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# THE EFFECT OF DERIVATIVE TRANSACTION ON PROFITS MANAGEMENT: THE MODERATING TESTING OF TAX AVOIDANCE

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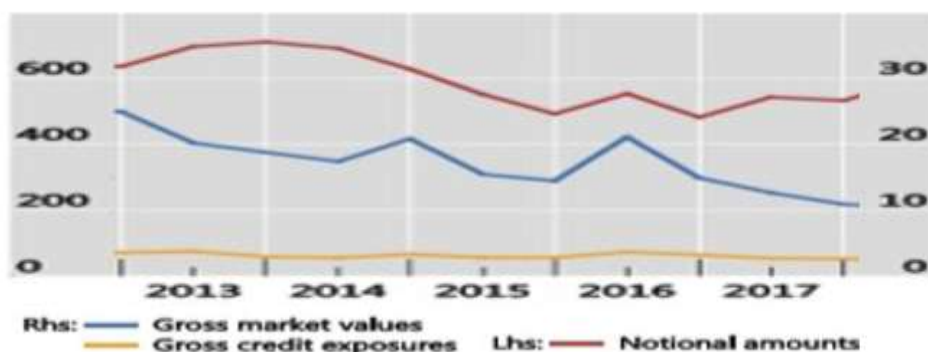
**ABSTRACT:** This study aims to examine and analyze the effect of the derivative transaction and tax avoidance on profits management of the non-financial firms listed on the stock exchange of Indonesia and the stock exchange of Thailand from 2013 until 2017 by employing firm size and growth as the control variable. This situation opens the opportunity to prove tax avoidance as the moderating variable becoming the novelty. Furthermore, tax avoidance and profits management get calculated by the book-tax difference and the residual of the Jaggi modified model, respectively. By considering these observed proxies, this study utilizes the regression model with pooled data to examine the proposed research hypotheses. Once testing the data and analyzing the result of hypotheses testing, this study concludes that derivative transaction becomes the reason for the firms to manage their profits. Surprisingly, when they comply with tax rule, the positive tendency of transacting derivative on earning management can get reduced.

**KEYWORDS:** corporate tax avoidance, derivative transactions, earnings management, residual of modified Jaggi model.

## I. INTRODUCTION

One of the drivers of derivative transactions is from the complaints of the wheat farmers in America in the 19th century. They complained that the price of wheat tended to fall during the great harvest and rise after it was over. To anticipate the decrease in the price, furthermore, the to-arrive contract got made. This contract locked the price for upcoming transactions; therefore, they obtained the certainty about the price in the future (Fischer, Hanauer, & Heigermoser, 2016; Rakowski, Shirley, & Stark, 2017; Brav, Jiang, Ma, & Tian, 2018).

Based on the statistical data from the Bank for International Settlement (BIS) website, overall, the value of the derivative transactions in the world measured by notional amounts tends to decrease from 2013 until 2017 (see Figure 1), where its value in 2013 is USD1.406 trillion. This value goes down to be USD493 trillion in 2015 and rises again to be USD1.074 trillion in 2017.



**Figure 1. Notional amounts of the derivative transactions in the world**  
 Source: Bank for International Settlement website

In Indonesia, overall, the derivative transactions on the capital market tend to grow from 247,507,111 contracts in 2013 to 596,633,650 contracts in 2017. The highest is in 2014. The real estate investment trust and the exchange-traded fund is in the first and the second preference to invest.

**Table 1. Trading Volume of Derivative Transactions from 2013 to 2017 in the Indonesia Capital Market**

Type of Instruments	2013	2014	2015	2016	2017
Right	30	22	21	35	41
Warrant	31	33	27	28	40
Future Trading	-	-	-	291	168
Exchange Trade Fund	119,879,775	11,747,100	22,212,400	54,025,900	245,019,000
Real Estate Investment Trust (REIT)	127,627,275	1,486,329,790	1,353,884,490	136,273,800	351,614,401
Total Volume	247,507,111	1,498,076,945	1,376,096,938	190,300,054	596,633,650

Source: IDX Fact Book (2018)

Similarly, the derivative transactions on Thai Future Exchange (TFEX) also increase from 16,664,126 contracts in 2013 to 78,990,574 contracts in 2017 (see Table 2). The highest one happens in 2017. The single stock futures and SET50 index futures become the first and the second preferences of investors to transact.

**Table 2. Trading Volume of Derivative Transactions from 2013 to 2017 in the Thai Capital Market**

Jenis Derivatif	2013	2014	2015	2016	2017
Single Stock Futures	8.415.967	19.624.561	19.708.113	33.826.624	47.480.762
SET50 Index Futures	5.688.404	14.403.574	26.764.395	32.192.984	26.321.073
Precious Metal Futures	2.208.505	1.541.704	1.461.536	2.903.950	3.691.785
Deferred Precious Metal	-	-	-	-	57.770
Currency Futures	239.345	309.926	271.754	204.470	346.890
Energy Futures	46.496	32.530	25.970	19.076	-
Agriculture Futures	-	-	-	250	10.613
SET 50 Index Options	65.409	108.855	307.131	428.810	1.081.681
Jumlah Volume Derivatif	16.664.126	36.021.150	48.538.899	69.576.164	78.990.574

Source: tfex.co.th

The research about derivative transactions (DT) gets generally connected with earnings management (EM). Associated with this topic, the impact of DT on EM is debatable because of two groups. The first group consists of the scholars who affirm supporting that DT can reduce EM (Coi, Mau, & Upadhyay, 2015). The second group contains the researchers who confirm DT can facilitate EM (Murwaningsari, Utama, & Rossieta, 2015; Oktavia, Siregar, Wardhani, & Rahayu, 2019).

Similarly, the previous research evidence about tax avoidance (TA) as the antecedence of earnings management (EM) shows the influence of TA on EM can be positive (Sari & Purwaningsih, 2014; Putri, Rohman, & Chariri, 2016; Sebrina, Helmayunita, & Karinda, 2018; Razali, Yi, Brahmama, & Tak, 2019) or negative (Putri & Fadhlia, 2017). Besides investigating the effect of derivative transactions and tax avoidance on earnings management, this research wants to prove tax avoidance as the moderating variable by examining the interaction effect of DT with TA to result in the finding.

## II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Profit Management

Profits management (PM) is the manager's intervention on the financial reporting information to get the personal benefit. Managers manipulate profits to achieve what they want. The measurement of PM adopts the residual of the Jaggi model modified by the additional variable, net derivative (ND) as a net of derivative asset and liability

in balance sheet (see equation 1). This original model, as declared by Jaggi et al. (2009), uses the total accruals (TAC) as the dependent variable and three proxies of the operating cash flow [OCF(t-1), OCF(t), and OCF(t+1)], and two proxies of the quality of accrual: change in revenue (ΔR) and property, plant, and equipment (PPE).

$$TAC_{i,t} = \delta_0 + \delta_1 CFO_{i,t-1} + \delta_2 CFO_{i,t} + \delta_3 CFO_{i,t+1} + \delta_4 \Delta Rev_{i,t} + \delta_5 PPE_{i,t} + \delta_6 ND_{i,t} + \varepsilon_{i,t} \dots \dots \dots (1)$$

Some notes related to the first equation is as follows.

- TAC of the firm at the time t calculated by the formula in equation 1a.
- TAC = (Profits before extraordinary account + depreciation + amortization) – OCF .....(1a)
- All the variables get already divided by total assets.
- ε<sub>1</sub> is the residual based on the modified Jaggi model.

**Derivative transaction**

A derivative is a financial contract-based instrument, where its value depends on the underlying assets (Hanafi, 2017). The derivative transaction is useful to overcome the financial risk of the company through the hedging. By hedging, the company can protect the fair value of its assets or liabilities from the uncertainty in the future (Darussalam & Septriadi, 2009). Besides hedging, according to Darussalam & Septriadi (2009), the company can utilize the derivatives for speculation. The government in some countries sets and applies different tax rules if the losses happen. By denoting Allayannis (2001), Barton (2001), and Oktavia et al. (2019), moreover, derivative transaction (DT) is measured by the ratio of the total notional derivatives to the previous total assets (see equation 2).

$$DT = \frac{Notional\ derivative_t}{Total\ assets_{t-1}} \dots \dots \dots (2)$$

**Tax Avoidance**

Tax avoidance is the way of the firm to get the reduction of taxes legally by utilizing dodges from the tax regulation in a country. Also, it is the form of tax planning done by the firm before the duty of tax payment stands up (Agrawal, 2007). By following Tang & Firth (2011), Blaylock, Shevlin, & Wilson (2012), Wang & Chen (2012), Sari & Purwaningsih (2014), as well as Putri & Fadhlia (2017), this study uses the book-tax difference (BTD) as the measurement of tax avoidance. The formula of BTD, furthermore, can get looked at in equation three.

$$BTD = \frac{(Accounting\ profits - Taxable\ profits)_t}{(Total\ assets)_t} = \frac{(Commercial\ profits - \frac{Tax\ expense}{Tax\ rate})_t}{(Total\ assets)_t} \dots \dots \dots (3)$$

**The effect of the derivative transaction on the tendency of the firms to manage profits**

In their study, Devi and Effendi (2018) attempt to prove the derivative transaction as the toll to manage profits. They explain that the company can fasten to recognize the loss of speculative derivative transactions to postpone the realization of the earnings. Similarly, Murwaningsari et al. (2015) and Oktavia et al. (2019) find that derivative transactions positively affect earnings management measured by discretionary accrual. According to these explanations, we propose the first hypothesis as follows.

H<sub>1</sub>: Derivative transaction increases the tendency of managing profits.

**The effect of tax avoidance on the tendency of the firms to manage profit**

Besides the derivative transaction, another reason for the firms to manage their earnings is to avoid tax. Similar to this statement, Sari & Purwaningsih (2014) prove a positive impact of tax avoidance on earnings management; correspondingly, Putri et al. (2016), Sebrina et al. (2018), and Razali et al. (2019) confirm that evidence. According to these explanations, we propose the first hypothesis as follows.

H<sub>2</sub>: Tax avoidance increases the tendency of managing profits.

**The moderating effect of tax avoidance on the impact of the derivative transaction on the tendency of the firms to manage profits**

The lower the book-tax difference (BTD), the higher the obedience of the firms on tax regulations. Consequently, the potency to manage earnings gets dropped. By assuming the effect of obeying tax regulation is stronger than that of transacting derivatives to manipulate earnings, the interaction between BTD and the derivative transaction (DT) will affect profits management negatively. In other words, the positive influence of

BTD on managing earnings will get reduced when firms comply with the tax regulation. According to these explanations, we propose the third hypothesis as follows.

H<sub>3</sub>: Interaction between BTD and the derivative transaction tends to drop profits management.

**III. RESEARCH METHOD**

**Variable definition**

This research uses two kinds of variables. Firstly, the dependent variable named profits management measured by the residual ( $\epsilon_1$ ) of the modified model of Jaggi et al. (2009) in the first equation. Secondly, the explaining variables consisting of derivative transactions, tax avoidance, firm growth, and firm size.

- a. To measure derivative transactions (TD), we use the ratio of the total notional derivatives to the previous total assets based on the second equation.
- b. To calculate tax avoidance, we use the book-tax difference (BTD) by mentioning the third equation.
- c. To compute the firm growth and size, we use the total assets growing and the natural logarithm of total assets.

**The population and sample**

The population comes from the non-financial firms from 2013 to 2017 listed on the capital market of Indonesia and Thailand. The samples get obtained by purposive sampling with two criteria, i.e., the firms have to own the derivative transaction and the complete financial statements (see the details in Table 1). Furthermore, the names of the non-financial firms used can get looked at in Appendix 1.

<b>Table 1. The process of getting the number of firms based on the criteria in the purposive sampling method</b>			
Description/criteria	The number of non-financial firms in		Total firms
	Indonesia capital market	Thai capital market	
The consistent firms from 2013 until 2017	□□□	□□□	□□□□□
The consistent firms without DT	□□□□□	□□□□□	□□□□□□□
The consistent firms with DT	□□	□□□	□□□
The consistent firms with DT and do not own the financial reports completely	□□□	□□□□	□□□□
The consistent firms with DT and have financial reports completely	□□	□□	□□

**The method of analyzing data**

After considering the characteristics of the data and variables, this study uses the regression model with pooled data, i.e., the combination of cross-sectional and time-series data, estimated by ordinary least square technique (Nachrowi & Usman, 2006). The cross-sectional and time-series data intended are firms with a sum of 91 and years with a total of 5. Moreover, the regression model exists in equation 4.

$$RMJJ_{it} = \beta_0 + \beta_1DT_{it} + \beta_2BTD_{it} + \beta_3DT*BTD_{it} + \beta_4TAG_{it} + \beta_5LN\_TA_{it} + \epsilon_{it} \dots\dots\dots(4)$$

**IV. RESULT AND DISCUSSION**

**The result of descriptive statistics**

This study employs 91 non-financial firms for 5 years; hence, 455 observations (N) exist. Table 1 presents the statistics to describe the variables based on this number, i.e., average, minimum, maximum, and standard deviation.

- a. The residual of the modified model of Jaggi et al. (2009) (RMMJ) has average, minimum, maximum, and standard deviation of 0.0389, -0.08, 0.16, and 0.03850, respectively.
- b. Derivative transactions (DT) measured by the ratio of the total notional derivatives to the previous total assets have average, minimum, maximum, and standard deviation 0.1322, -0.59, 0.86, and 0.23151, individually.
- c. Tax avoidance measured by the book-tax difference has average, minimum, maximum, and standard deviation of 0.0155, -0.22, 0.25, and 0.07611, correspondingly.
- d. Firm growth measured by the total assets growing (TAG) has average, minimum, maximum, and standard deviation of 0.1076, -1.14, 1.36, and 0.39895, individually.
- e. Firm size measured by the natural logarithm of total assets (LN\_TA) owns average, minimum, maximum, and standard deviation of 20.6844, 16.22, 25.15, and 1.42097, one-to-one.

Table 1. Descriptive Statistics					
Variable	N	Mean	Minimum	Maximum	Std. Deviation
RMMJ	455	0.0389	-0.08	0.16	0.03850
TD	455	0.1322	-0.59	0.86	0.23151
BTD	455	0.0155	-0.22	0.25	0.07611
TAG	455	0.1076	-1.14	1.36	0.39895
LN_TA	455	20.6844	16.22	25.15	1.42097

Source: Output of IBM SPSS 20

**The result of the regression model estimation**

Table 2 shows the estimation result of the regression model. This model contains two parts: the restricted and the unrestricted ones to prove tax avoidance as the moderating variables by the interaction effect testing. Moreover, to test the hypotheses proposed, this study utilized the regression estimation in the unrestricted model.

Table 2. The Estimation Result of Profits Management Model: RMMJ = f[DT, BTD, TD*BTD, TAG, LN(TA)]								
Independent Variable	Restricted Model				Unrestricted Model			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
C	0.097025	0.026171	3.707306	0.0002	0.097281	0.026088	3.728887	0.0002
DT	0.011779	0.007913	1.488548	0.1373	0.016146	0.008194	1.970462	0.0494
BTD	-0.069877	0.024057	-2.904671	0.0039	-0.040950	0.028126	-1.455951	0.1461
DT*BTD					-0.185265	0.094127	-1.968234	0.0497
TAG	0.007896	0.004648	1.698626	0.0901	0.008051	0.004634	1.737276	0.0830
LN_TA	-0.002873	0.001261	-2.277563	0.0232	-0.002896	0.001257	-2.303039	0.0217
Adjusted R <sup>2</sup>	0.030448				0.036601			
Prob. ΔF-statistic (1,449)					0.0497			

Source: Modified Output of E-Views 7

**The result of the hypotheses testing**

By referring to Table 2, DT shows a positive effect on profits management. This condition gets proven by the probability value of the t-statistic of 0.0494, which is lower than the 0.05 significance level. Based on this fact, the first hypothesis (H<sub>1</sub>) gets accepted.

In the same table, the tax avoidance affects profits management negatively (see the probability of the t-statistic of 0.0039 for BTD in the restricted model that is less than 0.05 significance level). Unfortunately, this effect is not significant in the unrestricted model, shown by the probability of BTD of 0.1461 exceeding 0.05 as the significance level. Based on this fact, the second hypothesis (H<sub>2</sub>) gets refused so that tax avoidance does not influence profits management.

Furthermore, this negative effect of BTD in the restricted model is consistent until its interaction with the derivative transaction appears in the unrestricted model (see the probability of the t-statistic of 0.0497 for DT\*BTD that is still less than the 0.05 significance level). This condition means the obedience of the firm on tax regulation can reduce the positive impact of the derivative transactions on earnings management. By considering this circumstance based on Ghozali (2016), tax avoidance is the pure moderating variable. Based on this fact, the third hypothesis (H<sub>3</sub>) gets acknowledge.

**V. DISCUSSION**

By accepting H<sub>1</sub>, this research supports the signaling theory of Spence (1973). In this context, derivative transactions can be a signal of earnings management to the market participants and the study of Murwaningsari et al. (2015) and Oktavia et al. (2019). The firms in Indonesia and Thailand utilize the derivatives to anticipate the depreciation of their currency to USD because they finance the operating activities by USD. Hence, the managers can determine the time to delay or fasten the gain or losses to make the firms perform well.

By refusing H<sub>2</sub> and accepting H<sub>3</sub>, this research does not support the existing studies documenting a positive effect of tax avoidance on earning management (Sari & Purwaningsih, 2014; Putri et al. 2016; Sebrina et al., 2018; Razali et al., 2019) or a negative one (Putri & Fadhli, 2017), but demonstrates that the obedience of the firms to the tax regulation can reduce the positive propensity of managers to utilize the derivative transactions to manage their earnings.

## VI. CONCLUSION AND RECOMMENDATIONS

This research aims to investigate and analyze the effect of derivative transactions and tax avoidance on earnings management. By having tests and analyzing the hypotheses proposed, overall, this research shows some evidence. Firstly, earnings management is affected by the derivative transaction positively. Secondly, the positive effect of the derivative transaction on earnings management tend to decrease when the firms conform the tax rule.

By referring to some research evidence, this study gives two suggestions. The first is the practical ones, addressed to the leader and the members of the supervisory board.

- Firstly, the leader and the members of the supervising board need to strictly monitor the manager's transaction in the derivatives by motivating them to cover the firm position from risks through hedging to reduce earnings management.
- Secondly, the supervisory board has to encourage the managers to follow the tax regulation because their obedience can reduce earnings management that makes the firms trusted by the public shareholders. The second is the academic suggestions for the next scholars to make some improvements based on this study.
- Firstly, this regression model has a low adjusted R-square of 0.036601, as seen in Table 2, showing the model has no sufficient power to predict. To enhance the prediction power, the next scholars can add several variables into this model, for example, the number and the independence of the supervising board, leverage, profitability, growth opportunity, and dividend policy.
- Secondly, this research only utilizes firms with derivative transactions from two countries. Hence, this study suggests the next scholars add the number of countries with the capital market in Southeast Asia except for Timor-Leste and Brunei. Furthermore, they can test the moderating variable based on the occupied countries by the multi-group analysis.

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Appendix 1. The name of the firm based on the country name			
The country name	No	Stock Code	The name of the firm
Indonesia	1	ADRO	Adaro Energy Tbk
Indonesia	2	ASGR	Astra Graphia Tbk
Indonesia	3	ASII	Astra International Tbk
Indonesia	4	BWPT	Eagle High Plantations Tbk
Indonesia	5	BYAN	Bayan Resources Tbk
Indonesia	6	CTRA	Ciputra Development Tbk
Indonesia	7	DOID	Delta Dunia Makmur Tbk
Indonesia	8	DSSA	Dian Swastatika Sentosa Tbk
Indonesia	9	EXCL	XL Axiata Tbk
Indonesia	10	FISH	FKS Multi Agro Tbk
Indonesia	11	HERO	Hero Supermarket Tbk
Indonesia	12	HMSP	HM Sampoerna Tbk
Indonesia	13	IMAS	Indomobil Sukses Internasional Tbk
Indonesia	14	INDF	Indofood Sukses Makmur Tbk
Indonesia	15	ITMG	Indo Tambangraya Megah Tbk
Indonesia	16	JKON	Jaya Konstruksi Manggala Pratama Tbk
Indonesia	17	JPFA	JAPFA Comfeed Indonesia Tbk
Indonesia	18	KBLI	KMI Wire and Cable Tbk
Indonesia	19	KIJA	Kawasan Industri Jababeka Tbk
Indonesia	20	LPKR	Lippo Karawaci Tbk
Indonesia	21	LTLS	Lautan Luas Tbk



<b>Appendix 1. The name of the firm based on the country name</b>			
The country name	No	Stock Code	The name of the firm
Indonesia	22	MAPI	Mitra Adiperkasa Tbk
Indonesia	23	MDLN	Modernland Realty Ltd Tbk
Indonesia	24	MEDC	Medco Energi Internasional Tbk
Indonesia	25	MLBI	Multi Bintang Indonesia Tbk
Indonesia	26	PGAS	Perusahaan Gas Negara (Persero) Tbk
Indonesia	27	PLIN	Plaza Indonesia Realty Tbk
Indonesia	28	PTBA	Tambang Batubara Bukit Asam Tbk
Indonesia	29	PWON	Pakuwon Jati Tbk
Indonesia	30	RUIS	Radiant Utama Interinsco Tbk
Indonesia	31	SMCB	Holcim Indonesia Tbk
Indonesia	32	SMDM	Suryamas Dutamakmur Tbk
Indonesia	33	SMSM	Selamat Sempurna Tbk
Indonesia	34	TBIG	PT Tower Bersama Infrastructure Tbk
Indonesia	35	TBLA	Tunas Baru Lampung Tbk
Indonesia	36	TLKM	Telekomunikasi Indonesia (Persero) Tbk
Indonesia	37	TMAS	Pelayaran Tempuran Emas Tbk
Indonesia	38	TOWR	Sarana Menara Nusantara Tbk
Indonesia	39	TRST	Trias Sentosa Tbk
Indonesia	40	TURI	Tunas Ridean Tbk
Indonesia	41	ULTJ	Ultra Jaya Milk Industry Tbk
Indonesia	42	UNTR	United Tractors Tbk
Indonesia	43	UNVR	Unilever Indonesia Tbk
Thailand	1	AAV	Asia Aviation Public Company Limited
Thailand	2	AOT	Aeon Thana Sinsap (Thailand) Public Company Limited
Thailand	3	BANPU	Advanced Information Technology Public Company Limited
Thailand	4	BCP	Airports Of Thailand Public Company Limited
Thailand	5	BDMS	Bangkok Airways Public Company Limited
Thailand	6	BJC	Bangkok Aviation Fuel Services Public Company Limited
Thailand	7	BTS	Banpu Public Company Limited
Thailand	8	CK	Bangchak Corporation Public Company Limited
Thailand	9	CKP	Bangkok Dusit Medical Services Public Company Limited
Thailand	10	CPF	Berli Jucker Public Company Limited
Thailand	11	CPN	Buriram Sugar Public Company Limited
Thailand	12	DTAC	BTS Group Holdings Public Company Limited
Thailand	13	EA	Seafresh Industry Public Company Limited
Thailand	14	EGCO	Cho Thavee Public Company Limited
Thailand	15	GLOBAL	Chow Steel Industries Public Company Limited
Thailand	16	HANA	CH Karnchang Public Company Limited
Thailand	17	INTUCH	CK Power Public Company Limited
Thailand	18	IVL	Charoen Pokphand Foods Public Company Limited
Thailand	19	LH	Central Pattana Public Company Limited
Thailand	20	MINT	Delta Electronics (Thailand) Public Company Limited

<b>Appendix 1. The name of the firm based on the country name</b>			
The country name	No	Stock Code	The name of the firm
Thailand	21	PTTGC	Total Access Communication Public Company Limited
Thailand	22	SCC	Energy Absolute Public Company Limited
Thailand	23	SGP	Electricity Generating Public Company Limited
Thailand	24	STA	GFPT Public Company Limited
Thailand	25	TOP	Siam Global House Public Company Limited
Thailand	26	WHA	Hana Microelectronics Public Company Limited
Thailand	27	CFRESH	Intouch Holdings Public Company Limited
Thailand	28	CHO	Inoue Rubber (Thailand) Public Company Limited
Thailand	29	CHOW	Indorama Ventures Public Company Limited
Thailand	30	DELTA	Khonburi Sugar Public Company Limited
Thailand	31	GFPT	Khon Kaen Sugar Industry Public Company Limited
Thailand	32	IRC	The Lanna Resources Public Company Limited
Thailand	33	KBS	Land And Houses Public Company Limited
Thailand	34	KSL	MK Restaurant Group Public Company Limited
Thailand	35	LANNA	Minor International Public Company Limited
Thailand	36	M	Modernform Group Public Company Limited
Thailand	37	MODERN	Padaeng Industry Public Company Limited
Thailand	38	PDI	PTT Global Chemical Public Company Limited
Thailand	39	AEONTS	QTC Energy Public Company Limited
Thailand	40	AIT	Samart Telcoms Public Company Limited
Thailand	41	BAFS	Somboon Advance Technology Public Company Limited
Thailand	42	QTC	The Siam Cement Public Company Limited
Thailand	43	SAMTEL	Siam City Cement Public Company Limited
Thailand	44	SAT	Samart Digital Public Company Limited
Thailand	45	SCCC	Siamgas and Petrochemicals Public Company Limited
Thailand	46	SDC	Sri Trang Agro-Industry Public Company Limited
Thailand	47	BA	Thai Oil Public Company Limited
Thailand	48	BRR	Wha Corporation Public Company Limited

# THE EFFECT OF DERIVATIVE TRANSACTION ON PROFITS MANAGEMENT: THE MODERATING TESTING OF TAX AVOIDANCE

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# THE EFFECT OF DERIVATIVE TRANSACTION ON PROFITS MANAGEMENT: THE MODERATING TESTING OF TAX AVOIDANCE

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**ABSTRACT:** This study aims to examine and analyze the effect of the derivative transaction and tax avoidance on profits management of the non-financial firms listed on the stock exchange of Indonesia and the stock exchange of Thailand from 2013 until 2017 by employing firm size and growth as the control variable. This situation opens the opportunity to prove tax avoidance as the moderating variable becoming the novelty. Furthermore, tax avoidance and profits management get calculated by the book-tax difference and the residual of the Jaggi modified model, respectively. By considering these observed proxies, this study utilizes the regression model with pooled data to examine the proposed research hypotheses. Once testing the data and analyzing the result of hypotheses testing, this study concludes that derivative transaction becomes the reason for the firms to manage their profits. Surprisingly, when they comply with tax rule, the positive tendency of transacting derivative on earning management can get reduced.

**KEYWORDS:** corporate tax avoidance, derivative transactions, earnings management, residual of modified Jaggi model.

## I. INTRODUCTION

One of the drivers of derivative transactions is from the complaints of the wheat farmers in America in the 19th century. They complained that the price of wheat tended to fall during the great harvest and rise after it was over. To anticipate the decrease in the price, furthermore, the to-arrive contract got made. This contract locked the price for upcoming transactions; therefore, they obtained the certainty about the price in the future (Fischer, Hanauer, & Heigermoser, 2016; Rakowski, Shirley, & Stark, 2017; Brav, Jiang, Ma, & Tian, 2018).

Based on the statistical data from the Bank for International Settlement (BIS) website, overall, the value of the derivative transactions in the world measured by notional amounts tends to decrease from 2013 until 2017 (see Figure 1), where its value in 2013 is USD1.406 trillion. This value goes down to be USD493 trillion in 2015 and rises again to be USD1.074 trillion in 2017.

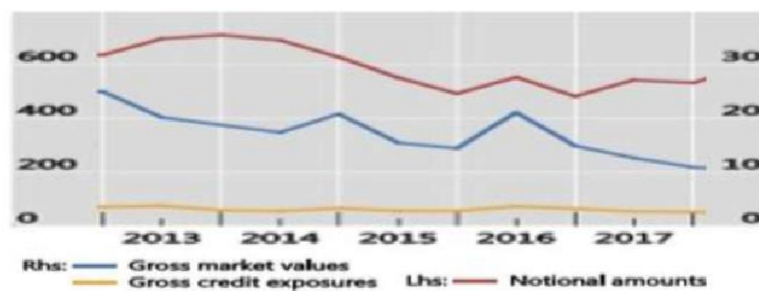


Figure 1. Notional amounts of the derivative transactions in the world  
Source: Bank for International Settlement website

In Indonesia, overall, the derivative transactions on the capital market tend to grow from 247,507,111 contracts in 2013 to 596,633,650 contracts in 2017. The highest is in 2014. The real estate investment trust and the exchange-traded fund is in the first and the second preference to invest.

**Table 1. Trading Volume of Derivative Transactions from 2013 to 2017 in the Indonesia Capital Market**

Type of Instruments	2013	2014	2015	2016	2017
Right	30	22	21	35	41
Warrant	31	33	27	28	40
Future Trading	-	-	-	291	168
Exchange Trade Fund	119,879,775	11,747,100	22,212,400	54,025,900	245,019,000
Real Estate Investment Trust (REIT)	127,627,275	1,486,329,790	1,353,884,490	136,273,800	351,614,401
<b>Total Volume</b>	<b>247,507,111</b>	<b>1,498,076,945</b>	<b>1,376,096,938</b>	<b>190,300,054</b>	<b>596,633,650</b>

Source: IDX Fact Book (2018)

Similarly, the derivative transactions on Thai Future Exchange (TFEX) also increase from 16,664,126 contracts in 2013 to 78,990,574 contracts in 2017 (see Table 2). The highest one happens in 2017. The single stock futures and SET50 index futures become the first and the second preferences of investors to transact.

**Table 2. Trading Volume of Derivative Transactions from 2013 to 2017 in the Thai Capital Market**

Jenis Derivatif	2013	2014	2015	2016	2017
<b>Single Stock Futures</b>	8.415.967	19.624.561	19.708.113	33.826.624	47.480.762
<b>SET50 Index Futures</b>	5.688.404	14.403.574	26.764.395	32.192.984	26.321.073
<b>Precious Metal Futures</b>	2.208.505	1.541.704	1.461.536	2.903.950	3.691.785
<b>Deferred Precious Metal</b>	-	-	-	-	57.770
<b>Currency Futures</b>	239.345	309.926	271.754	204.470	346.890
<b>Energy Futures</b>	46.496	32.530	25.970	19.076	-
<b>Agriculture Futures</b>	-	-	-	250	10.613
<b>SET 50 Index Options</b>	65.409	108.855	307.131	428.810	1.081.681
<b>Jumlah Volume Derivatif</b>	<b>16.664.126</b>	<b>36.021.150</b>	<b>48.538.899</b>	<b>69.576.164</b>	<b>78.990.574</b>

Source: tfex.co.th

The research about derivative transactions (DT) gets generally connected with earnings management (EM). Associated with this topic, the impact of DT on EM is debatable because of two groups. The first group consists of the scholars who affirm supporting that DT can reduce EM (Coi, Mau, & Upadhyay, 2015). The second group contains the researchers who confirm DT can facilitate EM (Murwaningsari, Utama, & Rossieta, 2015; Oktavia, Siregar, Wardhani, & Rahayu, 2019).

Similarly, the previous research evidence about tax avoidance (TA) as the antecedence of earnings management (EM) shows the influence of TA on EM can be positive (Sari & Purwaningsih, 2014; Putri, Rohman, & Chariri, 2016; Sebrina, Helmayunita, & Karinda, 2018; Razali, Yi, Brahmata, & Tak, 2019) or negative (Putri & Fadhli, 2017). Besides investigating the effect of derivative transactions and tax avoidance on earnings management, this research wants to prove tax avoidance as the moderating variable by examining the interaction effect of DT with TA to result in the finding.

## II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Profit Management

Profits management (PM) is the manager's intervention on the financial reporting information to get the personal benefit. Managers manipulate profits to achieve what they want. The measurement of PM adopts the residual of the Jaggi model modified by the additional variable, net derivative (ND) as a net of derivative asset and liability

in balance sheet (see equation 1). This original model, as declared by Jaggi et al. (2009), uses the total accruals (TAC) as the dependent variable and three proxies of the operating cash flow [OCF(t-1), OCF(t), and OCF(t+1)], and two proxies of the quality of accrual: change in revenue (ΔR) and property, plant, and equipment (PPE).

$$TAC_{i,t} = \delta_0 + \delta_1 CFO_{i,t-1} + \delta_2 CFO_{i,t} + \delta_3 CFO_{i,t+1} + \delta_4 \Delta Rev_{i,t} + \delta_5 PPE_{i,t} + \delta_6 ND_{i,t} + \varepsilon_{i,t} \dots \dots \dots (1)$$

Some notes related to the first equation is as follows.

- TAC of the firm at the time t calculated by the formula in equation 1a.
- TAC = (Profits before extraordinary account + depreciation + amortization) – OCF .....(1a)
- All the variables get already divided by total assets.
- $\varepsilon_t$  is the residual based on the modified Jaggi model.

**Derivative transaction**

A derivative is a financial contract-based instrument, where its value depends on the underlying assets (Hanafi, 2017). The derivative transaction is useful to overcome the financial risk of the company through the hedging. By hedging, the company can protect the fair value of its assets or liabilities from the uncertainty in the future (Darussalam & Septriadi, 2009). Besides hedging, according to Darussalam & Septriadi (2009), the company can utilize the derivatives for speculation. The government in some countries sets and applies different tax rules if the losses happen. By denoting Allayannis (2001), Barton (2001), and Oktavia et al. (2019), moreover, derivative transaction (DT) is measured by the ratio of the total notional derivatives to the previous total assets (see equation 2).

$$DT = \frac{Notional\ derivative_t}{Total\ assets_{t-1}} \dots \dots \dots (2)$$

**Tax Avoidance**

Tax avoidance is the way of the firm to get the reduction of taxes legally by utilizing dodges from the tax regulation in a country. Also, it is the form of tax planning done by the firm before the duty of tax payment stands up (Agrawal, 2007). By following Tang & Firth (2011), Blaylock, Shevlin, & Wilson (2012), Wang & Chen (2012), Sari & Purwaningsih (2014), as well as Putri & Fadhli (2017), this study uses the book-tax difference (BTD) as the measurement of tax avoidance. The formula of BTD, furthermore, can get looked at in equation three.

$$BTD = \frac{(Accounting\ profits - Taxable\ profits)_t}{(Total\ assets)_t} = \frac{(Commercial\ profits - \frac{Tax\ expense}{Tax\ rate})_t}{(Total\ assets)_t} \dots \dots \dots (3)$$

**The effect of the derivative transaction on the tendency of the firms to manage profits**

In their study, Devi and Effendi (2018) attempt to prove the derivative transaction as the toll to manage profits. They explain that the company can fasten to recognize the loss of speculative derivative transactions to postpone the realization of the earnings. Similarly, Murwaningsari et al. (2015) and Oktavia et al. (2019) find that derivative transactions positively affect earnings management measured by discretionary accrual. According to these explanations, we propose the first hypothesis as follows.  
H<sub>1</sub>: Derivative transaction increases the tendency of managing profits.

**The effect of tax avoidance on the tendency of the firms to manage profit**

Besides the derivative transaction, another reason for the firms to manage their earnings is to avoid tax. Similar to this statement, Sari & Purwaningsih (2014) prove a positive impact of tax avoidance on earnings management; correspondingly, Putri et al. (2016), Sebrina et al. (2018), and Razali et al. (2019) confirm that evidence. According to these explanations, we propose the first hypothesis as follows.  
H<sub>2</sub>: Tax avoidance increases the tendency of managing profits.

**The moderating effect of tax avoidance on the impact of the derivative transaction on the tendency of the firms to manage profits**

The lower the book-tax difference (BTD), the higher the obedience of the firms on tax regulations. Consequently, the potency to manage earnings gets dropped. By assuming the effect of obeying tax regulation is stronger than that of transacting derivatives to manipulate earnings, the interaction between BTD and the derivative transaction (DT) will affect profits management negatively. In other words, the positive influence of

BTD on managing earnings will get reduced when firms comply with the tax regulation. According to these explanations, we propose the third hypothesis as follows.

H<sub>3</sub>: Interaction between BTD and the derivative transaction tends to drop profits management.

**III. RESEARCH METHOD**

**Variable definition**

This research uses two kinds of variables. Firstly, the dependent variable named profits management measured by the residual (ε<sub>1</sub>) of the modified model of Jaggi et al. (2009) in the first equation. Secondly, the explaining variables consisting of derivative transactions, tax avoidance, firm growth, and firm size.

- a. To measure derivative transactions (TD), we use the ratio of the total notional derivatives to the previous total assets based on the second equation.
- b. To calculate tax avoidance, we use the book-tax difference (BTD) by mentioning the third equation.
- c. To compute the firm growth and size, we use the total assets growing and the natural logarithm of total assets.

**The population and sample**

The population comes from the non-financial firms from 2013 to 2017 listed on the capital market of Indonesia and Thailand. The samples get obtained by purposive sampling with two criteria, i.e., the firms have to own the derivative transaction and the complete financial statements (see the details in Table 1). Furthermore, the names of the non-financial firms used can get looked at in Appendix 1.

Description/criteria	The number of non-financial firms in		Total firms
	Indonesia capital market	Thai capital market	
The consistent firms from 2013 until 2017	□□□	□□□	□□□□□
The consistent firms without DT	□□□□□	□□□□□	□□□□□□□
The consistent firms with DT	□□	□□□	□□□
The consistent firms with DT and do not own the financial reports completely	□□□	□□□□	□□□□
The consistent firms with DT and have financial reports completely	□□	□□	□□

**The method of analyzing data**

After considering the characteristics of the data and variables, this study uses the regression model with pooled data, i.e., the combination of cross-sectional and time-series data, estimated by ordinary least square technique (Nachrowi & Usman, 2006). The cross-sectional and time-series data intended are firms with a sum of 91 and years with a total of 5. Moreover, the regression model exists in equation 4.

$$RMJJ_{it} = \beta_0 + \beta_1DT_{it} + \beta_2BTD_{it} + \beta_3DT*BTD_{it} + \beta_4TAG_{it} + \beta_5LN\_TA_{it} + \epsilon_{it} \dots\dots\dots(4)$$

**IV. RESULT AND DISCUSSION**

**The result of descriptive statistics**

This study employs 91 non-financial firms for 5 years; hence, 455 observations (N) exist. Table 1 presents the statistics to describe the variables based on this number, i.e., average, minimum, maximum, and standard deviation.

- a. The residual of the modified model of Jaggi et al. (2009) (RMMJ) has average, minimum, maximum, and standard deviation of 0.0389, -0.08, 0.16, and 0.03850, respectively.
- b. Derivative transactions (DT) measured by the ratio of the total notional derivatives to the previous total assets have average, minimum, maximum, and standard deviation 0.1322, -0.59, 0.86, and 0.23151, individually.
- c. Tax avoidance measured by the book-tax difference has average, minimum, maximum, and standard deviation of 0.0155, -0.22, 0.25, and 0.07611, correspondingly.
- d. Firm growth measured by the total assets growing (TAG) has average, minimum, maximum, and standard deviation of 0.1076, -1.14, 1.36, and 0.39895, individually.
- e. Firm size measured by the natural logarithm of total assets (LN\_TA) owns average, minimum, maximum, and standard deviation of 20.6844, 16.22, 25.15, and 1.42097, one-to-one.

Variable	N	Mean	Minimum	Maximum	Std. Deviation
RMMJ	455	0.0389	-0.08	0.16	0.03850
TD	455	0.1322	-0.59	0.86	0.23151
BTD	455	0.0155	-0.22	0.25	0.07611
TAG	455	0.1076	-1.14	1.36	0.39895
LN_TA	455	20.6844	16.22	25.15	1.42097

**Source: Output of IBM SPSS 20**

**The result of the regression model estimation**

Table 2 shows the estimation result of the regression model. This model contains two parts: the restricted and the unrestricted ones to prove tax avoidance as the moderating variables by the interaction effect testing. Moreover, to test the hypotheses proposed, this study utilized the regression estimation in the unrestricted model.

Independent Variable	Restricted Model				Unrestricted Model			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
C	0.097025	0.026171	3.707306	0.0002	0.097281	0.026088	3.728887	0.0002
DT	0.011779	0.007913	1.488548	0.1373	0.016146	0.008194	1.970462	0.0494
BTD	-0.069877	0.024057	-2.904671	0.0039	-0.040950	0.028126	-1.455951	0.1461
DT*BTD					-0.185265	0.094127	-1.968234	0.0497
TAG	0.007896	0.004648	1.698626	0.0901	0.008051	0.004634	1.737276	0.0830
LN_TA	-0.002873	0.001261	-2.277563	0.0232	-0.002896	0.001257	-2.303039	0.0217
Adjusted R <sup>2</sup>	0.030448				0.036601			
Prob. ΔF-statistic (1,449)					0.0497			

**Source: Modified Output of E-Views 7**

**The result of the hypotheses testing**

By referring to Table 2, DT shows a positive effect on profits management. This condition gets proven by the probability value of the t-statistic of 0.0494, which is lower than the 0.05 significance level. Based on this fact, the first hypothesis (H<sub>1</sub>) gets accepted.

In the same table, the tax avoidance affects profits management negatively (see the probability of the t-statistic of 0.0039 for BTD in the restricted model that is less than 0.05 significance level). Unfortunately, this effect is not significant in the unrestricted model, shown by the probability of BTD of 0.1461 exceeding 0.05 as the significance level. Based on this fact, the second hypothesis (H<sub>2</sub>) gets refused so that tax avoidance does not influence profits management.

Furthermore, this negative effect of BTD in the restricted model is consistent until its interaction with the derivative transaction appears in the unrestricted model (see the probability of the t-statistic of 0.0497 for DT\*BTD that is still less than the 0.05 significance level). This condition means the obedience of the firm on tax regulation can reduce the positive impact of the derivative transactions on earnings management. By considering this circumstance based on Ghozali (2016), tax avoidance is the pure moderating variable. Based on this fact, the third hypothesis (H<sub>3</sub>) gets acknowledge.

**V. DISCUSSION**

By accepting H<sub>1</sub>, this research supports the signaling theory of Spence (1973). In this context, derivative transactions can be a signal of earnings management to the market participants and the study of Murwaningsari et al. (2015) and Oktavia et al. (2019). The firms in Indonesia and Thailand utilize the derivatives to anticipate the depreciation of their currency to USD because they finance the operating activities by USD. Hence, the managers can determine the time to delay or fasten the gain or losses to make the firms perform well.

By refusing H<sub>2</sub> and accepting H<sub>3</sub>, this research does not support the existing studies documenting a positive effect of tax avoidance on earning management (Sari & Purwaningsih, 2014; Putri et al. 2016; Sebrina et al., 2018; Razali et al., 2019) or a negative one (Putri & Fadhlia, 2017), but demonstrates that the obedience of the firms to the tax regulation can reduce the positive propensity of managers to utilize the derivative transactions to manage their earnings.



## VI. CONCLUSION AND RECOMMENDATIONS

This research aims to investigate and analyze the effect of derivative transactions and tax avoidance on earnings management. By having tests and analyzing the hypotheses proposed, overall, this research shows some evidence. Firstly, earnings management is affected by the derivative transaction positively. Secondly, the positive effect of the derivative transaction on earnings management tend to decrease when the firms conform the tax rule.

By referring to some research evidence, this study gives two suggestions. The first is the practical ones, addressed to the leader and the members of the supervisory board.

- Firstly, the leader and the members of the supervising board need to strictly monitor the manager's transaction in the derivatives by motivating them to cover the firm position from risks through hedging to reduce earnings management.

- Secondly, the supervisory board has to encourage the managers to follow the tax regulation because their obedience can reduce earnings management that makes the firms trusted by the public shareholders.

The second is the academic suggestions for the next scholars to make some improvements based on this study.

- Firstly, this regression model has a low adjusted R-square of 0.036601, as seen in Table 2, showing the model has no sufficient power to predict. To enhance the prediction power, the next scholars can add several variables into this model, for example, the number and the independence of the supervising board, leverage, profitability, growth opportunity, and dividend policy.

- Secondly, this research only utilizes firms with derivative transactions from two countries. Hence, this study suggests the next scholars add the number of countries with the capital market in Southeast Asia except for Timor-Leste and Brunei. Furthermore, they can test the moderating variable based on the occupied countries by the multi-group analysis.

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Appendix 1. The name of the firm based on the country name

The country name	No	Stock Code	The name of the firm
Indonesia	1	ADRO	Adaro Energy Tbk
Indonesia	2	ASGR	Astra Graphia Tbk
Indonesia	3	ASII	Astra International Tbk
Indonesia	4	BWPT	Eagle High Plantations Tbk
Indonesia	5	BYAN	Bayan Resources Tbk
Indonesia	6	CTRA	Ciputra Development Tbk
Indonesia	7	DOID	Delta Dunia Makmur Tbk
Indonesia	8	DSSA	Dian Swastatika Sentosa Tbk
Indonesia	9	EXCL	XL Axiata Tbk
Indonesia	10	FISH	FKS Multi Agro Tbk
Indonesia	11	HERO	Hero Supermarket Tbk
Indonesia	12	HMSP	HM Sampoerna Tbk
Indonesia	13	IMAS	Indomobil Sukses Internasional Tbk
Indonesia	14	INDF	Indofood Sukses Makmur Tbk
Indonesia	15	ITMG	Indo Tambangraya Megah Tbk
Indonesia	16	JKON	Jaya Konstruksi Manggala Pratama Tbk
Indonesia	17	JPFA	JAPFA Comfeed Indonesia Tbk
Indonesia	18	KBLI	KMI Wire and Cable Tbk
Indonesia	19	KIJA	Kawasan Industri Jababeka Tbk
Indonesia	20	LPKR	Lippo Karawaci Tbk
Indonesia	21	LTLS	Lautan Luas Tbk

## JOURNAL OF CRITICAL REVIEWS

ISSN- 2394-5125

VOL 7, ISSUE 14, 2020

<b>Appendix 1. The name of the firm based on the country name</b>			
The country name	No	Stock Code	The name of the firm
Indonesia	22	MAPI	Mitra Adiperkasa Tbk
Indonesia	23	MDLN	Modernland Realty Ltd Tbk
Indonesia	24	MEDC	Medco Energi Internasional Tbk
Indonesia	25	MLBI	Multi Bintang Indonesia Tbk
Indonesia	26	PGAS	Perusahaan Gas Negara (Persero) Tbk
Indonesia	27	PLIN	Plaza Indonesia Realty Tbk
Indonesia	28	PTBA	Tambang Batubara Bukit Asam Tbk
Indonesia	29	PWON	Pakuwon Jati Tbk
Indonesia	30	RUIS	Radiant Utama Interinsco Tbk
Indonesia	31	SMCB	Holcim Indonesia Tbk
Indonesia	32	SMDM	Suryamas Dutamakmur Tbk
Indonesia	33	SMSM	Selamat Sempurna Tbk
Indonesia	34	TBIG	PT Tower Bersama Infrastructure Tbk
Indonesia	35	TBLA	Tunas Baru Lampung Tbk
Indonesia	36	TLKM	Telekomunikasi Indonesia (Persero) Tbk
Indonesia	37	TMAS	Pelayaran Tempuran Emas Tbk
Indonesia	38	TOWR	Sarana Menara Nusantara Tbk
Indonesia	39	TRST	Trias Sentosa Tbk
Indonesia	40	TURI	Tunas Ridean Tbk
Indonesia	41	ULTJ	Ultra Jaya Milk Industry Tbk
Indonesia	42	UNTR	United Tractors Tbk
Indonesia	43	UNVR	Unilever Indonesia Tbk
Thailand	1	AAV	Asia Aviation Public Company Limited
Thailand	2	AOT	Aeon Thana Sinsap (Thailand) Public Company Limited
Thailand	3	BANPU	Advanced Information Technology Public Company Limited
Thailand	4	BCP	Airports Of Thailand Public Company Limited
Thailand	5	BDMS	Bangkok Airways Public Company Limited
Thailand	6	BJC	Bangkok Aviation Fuel Services Public Company Limited
Thailand	7	BTS	Banpu Public Company Limited
Thailand	8	CK	Bangchak Corporation Public Company Limited
Thailand	9	CKP	Bangkok Dusit Medical Services Public Company Limited
Thailand	10	CPF	Berli Jucker Public Company Limited
Thailand	11	CPN	Buriram Sugar Public Company Limited
Thailand	12	DTAC	BTS Group Holdings Public Company Limited
Thailand	13	EA	Seafresh Industry Public Company Limited
Thailand	14	EGCO	Cho Thavee Public Company Limited
Thailand	15	GLOBAL	Chow Steel Industries Public Company Limited
Thailand	16	HANA	CH Karnchang Public Company Limited
Thailand	17	INTUCH	CK Power Public Company Limited
Thailand	18	IVL	Charoen Pokphand Foods Public Company Limited
Thailand	19	LH	Central Pattana Public Company Limited
Thailand	20	MINT	Delta Electronics (Thailand) Public Company Limited

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ISSN- 2394-5125

VOL 7, ISSUE 14, 2020

### Appendix 1. The name of the firm based on the country name

The country name	No	Stock Code	The name of the firm
Thailand	21	PTTGC	Total Access Communication Public Company Limited
Thailand	22	SCC	Energy Absolute Public Company Limited
Thailand	23	SGP	Electricity Generating Public Company Limited
Thailand	24	STA	GFPT Public Company Limited
Thailand	25	TOP	Siam Global House Public Company Limited
Thailand	26	WHA	Hana Microelectronics Public Company Limited
Thailand	27	CFRESH	Intouch Holdings Public Company Limited
Thailand	28	CHO	Inoue Rubber (Thailand) Public Company Limited
Thailand	29	CHOW	Indorama Ventures Public Company Limited
Thailand	30	DELTA	Khonburi Sugar Public Company Limited
Thailand	31	GFPT	Khon Kaen Sugar Industry Public Company Limited
Thailand	32	IRC	The Lanna Resources Public Company Limited
Thailand	33	KBS	Land And Houses Public Company Limited
Thailand	34	KSL	MK Restaurant Group Public Company Limited
Thailand	35	LANNA	Minor International Public Company Limited
Thailand	36	M	Modernform Group Public Company Limited
Thailand	37	MODERN	Padaeng Industry Public Company Limited
Thailand	38	PDI	PTT Global Chemical Public Company Limited
Thailand	39	AEONTS	QTC Energy Public Company Limited
Thailand	40	AIT	Samart Telecoms Public Company Limited
Thailand	41	BAFS	Somboon Advance Technology Public Company Limited
Thailand	42	QTC	The Siam Cement Public Company Limited
Thailand	43	SAMTEL	Siam City Cement Public Company Limited
Thailand	44	SAT	Samart Digital Public Company Limited
Thailand	45	SCCC	Siamgas and Petrochemicals Public Company Limited
Thailand	46	SDC	Sri Trang Agro-Industry Public Company Limited
Thailand	47	BA	Thai Oil Public Company Limited
Thailand	48	BRR	Wha Corporation Public Company Limited

# Artikel 6

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PAGE 1

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PAGE 2

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PAGE 3

---

PAGE 4

---

PAGE 5

---

PAGE 6

---

PAGE 7

---

PAGE 8

---

PAGE 9

---