are insignificant risk exposure and the costs of employing derivatives programs exceeding the benefits. The result also substantiates the size effect hypothesis, where large firms are more likely to use derivatives than small firms. In terms of the types of risks being exposed to, the result shows that foreign currency risk and interest rate risk are the most important types of risks faced with by respondents, and consistently foreign currency forward

and currency swap contracts are the most intensive types of derivatives used. Value-at-Risk (VaR) and scenario analysis are reported as the most common methods utilized to measure the risk exposure. Eventually, this study also reveals that the respondents do not have a predetermined fixed schedule of reporting and monitoring certain activities of derivatives usage.

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