The Use of Financial Derivatives in Tax Avoidance Activities: Cross Country Analysis in ASEAN

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Abstract. This study investigates the association between the level of financial derivatives use and the level of tax avoidance. The association differs between the users of financial derivatives for speculation purposes and the users of financial derivative for hedging purposes. Using a cross-country analysis which covering four countries in the ASEAN region, we find that there is a positive association between the level of financial derivative use and the level of tax avoidance. This finding indicates that financial derivative can be used as a tool of tax avoidance activities. When we classified the users of financial derivatives into two categories (the users of financial derivative for hedging purposes and the users of financial derivatives for speculation purposes), we find that positive association between the level of financial derivative use and the level of tax avoidance is higher in the user of financial derivatives for speculation purposes rather than the user of financial derivatives for hedging purposes. This research is expected to provide suggestion for the tax authorities to set a clear tax regulation regarding the tax treatment of financial derivatives transactions.
Keywords: tax avoidance, financial derivatives, hedge, speculation, cross country

1. Introduction

The volume of derivatives trading in the ASEAN region is expected to continue to increase, especially after the implementation of the ASEAN Economic Community (AEC) in 2015. With the implementation of the AEC, the activity of trade between member countries of ASEAN is expected to increase rapidly. Increased activity of intra-ASEAN trade in turn also increases the need for companies to be hedge market risks through the use of financial derivatives. According to previous researchers (Barton, 2001; Pincus & Rajgopal, 2002; Huang et al., 2009), derivative financial instruments is used to reduce cash flow volatility and earnings volatility caused by market risk factors, such as fluctuations in interest rates, fluctuations in foreign currency exchange rates, fluctuations in commodity prices, and other risk factors. The use of financial derivatives to reduce cash flow volatility and earnings volatility shows that financial derivatives is one tool of earnings management.

Companies with high earnings volatility shows that the company has too volatile earnings pattern, thus making potential investors think that the investment into the companies is very risky (Fudenberg and Tirole, 1995; Barton, 2001; Kirschenheiter and Melumad, 2002). Conversely, company with low earnings volatility or relatively stable earnings pattern indicates that the company has a low risk (Fudenberg and Tirole, 1995; Barton, 2001; Kirschenheiter and Melumad, 2002). This condition must be responded positively by investors. Besides as a tool of earnings management, financial derivatives can also be used as a tool of tax avoidance. According to Donohoe (2011a), financial derivatives are sophisticated tool of tax avoidance. A smart tax planner will take advantage of the features of complex financial derivatives, to design a profitable transaction for the company in terms of tax payments (Donohoe, 2011a; 2011b Donohoe; Donohoe, 2012). The inherent complexity of derivative instruments provides opportunities for companies to exploit ambiguities in tax laws (Donohoe, 2012).

Studies about the use of financial derivatives as a tool of earnings management has been growing rapidly, but studies about the use of financial derivatives as a means of tax avoidance is still rare. The first study is conducted by Donohoe (2011a; 2011b; 2012) in the United States. Donohoe (2011a; 2011b; 2012) find evidence that financial derivatives can be used as a tool of tax avoidance. Related to these findings, Donohoe (2011a) argued that financial derivatives can be used as a tool of tax avoidance because the features contained in the financial derivatives can be used to replicate the economic situation, blurring the economic substance of the underlying asset, as well as introduce ambiguity and complexity in tax reporting. Furthermore, Donohoe (2011a; 2011b) also found that the companies which use financial derivatives for speculation purposes has experience a reduction in the tax burden greater than the company which use financial derivatives for hedging purposes. Donohoe (2011a; 2011b; 2012) only uses the context of a single country (the United States). Tax environment and the development of financial derivatives markets in the United States are very different from other countries, so that their results cannot be generalized to the context of other countries.

A second study which examined the relationship between the use of financial derivatives and tax avoidance activities considering the disclosure level of financial derivatives when testing the relation of financial derivatives and tax avoidance activities (Oktavia and Martani, 2013a; 2013b). They found empirical evidence that *low-level disclosure user*, has a tax avoidance activity that is more aggressive than the companies that are categorized as *high-level*

disclosure user. These findings indicate that financial derivatives user which tend to hide information about derivative transactions, have a tax avoidance behavior is more aggressive than the companies which explicitly disclose derivatives transactions. The weakness of that study are: not separate between the use of financial derivatives for hedging purposes with the use of financial derivatives for speculation purposes; and only use a single country context (in this case is Indonesia). The third study is researching the use non-financial companies in Canada (Zeng, 2014). In that study, researcher proves that the company uses financial derivatives to save tax payment. The researcher found that the use of financial derivatives allow companies to take advantage of tax-timing option (i.e., recognize losses immediately, but defer profits indefinitely), thus enabling the company to save tax payment. The weakness of the third study are.: not separate between the use of financial derivatives for hedging purposes with the use of financial derivatives for speculation purposes; financial derivative is measured by dummy variables (i.e. 1 if there is a realization of gain or loss arising from financial derivative transactions, and 0 for the other); and only use a single country context (in this case is Canada).

This study was conducted using cross country analysis with restrictive on four countries in ASEAN, i.e.: the Philippines, Indonesia, Malaysia, and Singapore. Based on data from the Bank for International Settlements (BIS) and the International Swaps and Derivatives Associations (ISDA), the financial derivatives market in the ASEAN region consists of five countries, i.e.: the Philippines, Indonesia, Malaysia, Singapore, and Thailand. Thailand is not included as a sample in this study because of two reasons, that is: (i) Thai Financial Reporting Standards (TFRS) not yet adopted the international accounting standards of financial instruments, namely IAS 39 and IAS 32 (www.iasplus.com). Based on TFRS, there is no specific accounting standards regarding the accounting of derivatives, so the company does not recognize unrealized gains or unrealized losses arising from the derivative transactions (www.set.or.th); And, (ii) Thai Accounting Standard (TAS) No 12 which is concerning about the accounting treatment on the income tax is effective as of January 1, 2013.

Four countries in this study will represent the diversity of characteristics among countries in ASEAN, because it consists of: developed countries (such as Singapore) and emerging countries (such as the Philippines, Indonesia, and Malaysia); and advanced derivatives markets (such as Singapore) and growing derivatives market (such as the Philippines, Indonesia, and Malaysia). In addition, the tax environment characteristics of the four countries in this study also differ from country to country. Given the diversity of these characteristics, the results of this study are expected to provide an interesting view on the relationship between the use of financial derivatives and tax avoidance activities in the ASEAN region. The rest of this paper is organized as follows. Section 2 discusses prior research and hypotheses development. Section 3 describes our methodology. Section 4 presents the results of our empirical analysis. Section 5 describe robustness test and Section 6 concludes

2. Literature Review

2.1. Association between Financial Derivative and Tax Avoidance

Some experts claim that obscurity of taxation rules on derivative transactions to promote the use of financial derivatives as a tool of tax evasion (Raskolnikov, 2011), while others blame the fundamentals of hedging (Kramer, 2011) and the tax authorities (Raghavan, 2008). The claims of some experts (Raskolnikov, 2011; Kramer, 2011; Raghavan, 2008) makes the other researcher (Donohoe, 2011a; 2011b; 2012) proposed that the onset of the benefits of financial derivatives as a tool of tax avoidance due to the fundamental aspects, transaction design attributes aspects, tax reporting aspects, and cognitive aspects. Related to fundamental aspects, we expect that the use of financial derivatives for hedging purposes can reduce earnings volatility which in turn will reduce the expected tax liabilities. It is because expected tax liabilities are a convex function of taxable income. From the transactional aspect, the company can make the use of financial derivatives as a tool of tax avoidance by changing the timing, character and source of gain or losses arising from these transactions. In terms of tax reporting aspect, companies can take advantage of inconsistency, asymmetry, and indeterminacy in tax regulations as a loophole to avoid taxes by using financial derivatives. Finally, from the cognitive aspects, the company can also take advantage of the complexity of derivative transactions and a lack of understanding of regulators and practitioners.

According to Donohoe's studies, there are two ways of how financial derivatives used for tax avoidance, i.e.: explores the ambiguities in the tax reporting system to make choices of derivative transactions design to save tax payment, and involves the use of financial derivatives to create tax strategy with more aggressive and more intricate, such as tax shelters. That research using a sample of companies in the United States, proving that the derivative is a sophisticated tax avoidance tool, which can work independently or together with other tax planning strategies. Based on the above description, we propose the following hypotheses:

H1: There is a positive association between the level of financial derivative use and the level of tax avoidance

2.2. Association between Financial Derivative Purposes and Tax Avoidance

According to Donohoe's studies, he examine the effect of the use of financial derivative (hedging purposes and speculative purposes) on corporate tax burden. The researcher separated derivative users into two categories: the users of speculative financial derivatives and the users of hedging financial derivatives. He has found empirical evidence that

tax burden decreased after the company uses financial derivatives. The users of speculative financial derivatives have a reduction of tax burden greater than the users of hedging financial derivatives. This is because only a speculative derivatives and the ineffective portion of the hedge that directly affect reported earnings. Because many countries have adopted the accounting treatment to apply the tax on derivative transactions, then when the company entered into derivative transactions for speculative purposes (including transactions that do not qualify for hedge), any gain or loss arising from the contract (including gains or unrealized losses) should be recognized immediately in profit or loss. Therefore, profits from speculative derivative transactions are considered as objects of income tax and the loss is considered as ordinary loss (deductible expense). Based on the above description, we propose the following hypotheses:

H2: Positive association between the level of financial derivative use and the level of tax avoidance is higher in the user of financial derivatives for speculation purposes rather than the user of financial derivatives for hedging purposes

3. Method

3.1. First Model

To test the first hypothesis (H1), we use the first model. The following model is the first model in our study:

$$ABS\_TAXVOID_{it} = \alpha_0 + \alpha_1 DERIV_{it} + \alpha_2 SIZE_{it} + \alpha_3 ROA_{it} + \alpha_4 DTA_{it} + \alpha_5 CAPINT_{it} + \alpha_6 D\_PHIL_{it} + \alpha_7 D\_MALAY_{it} + \alpha_8 D\_SING_{it} + \alpha_9 D10_i + \alpha_{10} D11_i + \alpha_{11} D12_i + \alpha_{12} D13_i + \varepsilon_{it} \quad (1)$$

Where:

ABS_TAXVOID = the level of tax avoidance (measured by absolute value of tax avoidance)
DERIV = the level of the use of financial derivative
SIZE = the natural logarithm of total assets
ROA = Return on asset
DTA = Debt to total asset
CAPINT = Capital intensity (Net property, plants, and equipment on total asset)
D_COUNTRY = D_PHIL (1 for Philippines and 0 for the others); D_MALAY (1 for Malaysia and 0 for the others); D_SING (1 for Singapore and 0 for the others)
DYEAR = D10 (1 for year 2010 and 0 for the others); D11 (1 for year 2011 and 0 for the others); D12 (1 for year 2012 and 0 for the others); D13 (1 for year 2013 and 0 for the others)

3.2. Second Model

The second model is used to test the second hypothesis (H2):

$$ABS\_TAXVOID_{it} = \alpha_0 + \alpha_1 DERIV_{it} + \alpha_2 DSPEC_{it} + \alpha_3 DERIV*DSPEC_{it} + \alpha_4 SIZE_{it} + \alpha_5 ROA_{it} + \alpha_6 DTA_{it} + \alpha_7 CAPINT_{it} + \alpha_8 D\_PHIL_{it} + \alpha_9 D\_MALAY_{it} + \alpha_{10} D\_SING_{it} + \alpha_{11} D10_i + \alpha_{12} D11_i + \alpha_{13} D12_i + \alpha_{14} D13_i + \varepsilon_{it} \quad (2)$$

3.3. Sample Selection

Table 1. The Sample Selection Procedure

First Stage				
Description	**Philippines**	**Indonesia**	**Malaysia**	**Singapore**
The number of companies listed on the Stock Exchange	241	477	898	716
The number of companies engaged in financial sector	(39)	(69)	(38)	(30)
The number of companies which calculate the taxable income based on gross revenue or companies subject to a special income tax rates were excluded from the sample	(45)	(130)	(124)	(96)
The number of companies whose data does not exist	(6)	(8)	(54)	(81)
Full Sample	151	270	682	509
The number of companies were not detected using financial derivatives during 2009 to 2013	(121)	(224)	(461)	(312)
	30	46	221	197

Second stage			
Country	**Derivative user that disclose the notional amount of derivative**	**Country**	**Final Sample for Model (1) and (2)**
Philippines	109	Philippines	80
Indonesia	131	Indonesia	111
Malaysia	705	Malaysia	641
Singapura	659	Singapura	594
	1604		**1426**

The sample criteria in this study consists of: Firms entered into derivative transactions of foreign currency exchange rates and interest rates, as well as disclosed the notional value of financial derivatives; Firms is not included in the banking industry and other financial institutions; and Firms calculate the taxable income based on the basis of net

income and use the normal corporate income tax rates. Companies which calculate the taxable income based on gross revenue or companies subject to a special income tax rates were excluded from the sample. Once the criteria have been fulfilled, the companies which indicated as the users of financial derivatives are classified into two categories. The first category is users of financial derivative for hedging purposes. This user revealed that the derivative meets the hedge accounting criteria. The second category is users of financial derivatives for speculation purposes. This user does not disclose that the derivative meets the hedge accounting criteria.

Table 1 presents the sample selection procedure. From Table 1, it can be seen that the number of observation for 5 years is 2470 *firm-year* (if strongly balance). Only 58% of observations can be processed in hypothesis testing. The number reflects the number of observations unbalanced panel of data, which means that there is a new company registered in the stock market from 2009 to 2013, and there are observations dropped by Stata 13. In this study, outlier criteria 1% upper limit and lower limit percentile coped with winsorize procedure. The second stage of sample selection procedure is necessary because there are companies that use derivatives for five consecutive years (2009-2013), but some are not using derivatives for five consecutive years. To avoid bias, the sample in this study is the company which revealed the use of financial derivatives. Thus, if in a given year the company do not revealed the financial derivative data, then the data in that year are not used in the test.

3.4. Data

The data in this study is financial statements of public companies in ASEAN from year 2008 to 2014. Sources of the data of this study were obtained from the database "Thomson Reuters Data Stream Pro" which available at Data Center of Economics and Business, Faculty of Economics and Business, Universitas Indonesia. Period in this study was year 2009, 2010, 2011, 2012, and 2013.

3.5. Definition of Study Variables

Table 2. Definition of Study Variables

No.	Variable	Description
1	**The level of Tax Avoidance (ABS_TAXVOID)**	Tax avoidance variable in this study was formed by using confirmatory factor analysis on four measurements in tax avoidance, that is: DTAX, BTD, temporary BTD, and abnormal BTD. Here is the formula for calculating temporary BTD, and abnormal BTD: **a. DTAX (*Discretionary measures of tax avoidance*)** Frank et al. (2009) measured DTAX by using the residuals of the following models: $PERMDIFF_{it} = \alpha_0 + \alpha_1 INTANG_{it} + \alpha_2 UNCON_{it} + \alpha_3 MI_{it} + \alpha_4 CSTE_{it} + \alpha_5 \Delta NOL_{it} + \alpha_6 LAGPERM_{it} + \varepsilon_{it}$ (3) Where: PERMDIFF = Permanent difference INTANG = goodwill and other intangibles UNCON = income (loss) reported under the equity method MI = income (loss) attributable to minority interest CSTE = current state income tax expense ΔNOL = the change in net operating loss carryforwards from year t-1 to year t LAGPERM = one-year lagged *PERMDIFF* **b. BTD (*Book Tax Difference*)** Measured using the difference between the accounting income and taxable income. **c. Temporary BTD** This variable is measured by ratio of deferred tax expense on statutory corporate tax rate. **d. Abnormal BTD** Here is a model to estimate the value of ABTD: $BTD_{it} = \alpha_0 + \alpha_1 \Delta INVit + \alpha_2 \Delta REVit + \alpha_3 TLit + \alpha_4 TLUit + \alpha_5 BTD_{it-1} + \varepsilon_{it}$ (4) Where: BTD = the reported BTD ΔINV = the change in investment in gross property, plant and equipment, and intangible assets from year t-1 to year t ΔREV = the change in revenue from year t-1 to year t TL = the value of net operating losses TLU = the value of tax losses utilized
2	**The level of financial derivative use (DERIV)**	We measure financial derivative use (DERIV) as the disclosed notional amount of interest rate and foreign currency derivatives scaled by lagged total assets
3	**Speculation dummy (DSPEC)**	DSPEC is measured by the dummy variable. DSPEC is 1 if the company uses financial derivatives that do not qualify for hedge accounting and 0 for the other.
4	**D_COUNTRY**	Dummy country: 1 for the country where the company is domiciled and 0 for the other. Indonesia as a reference country. Because this study uses four countries as a sample, so this study has three dummy countries (four countries minus one country as a reference), ie.: D_PHIL, D_MALAY, and D_SING.

4. Results

4.1. Descriptive Statistics

Table 4 present descriptive statistics in this study. The mean of ABS_TAXVOID is 0.0397. The mean and maximum of DERIV are 0.1178 and 0.0001. The mean of CAPINT and SIZE are 0.3322 and 21.1757, respectively. The mean, minimum, and maximum of ROA are 0.0688, -0.1901, and 0.4460, respectively. The mean of DTA is 0.5444.

Table 4. Descriptive Statistics

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
ABS_TAXVOID	0.0397	0.0270	0.0000	0.3178	0.0416
DERIV	0.1178	0.0525	0.0001	1.1342	0.1785
SIZE	21.1757	20.3231	17.1222	31.4198	3.1424
ROA	0.0688	0.0569	-0.1901	0.4460	0.0871
DTA	0.5444	0.5277	0.0624	1.6332	0.2666
CAPINT	0.3322	0.3023	0.0027	1.0722	0.2150

4.2. Correlation

Table 5 reports the correlation matrix for the variables used in this study. The univariate correlation analysis shows that DERIV has a significantly positive association with ABS_TAXVOID consistent with our predictions. Table 5 also shows that ROA and DTA have a significantly positive association with ABS_TAXVOID.

Table 5. Correlation

Variable	ABS_TAXVOID	DERIV	SIZE	ROA	DTA	CAPINT
ABS_TAXVOID	1					
DERIV	***0.0749	1				
SIZE	-0.0403	0.0143	1			
ROA	***0.1673	***0.1105	***0.2108	1		
DTA	*0.0489	***0.1902	***0.3090	**0.0661	1	
CAPINT	0.0161	**0.0540	***0.1787	0.0405	***0.1084	1

Asterisks *, **, and *** denote one-tailed statistical significance at 10%, 5%, and 1%, respectively.

4.3. Test Results of the Hypothesis H1

Table 6 shows the test results of the first hypothesis (H1). From this table, we find that the coefficient on DERIV is significantly positive, suggesting that DERIV has a significantly positive association with ABS_TAXVOID consistent with our predictions. The higher the level of financial derivative use, the higher the level of tax avoidance. This finding indicates that financial derivative can be used as a tool of tax avoidance activities.

Table 6. Test Results of the Hypothesis H1

	First Model			
	$ABS\_TAXVOID_{it} = \alpha_0 + \alpha_1 DERIV_{it} + \alpha_2 SIZE_{it} + \alpha_3 ROA_{it} + \alpha_4 DTA_{it} + \alpha_5 CAPINT_{it} + \alpha_6 D\_PHIL_{it} + \alpha_7 D\_MALAY_{it} + \alpha_8 D\_SING_{it} + \alpha_9 D10_i + \alpha_{10} D11_i + \alpha_{11} D12_i + \alpha_{12} D13_i + \varepsilon_{it}$			
	Dependent Variable: ABS_TAXVOID			
	Expected Sign	**Coef.**	**t**	**P-value**
DERIV	+	0.0102	1.37	*0.0850
SIZE	+/-	-0.0030	-4.00	***0.0000
ROA	+	0.0901	3.74	***0.0000
DTA	+	0.0100	1.73	**0.0420
CAPINT	+	0.0053	0.96	0.1675
D_PHIL	+/-	-0.0050	-0.71	0.2400
D_MALAY	+/-	-0.0236	-3.01	***0.0015
D_SING	+/-	-0.0176	-2.12	**0.0170
D10	+/-	-0.0033	-0.96	0.1690
D11	+/-	-0.0030	-0.89	0.1855
D12	+/-	0.0012	0.34	0.3665
D13	+/-	-0.0006	-0.18	0.4285
Constanta	+/-	0.0445	6.22	0.0000
N-sampel	1,426			
R-Square	5.56%			
F-stat	4.12			
p-value	0.0000			

Asterisks *, **, and *** denote one-tailed statistical significance at 10%, 5%, and 1%, respectively

4.4. Test Results of the Hypothesis H2

Table 7 shows that coefficient on DERIV*DSPEC is significantly positive, suggesting that DERIV*DSPEC has a significantly positive association with ABS_TAXVOID consistent with our predictions. This finding prove that positive association between the level of financial derivative use and the level of tax avoidance is higher in the user of financial derivatives for speculation purposes rather than the user of financial derivatives for hedging purposes.

Table 7. Test Results of the Hypothesis H2

	Second Model			
	$ABS\_TAXVOID_{it} = \alpha_0 + \alpha_1 DERIV_{it} + \alpha_2 DSPEC_{it} + \alpha_3 DERIV*DSPEC_{it} + \alpha_4 SIZE_{it} + \alpha_5 ROA_{it} + \alpha_6 DTA_{it} + \alpha_7 CAPINT_{it} + \alpha_8 D\_PHIL_{it} + \alpha_9 D\_MALAY_{it} + \alpha_{10} D\_SING_{it} + \alpha_{11} D10_i + \alpha_{12} D11_i + \alpha_{13} D12_i + \alpha_{14} D13_i + \varepsilon_{it}$			
	Dependent Variable: ABS_TAXVOID			
	Expected Sign	**Coef.**	**t**	**P-value**
DERIV	+	-0.0086	-0.79	0.2160
DSPEC	+/-	-0.0039	-1.12	0.1315
DERIV*DSPEC	+	0.0241	1.77	**0.0385
SIZE	+/-	-0.0030	-3.83	***0.0000
ROA	+	0.0891	3.71	***0.0000
DTA	+/-	0.0103	1.77	**0.0385
CAPINT	+	0.0054	0.97	0.1665
D_PHIL	+/-	-0.0051	-0.70	0.2425
D_MALAY	+/-	-0.0239	-2.88	***0.0020
D_SING	+/-	-0.0178	-2.02	**0.0215
D10	+/-	-0.0033	-0.94	0.1745
D11	+/-	-0.0029	-0.88	0.1900
D12	+/-	0.0013	0.37	0.3555
D13	+/-	-0.0006	-0.18	0.4270
Constanta	+/-	0.0477	5.12	***0.0000
N-sampel	1426			
R-Square	5.75%			
F-stat	3.66			
p-value	0.0000			

Asterisks *, **, and *** denote one-tailed statistical significance at 10%, 5%, and 1%, respectively

4.5. Robustness Tests

Table 8. Robustness Test – Test Results of the Hypothesis H2

	Second Model – Robustness Test			
	$ABS\_TAXVOID_{it} = \alpha_0 + \alpha_1 DERIV_{it} + \alpha_2 DSPEC_{it} + \alpha_3 DERIV*DSPEC_{it} + \alpha_4 SIZE_{it} + \alpha_5 ROA_{it} + \alpha_6 DTA_{it} + \alpha_7 CAPINT_{it} + \alpha_8 D\_FILIPINA_{it} + \alpha_9 D\_MALAY_{it} + \alpha_{10} D\_SING_{it} + \alpha_{11} D10_i + \alpha_{12} D11_i + \alpha_{13} D12_i + \alpha_{14} D13_i + \varepsilon_{it}$			
	Dependent Variable: ABS_TAXVOID			
	Expected Sign	**Coef.**	**t**	**P-value**
DERIV	+	-0.0086	-0.77	0.2205
DSPEC	+/-	-0.0041	-1.16	0.1230
DERIV*DSPEC	+	0.0240	1.70	**0.0445
SIZE	+/-	-0.0031	-3.86	***0.0000
ROA	+	0.0892	3.71	***0.0000
DTA	+/-	0.0102	1.76	**0.0390
CAPINT	+	0.0053	0.96	0.1685
D_PHIL	+/-	-0.0052	-0.71	0.2375
D_MALAY	+/-	-0.0241	-2.90	***0.0020
D_SING	+/-	-0.0180	-2.05	**0.0205
D10	+/-	-0.0033	-0.95	0.1720
D11	+/-	-0.0029	-0.88	0.1885
D12	+/-	0.0013	0.37	0.3560
D13	+/-	-0.0007	-0.19	0.4250
Constanta	+/-	0.0482	5.13	***0.0000
N-sampel		1426		
R-Square		5.74%		
F-stat		3.63		
p-value		0.0000		

Asterisks *, **, and *** denote one-tailed statistical significance at 10%, 5%, and 1%, respectively

Because quite a lot of companies that use financial derivatives for hedge or speculative purposes simultaneously in the same period, then DSPEC is measured by the proportions of the notional amount of financial derivatives for speculation purposes divided by total notional amount of financial derivatives. Table 8 shows the robustness test results of the second hypothesis (H2). From table 8, we know that coefficient on DERIV*DSPEC is significantly positive,

suggesting that DERIV*DSPEC has a significantly positive association with ABS_TAXVOID. This finding prove that positive association between the level of financial derivative use and the level of tax avoidance is higher in the user of financial derivatives for speculation purposes rather than the user of financial derivatives for hedging purposes.

5. Conclusion

This study uses a cross-country analysis which covering four countries in the ASEAN region, i.e.: the Philippines, Indonesia, Malaysia, and Singapore. The purpose of this study is to investigate the association between the level of financial derivatives use and the level of tax avoidance, and whether this association differs between the users of financial derivatives for speculation purposes and the users of financial derivative for hedging purposes.

We find positive association between the level of financial derivative use and the level of tax avoidance. Our finding suggests that the higher the level of financial derivative use, the higher the level of tax avoidance. This finding indicates that financial derivative can be used as a tool of tax avoidance activities. When we classified the users of financial derivatives into two categories (i.e., the users of financial derivative for hedging purposes and the users of financial derivatives for speculation purposes), we also find that positive association between the level of financial derivative use and the level of tax avoidance is higher in the user of financial derivatives for speculation purposes rather than the user of financial derivatives for hedging purposes. These findings are consistent with the empirical evidence found by Donohoe's studies (2011b).

This research is expected to provide suggestion for the tax authorities to determine the direction of future policy, for example, set a clearer tax regulation regarding the tax treatment of financial derivatives transactions. Improvement of tax regulations on derivative transactions are expected to: (i) minimize the loophole for companies that want to use financial derivatives as a tool of tax avoidance; (ii) minimize the loss of government revenues from taxes sector; and (iii) minimize the disputes between tax authorities and taxpayers.

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