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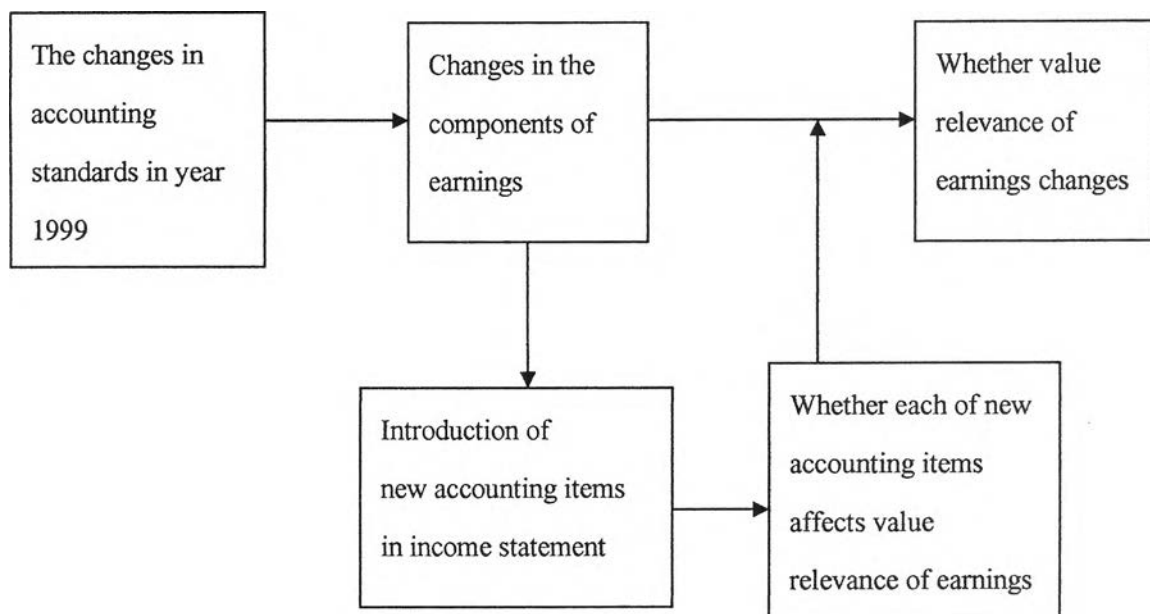
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## **APPENDICES**

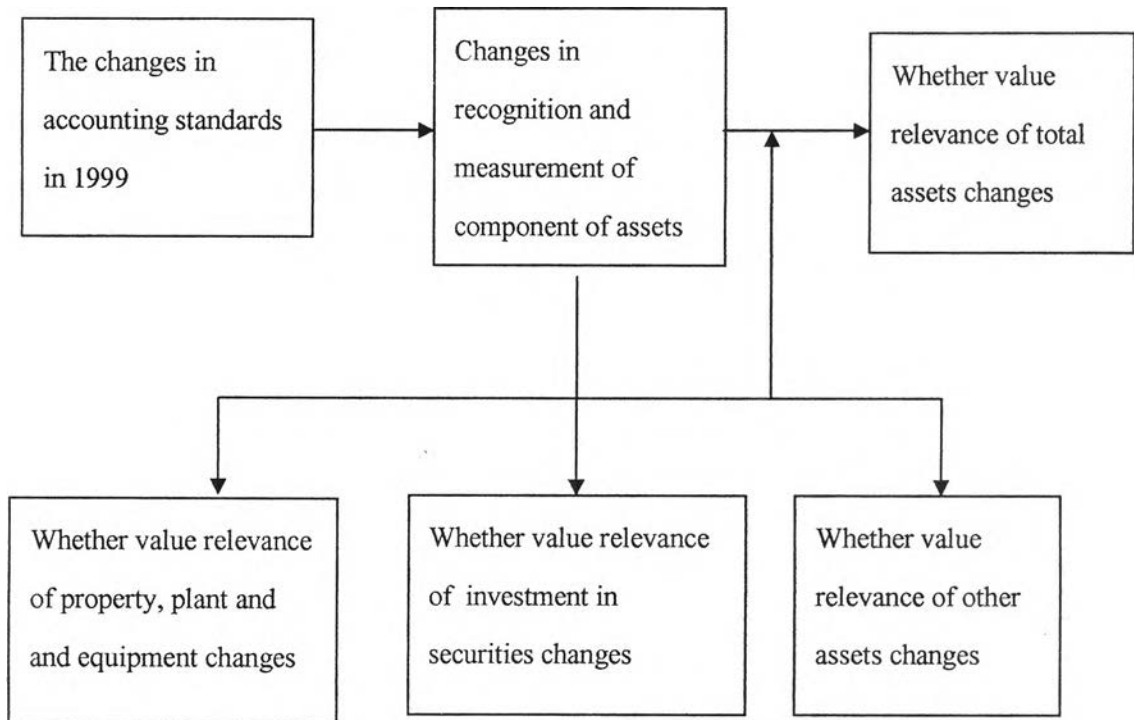
## APPENDIX A

## Conceptual Framework of Research

**Diagram 1 The Effects of Changes in Accounting Standards on Value Relevance of Earnings**



**Diagram 2 The Effects of Changes in Accounting Standards on Value Relevance of Accounting Items in Balance Sheet**



## APPENDIX B

### **Summary of New Accounting Standards in Year 2000 and 2001 (TAS No. 41-49)**

TAS No. 41-48 become operative for financial statements covering the periods beginning on and after 1 January 2000. TAS No.49 becomes operative for financial statements covering the periods beginning on and after 1 January 2001. Because the data for analysis in this study include the financial statements in year 2000 and 2001, these new accounting standards affect the accounting items in those financial statements. These accounting standards can be summarized as follows.

#### **1. TAS No.41 *Interim Financial Reporting* (New Issue)**

This standard prescribes the minimum content of interim financial reporting and principles of reporting for the recognition and measurement in complete or condensed financial statements for an interim period. It allows the enterprise to select either the complete set of financial statement (according to the requirement of TAS No.35 The Presentation of Financial Statements) or the set of condensed financial statements in its interim financial reports.

#### **2. TAS No.42 *Accounting for Investment Companies* (New Issue)**

TAS No.42 should be applied for the accounting practices and disclosures of information of the investment companies such as mutual fund, and pension fund. This standard deals with the recognition and measurement of investments, the calculation of net asset value per unit, the accounting for the equities' unit fund, income and expense recognition from investments, and the presentation of financial statements of investment companies.

#### **3. TAS No.43 *Business Combinations supercedes TAS No.20 Accounting for Business Combinations.***

The requirements of identification of the types and the accounting practice for business combination are the same in two standards. The types of business combination can be divided into purchase and pooling method.

For the case of purchase, an acquirer should incorporate into the income statement the results of operation of the acquiree and recognizes in the balance sheet the assets and liabilities of the acquiree and any goodwill or negative goodwill arising on the acquisition. For the case of pooling of interest, financial statement items of combining enterprises for the period in which the combination occurs and for any comparative periods described should be included in the financial statements of the combined enterprises as if they had been combined from the beginning of the earliest period presented.

The main difference point is goodwill arising on acquisition. TAS No.43 requires that any excess of cost of acquisition over the acquirer's interest in the fair value of the identifiable assets and liabilities acquired as at the date of the exchange transaction should be described as goodwill and recognized as an asset. Goodwill should be amortized by recognizing it as expense over its useful life. When the acquirer's interest in the fair values of identifiable of assets and liabilities is higher than the cost of acquisition at the date of exchange transaction, the enterprise should recognize this excess as negative goodwill. The negative goodwill that relates to future loss and expense is recognized as income in the income statement. Positive goodwill is presented as an asset in balance sheet; negative goodwill is also presented as an asset in balance sheet, but has negative sign.

TAS No 20 requires that the difference between the cost of acquisition and the acquirer's interest in the fair values of the identifiable assets and liabilities are treated as income/expense in the income statement or adjusted to the equity.

In conclusion, TAS No.43 differs from TAS No.20 in the goodwill accounting practice. That is, TAS No.43 cut off the accounting treatment of goodwill that directly adjusts with the equity.

TAS No.43 adds the consideration of impairment of goodwill and identifies the useful life of goodwill, which should not exceed twenty years. TAS No.20 does not state above.

**4. TAS No.44 Consolidation Financial Statement and Accounting for Investments in Subsidiaries** supercedes TAS No.19 Consolidated Financial Statements.

The scope of consolidation and the consolidation method are same requirements in two standards. That is, consolidated financial statements do not include the subsidiaries that control of them is intended to be temporary and it operates under severe long-term restrictions.

For the consolidation method, the carrying amount of the parent's investment in each subsidiary and the parent's portion of equity of each subsidiary are eliminated. Minority interest in the net income of consolidated subsidiaries for the reporting period are identified and adjusted against the income of the group in order to arrive the net income attributable to the owners of the parent.

Under TAS No. 44, the definition of control is the power to govern the financial and operating policies of an enterprise so as to obtain the benefits from its activities. Under TAS No.19, the definition of control is the right in the voting power. If the voting right is more than the half of the shares (directly or indirectly), it will be called the enterprise have the control over the other. The control includes the governing the financial or operating policies, too.

Under TAS No. 44, the definition of subsidiary is an enterprise that is controlled by another enterprise. Under TAS No.19, the definition of subsidiary is an enterprise that the enterprise (parents) owns directly or indirectly more than one half of the voting power (50 % of the voting right shares).

TAS No.44 requires that minority of interest in net asset of consolidated subsidiaries are identified and presented in the consolidated balance sheet separately next to the retained earnings under the parent shareholders' equity. TAS No.19 requires that minority of interest is presented between the liabilities and parents shareholder's equity.

TAS No.44 requires that the parent have the control over the subsidiaries and subsidiaries do not have the long-term severe restriction, the parent companies should recognize the investment in subsidiaries by using the equity method. TAS No.19 requires that parent can use either the cost method or equity method for the investment in subsidiaries. But the listed companies in the Stock Exchange of Thailand (SET) should use only the equity method for the investment in subsidiaries since the year 1994. Thus, there is no difference between the methods of the investment between two accounting standards of the listed companies.

#### **5. TAS No.45 *Accounting for Investment in Associates* supercedes TAS No.18 *Accounting for Investment in Subsidiaries and Associates.***

The definitions of associate companies and significance influence between two standards are same.

The associate company is an enterprise in which the investor has significant influence and which is neither a subsidiary nor a joint venture of investor. The definition of

significant influence is the power to participate in the financial and operating policy decisions of the investee, but it is not the control over those policies.

The details of accounting practice for cost method and equity method are also the same between two standards. For the equity method, the investment is initially recorded as at cost and the carrying amount is increased/decreased to recognized the investor's share of the profits or losses of the investee after the date of acquisition. Distributions received from an investee reduce the carrying amount of investment. For the cost method, an investor records its investment in the investee at cost. The investor recognizes income only the extent that it receives from the accumulated net profits of the investee arising from subsidiaries to the date of acquisition by the investor.

TAS No. 45 requires that investment in an associate should be accounted under equity method both in the case that consolidated financial statement or separate financial statements of investor. TAS No. 18 allows the investment in associate should be accounted either the cost method or equity method. However, the listed companies in the Stock Exchange of Thailand should use only the equity method for the investment in associates since the year 1994. Thus, there is no difference between the methods of the investments between two accounting standards of the listed companies.

Moreover, TAS No.45 requires the consideration of impairment loss according to TAS No.36. TAS No.18 does not stated above.

#### **6. TAS No.46 *Financial Reporting of Interests in Joint Ventures* (New Issue)**

TAS No.46 should be applied in accounting for interests in joint ventures and the reporting of joint ventures assets, liabilities, income and expenses in the financial statements of venturers and investors regardless of the structures or forms under which the joint ventures activities take place.

A joint venture is a contractual arrangement whereby two or more parties undertake an economic activity, which is subject to joint control (contractually agreed showing of control over an economic activity).

For accounting treatment for joint ventures, a venturer should report its interest in a jointly controlled entity for proportionate consolidation. The application of proportionate consolidation means that the consolidated balance sheet of the venturer includes its share of the



assets that it controls jointly and its share of the liabilities of which it is jointly responsible. For its separate financial statement of an investor, if a venturer wants to present the separate financial statement with the proportionate consolidated financial statement, a venturer should report its interest in joint venture in the separate financial statements by using the equity method.

**7. TAS No.47 *Related Party Disclosures* supercedes TAS No.13.**

This standard should be applied in dealing with related parties and transactions between a reporting enterprise and its related. The scope is the same as TAS No. 13. TAS No. 47 extends the boundaries of the definition of related parties in the point that close member of family of individuals owning, directly and indirectly, and an interest in the voting power of the reporting enterprise that give the significant influence over the enterprise.

TAS No. 47 focuses on the consideration of each possible related party relationship. Attention is desired to the substance of the relationship, and not merely the legal form. This standard requires the disclosure of related party relationship. That is, related party relationships where control exists should be disclosed irrespective of whether there have been transactions between the related parties. If there have the been transactions between the related parties, the reporting enterprise should disclose the nature of the related party relationships as well as the types of transactions and elements of transactions necessary for an understanding of financial statements. This requirement is the same of TAS No. 13.

**8. TAS No.48 *Financial Instruments: Presentation and Disclosure* supercedes TAS No.28.**

This standard extends the scope of TAS No. 28, which applies in presenting and disclosing information about all types of financial instruments (both financial primitives and financial derivatives), both recognized and unrecognized in balance sheet. TAS No. 28 deals only with convertible bond and bond with the warrants.

TAS No. 48 requires that the issuer of a financial instrument should classify the instrument, or its component parts, or a liability or as equity in accordance with the substance of the contractual arrangement on initial recognition and the definition of a financial liability and equity instrument. TAS No.28 requires that the issuer should not classify of convertible bond as liability separate from the right of converting bond at the initial recognition.

Moreover, TAS No. 48 also identifies the other accounting practices more than TAS No. 28. TAS No. 48 identifies the accounting practice for interest, dividend, losses and gains related to a financial instrument. That is, interest, dividend, losses and gains related to a financial instrument, or a component part, classified, as a financial liability should be reported in the income statement as expense or income. Distribution to holders of a financial instrument classified as an equity instrument should be debited by the issuer's equity.

This standard requires the conditions that financial asset and financial liability can be offset. That is, the enterprises have legally enforceable rights to set off the recognized amounts and intend either to settle on a net basis, or to realize the asset and settle the liability simultaneously.

Objective of the disclosure of financial instrument is to provide the information that will enhance the understanding of the significance of on-balance sheet and off-balance sheet financial instrument. The information that should be disclosed is summarized as follows:

- Information that assists users of financial statements in assessing the extent of risk related to both recognized and unrecognized financial statements. The risk of financial instrument is price risk (currency risk, interest rate risk, and market risk), credit risk, liquidity risk, and cash flow risk.

- The enterprise's financial risk management objectives and policies (include the policy for hedging each major type of forecasted transaction).

- The extent and the nature of financial instrument including the significant term and condition and accounting policies and methods adopted including the criteria of recognition and the basis of measurement applied.

- Fair values of each class of financial asset and financial liability both the recognized and unrecognized in balance sheet.

- The disclosure when financial asset carried at an amount in excess of fair value.

- The disclosure when an enterprise has accounted for a financial instrument as hedge of risk associated with anticipated future transactions.

**9. TAS No. 49 *Construction Contract* supercedes TAS No. 8 *Accounting for Construction Contract***

This standard describes the accounting practice of revenue and costs associated with the construction contracts. This standard applied for the construction contracts in the financial statement of contractors. It becomes operative for financial statement beginning on and after 1 January 2001.

Contract Revenue should comprise:

- (a) the initial amount of revenue agreed in the contract; and
- (b) variation in contract work, claims and incentive payments:
  - (i) to the extent that it is probable that they will result in revenue; and
  - (ii) they are capable of being reliably measured.

Contract Costs should comprise:

- (a) costs that relate directly to the specific contracts;
- (b) costs that are attributable to contract activity in general and can be allocated to the contracts; and
- (c) such either cost as are specifically chargeable to the customer under the terms of contract.

**Recognition of Contract Revenue and Expense**

When the outcome of a construction contract can be estimated reliably, contract revenue and costs associated with construction contracts should be recognized as revenue and expense respectively by reference to the stage of completion of the contract activity at the balance sheet date.

When the outcome of a construction contract cannot be estimated reliably:

- (a) revenue should be recognized only the extent of contract costs incurred that it is probable will be recoverable; and
- (b) contract costs should be recognized as an expense in the period in which they are incurred.

When the uncertainties that presented the outcome of the contracts being estimated reliable no longer exist, revenue and expenses associated with the construction contracts should be recognized by the stage of completion of the contract activity.

#### Recognition of Expected Loss

When it is probable that total contract costs, will exceed the total contract revenue, the expected loss should be recognized as an expense immediately.

TAS No. 8 Accounting for Construction Contracts (old accounting standard) Accounting for Construction Contracts should follow either the completed-contract method or the percentage-of-completion method. The appropriate method to be adopted depends on the conditions and circumstances of a particular contract.

The percentage-of-completion method is used when the outcome of the contract should be reliably estimated.

The completed-contract method is used only when:

- (a) It is a short-term contract (within one year)
- (b) The conditions of using percentage-of-completion method are not satisfied.
- (c) There are inherent hazards beyond the normal recurring construction business risk.

For the difference for the accounting for construction costs between TAS No. 49 and TAS No. 8, TAS No.49 cuts the method of completed-contract method. So the contractor should use the accounting treatment only the percentage-of-completion method.

The Effects of Changes in Accounting Standards (TAS No.41-49) on the Accounting Items in Financial Statements are summarized in TABLE B.1

**Table B.1 The Effects of Changes in Accounting Standards (TAS No.41-49) on the Accounting Items in Financial Statements**

Accounting Standards	Superseded Title	Effects of Changes in Accounting Standards on the Accounting Items
TAS No.41	-----	No direct effect on accounting items on income statement and balance sheet
TAS No.42	-----	This standard applies with the investment companies.
TAS No.43	TAS No.20	Goodwill should be recognized as assets and amortized as expense. The cumulative effect of change in accounting policy relating to goodwill adjusted with the opening balance with R/E.
TAS No.44	TAS No. 19	There is no direct effect on investment in subsidiary because SET requires the listed companies use the equity method for investment in subsidiary since 1994 (SET's regulation announcement dated 30 April, 1993).  Change the definition of control and subsidiary company
TAS No.45	TAS No.18	There is no direct effect on investment in associated company because SET requires the listed companies use the equity method for investment in subsidiary since 1994. (SET's regulation announcement dated 30 April 1993).
TAS No.46	-----	A venturer should report its interest in a jointly controlled entity for proportionate consolidation. The application of proportionate consolidation means that the consolidated B/S of the venturer includes its share of the assets that it controls jointly and its share of the liabilities of which it is jointly responsible
TAS No.47	TAS No.13	No direct effect on accounting item
TAS No.48	-----	No direct effect on accounting item
TAS No.49	TAS No.8	The contractor should use the accounting treatment only the percentage-of-completion method.

From the comparison between TAS No.41-49 and the old ones, the main differences are goodwill accounting practice; definition of subsidiary companies and control; and accounting for joint venture.

The new accounting standard (TAS No.43) requires that goodwill should be recognized as assets and cut the alternative method of adjustment goodwill to equity.

TAS No.44 changes the definition of subsidiary companies and control. Parent companies, which have the subsidiary companies under the definition of TAS No.44, should take all subsidiaries' financial statement in consolidated financial statements.

The example of effects of TAS No.44 on financial statement in Year 2000 is:

The change in accounting policies for consolidated financial statement and accounting for investments in subsidiaries applied in Year 2000. The company has changed accounting for investment in subsidiaries in accordance with Accounting Standard No.44 Consolidated Financial Statements and Accounting for investment in Subsidiaries, by taking financial statements of all companies into consolidated financial statements. Such companies are under control by the parent company, though, the parent company has voting right less than half.

Before, the parent company prepared consolidated financial statement by including the company that the parent company has subsidiary more than 50% of registered capital of those companies.

TAS No .46 identifies the clear definition for joint ventures. For accounting treatment for joint ventures, a venturer should report its interest in a jointly controlled entity for proportionate consolidation. The application of proportionate consolidation means that the consolidated balance sheet of the venturer includes its share of the assets that it controls jointly and its share of the liabilities of which it is jointly responsible.

The example for the effect of TAS No.46 on financial statement in Year 2000 is:

In the Year 2000, the Group adopts TAS No.46 Financial Reporting for Interest in Joint Venture in accounting for interest in ABC Company. The effect of this change has been to recognize only the proportionate share of each individual balance sheet and income statement items of the jointly controlled company.

Previously, ABC Company has been consolidated in full and minority interest recognized in the consolidated statement of income and balance sheet.

In addition, there are some firms which change the accounting in investment in subsidiaries and associates from cost method to equity method according to the requirement of TAS No.44 and 45; although, SET' s regulation mandated the change for accounting in these investment from cost method to equity method since the first quarter 1994.

The example of the effect of changing from cost method to equity method for investment in subsidiaries and associates is:

In 2000, the company has changed its accounting policy for investment in subsidiaries and associated company from cost method to equity method and the preparation of consolidated financial statements are in accordance with TAS No.44 and 45.

In changing such accounting policy, the company has to adjust retroactively to previous financial statement comparatively shown as if the company has recorded the equity method according to the new accounting policy all through.

The effect from goodwill accounting practice, change in definition of subsidiary and control, accounting for joint venture, the change from cost to equity method for investment in subsidiaries and associated companies according to the requirement of TAS No. 43, 44, 45 and 46 will be control in the sample selection as discussed in Chapter 4.

## APPENDIX C

### The Revision of Accounting Standards

To date, The Institute of Certified Accountants and Auditors of Thailand (ICAAT) has been revised two accounting standards (TAS No. 34, *Accounting for Troubled Debt Restructurings* and TAS No. 49, *Construction Contracts*).

TAS No.34 *Accounting for Troubled Debt Restructurings* (Revised) becomes operative for financial statements beginning on or after 1 January, 2002. TAS No. 34 (Revised) differs from TAS No.34 (Original) only for accounting practice of creditor. The difference for accounting practice for creditor is the types of modification of terms especially in the paragraph 26<sup>th</sup>.

#### Modification of Terms

For the modification of terms of a receivable at the time of the restructuring, a creditor should measure the recoverable amount of debt restructuring using either one of all following values.

1. Presented value of expected future cash flows discounted by the cost of financing which a creditor should pay for holding for the restructuring debts.
2. Fair values of debts
3. Presented value of expected future cash flows discounted by the contract rate.
4. Fair value of mortgages (if the payment of troubled debts depends only on the mortgages)

The difference between TAS No.34 (Revised) and TAS No. 34 (Original) does not affect this research. Furthermore, the adoption of this revised version of TAS No. 34 becomes operative for financial statements beginning on or after 1 January 2002, while the data used in the analyses ended on the second quarter of year 2001. So it does not affect to this research.



TAS No.49 (Revised) becomes operative for financial statements beginning on or after 1 January 2003. TAS No.49 (Revised) differs from TAS No.49 (Original) in the section of definitions and recognition of contract revenue and expenses (paragraph 27<sup>th</sup>).

TAS No.49 (Revised) adds the definition of Retentions, Progress billings, and Advances.

Retentions are amounts of progress billings which are not paid until the satisfaction of conditions specified in the contract of the payment of such amounts or until defects have been rectified.

Progress billings are amounts billed for works performed on a contract whether or not they have been paid by the customer.

Advances are amounts of received by the contractor before the related work is performed.

Recognition of Contract Revenue and Expenses (paragraph 27<sup>th</sup>) of TAS No. 49 (Revised) cut off the conditions stated in 27.1 to 27.3 of original version and summarize the conditions in the one paragraph.

The outcome of a construction contract costs can only be estimated reliably when it is probable that the economic benefits associated with the contract will flow to the enterprise. However, when an uncertainty arises about the collectability of an amount already included in the contract revenue, and already recognized in income statement, the uncollectable amount or the amount in respect which recovery has ceased to be probable is recognized as an expense rather than as an adjustment of the amount of contract revenue.

The difference between TAS No.49 (revised) and TAS No.49 (original) does not affect this research. In addition to, the adoption of this revised standard (revised) begins on January 2003, while the data used in the analysis ended on the second quarter of year 2001. So it does not affect to this research.

## APPENDIX D

### The Test of Assumptions of Regression Model

The regression model in this study is the multiple regressions. The general form is

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k + u_i$$

where

$Y$  = dependent variable,

$X_i$  = independent variables, and

$u_i$  = error term or disturbance term.

#### Assumptions of Regression Model

The main assumptions of linear regression models are

1. Zero mean value of disturbance  $u_i$ ,
2. Homoscedasticity or equal variance of  $u_i$ , and
3. No autocorrelation between the disturbances, and
4. Normality.

Details of each assumption are summarized as follows.

**1. Zero mean value of disturbance  $u_i$ .** Given the value of  $x_i$ , the mean or expected value of the random disturbance term  $u_i$  is zero. Symbolically,

$$E(u_i / X_i) = 0$$

This assumption is true for all.

**2. Homoscedasticity or equal variance of  $u_i$ .** Given the value of  $X$ , the variance of  $u_i$  is the same for all observations. That is, the conditional variances of  $u_i$  are identical.

One important assumption in regression model discussed above is that variance of each disturbance term  $u_i$ , conditional on the chosen values of the explanatory variables, is some constant number equal to  $\sigma^2$ .

That is the assumption of homoscedasticity. Symbolically,

$$\text{var}(u_i/X_i) = \sigma^2 \quad i= 1, 2, 3, \dots, n$$

Where var stands for variance.

This study tests whether the regression models present the Heteroscedasticity problem using the Statistical test called “Breusch-Pagan-Godfrey Test”.

The actual test procedure is as follows.

Step 1 Estimate each of model (model 1-12) by OLS (Ordinary Least Square) and obtain the residuals  $u_1, u_2, u_3, \dots, u_n$  for the observations 1, 2,  $\dots, n$ .

Step 2 Obtain  $\sigma^2 = \sum u_i^2/n$  where n is the number of observations.

Step 3 Construct the  $p_i$  defined as

$$p_i = u_i^2/\sigma^2$$

Which is simply each residual squared divided by  $\sigma^2$

Step 4 Regress  $p_i$ , thus constructed on the Z's as

$$p_i = \alpha_1 + \alpha_2 Z_{2i} + \alpha_3 Z_{3i} + \dots + \alpha_m Z_m \quad (A)$$

Step 5 Obtain ESS (Explained Sum of Squares) from model (A) and define

$$\Theta = 1/2 (\text{ESS})$$

Assuming  $u_i$  are normally distributed, one can show that if there is homoscedasticity and if the sample size n increases indefinitely, then

$$\Theta_{asy} \sim \chi^2_{m-1}$$

That is,  $\Theta$  follows the chi-square distribution with  $m-1$  degrees of freedom. If the calculated  $\Theta$  exceeds the critical value of  $\chi^2$  at the chosen level of significance, one can reject the hypothesis of homoscedasticity; otherwise one does not reject it.

First, this study runs the model (1) to model (12). It uses the Breusch-Pagan-Godfrey test to investigate whether there are heteroscedasticity problems. The results show that all of models have violated the assumption of homoscedasticity especially for the balance sheet models which stock prices are dependent variables and accounting items in balance sheet (model 5-12).

Easton and Sommer (2000) summarize that the nature of data that we usually encounter as a practical matter is such that the regression of market capitalization (price per share) on financial statement data are driven by largest firms in the samples. The heteroscedasticity problem usually arises in the regressions of market capitalization on various balance sheet and income statement data. It is called “price-levels” regression. They suggest the method to remove the scale effect (heteroscedasticity) by transforming the accounting variables in the ratios forms. The use of number of shares outstanding as deflator does not overcome the scale effect. The deflator should be proxy measures of size variables such as stock’s price at the beginning period, sales revenues.

In addition, the heteroscedasticity can also arise as a result of the presence of outlier (Gujarati, 2003). So the cut outlier observation from the samples will reduce the heteroscedasticity problem.

Another source of heteroscedasticity problem is skewness of distribution. The cut off the extreme values of observations will also reduce heteroscedasticity problem.

In sum, the methods for remedies the heteroscedasticity in many statistical texts are summarized as follows.

1. use the weight least square method (when the variance is known)
2. use the deflators

Thus, this study uses the stock's price at the beginning period of quarter as the deflator of variables in the model. The extreme values of observation (at 1%) and the outliers are also cut off from the sample in data analysis. After the remedies for Heteroscedasticity problem, the results of Breusch-Pagan test are presented in TABLE D.1

**TABLE D.1 The Results of Breusch-Pagan Test of Each Model (Model 1-12)**

Model	m <sup>a</sup>	Explained Sum Square (ESS) <sup>b</sup>	$\Theta = 1/2$ of ESS	$\chi^2_{m-1, 0.05}$	$X^2_{m-1, 0.01}$
1	4	18.021	9.0105 <sup>*</sup>	7.81473	11.3449
2	7	29.111	14.5555 <sup>*</sup>	12.5916	16.8119
3	12	27.353	13.6765	19.6751	24.7250
4.1 for gain on TDR quarters	2	2.058	1.029	3.84146	6.63490
4.2 for loss on TDR quarters	2	5.120	2.560	3.84146	6.63490
4.3 for impairment of PPE quarters	2	15.016	7.508 <sup>**</sup>	3.84146	6.63490
4.4 for impairment of investment quarters	2	0.191	0.0955	3.84146	6.63490
4.5 for unrealized gain/loss on trading securities quarters	2	9.040	4.520 <sup>*</sup>	3.84146	6.63490
5	9	39.635	19.8175 <sup>*</sup>	15.5073	20.0902
6	6	31.389	15.6945 <sup>**</sup>	11.0705	15.0863
7	4	16.079	8.0395 <sup>*</sup>	7.81473	11.3449
8	5	11.085	5.5426	9.48773	13.2767
9	6	30.819	15.4095 <sup>**</sup>	11.0705	15.0863
10	6	12.897	6.4486	11.0705	15.0863
11	7	31.850	15.925 <sup>*</sup>	12.5916	16.8119
12	6	20.574	10.287	11.0705	15.0863

<sup>a</sup> m equals to the numbers of terms in model including the constant term.

<sup>b</sup> ESS is obtained by the regression value of  $p_i$  and  $X_i$  of each model after the procedures of step (1) - step (4) as discussed above.

<sup>c</sup> Model 12a is run for all samples, while model 12b is run for only firm-quarters affected by adoption the interpretations

<sup>\*</sup> significant at 0.05 level, <sup>\*\*</sup> significant at 0.01 level

From TABLE D.1, the values of  $\frac{1}{2}$  ESS  $\Theta$  of model (3), model (4) for gain and loss on TDR quarters, model (4) for impairment of investment-quarters, model (8), model (10) and model (12 a and b ) do not exceed  $\chi^2_{0.05}$ . They do not exceed  $\chi^2_{0.01}$ , too. Thus, all models stated above do not have the Heteroscedasticity problem both at 5% level and 1% level.

The values of  $\Theta$  of model (1), (2), (4) for unrealized gain/loss on trading securities quarters, model (5), (7) and (11) exceed the value of  $\chi^2_{0.05}$ , but they do not exceed of  $\chi^2_{0.01}$ . Thus, these models do not have the Heteroscedasticity problem at 1% level.

Model (4) for impairment of PPE-quarters, model (6) and model (9) have the  $\Theta$  values which exceed the  $\chi^2$  values both at 5% level and 1% level. That is, some models still have the heteroscedasticity problem, although this study uses several methods suggested by the statistical text books and prior researches to reduce heteroscedasticity problem. However,  $\Theta$  values of model (4) for impairment of PPE-quarters, model (6) and model (9) exceed the  $\chi^2$  values at 1% level only little.

Furthermore, some models in this study use the dummy variables to partition the firm-quarters into before and after the changes in accounting standards. So the important assumption of Heteroscedasticity with the dummy variables is that the error variances in the two periods are same. It is necessary to check the equality of variances in the sub periods using the F-statistics. Full models (model 1, 5, 6, 9, 12) with the dummy variables are separated into reduced models. That is, these models are run in the period of before and after the changes in accounting standards (Dummy =0, Dummy =1, respectively). Then, we obtain the residual sum square (RSS) given in each of sub period.

$$\sigma_1^2 = \text{RSS}_{\text{before}} / n_1 - k$$

$$\sigma_2^2 = \text{RSS}_{\text{after}} / n_2 - k$$

$$F = \sigma_{\text{larger}}^2 / \sigma_{\text{smaller}}^2$$

k is equal to parameter estimate in each model

Computing this F in application and comparing it with the critical F value with the appropriate degree of freedom  $n_{\text{larger}} - k$  and  $n_{\text{smaller}} - k$ , one can decide to reject or not reject the null hypothesis is that variance in the two sub-periods are the same.

**TABLE D.2 The Results of Test the Equality of Variance between Two Subperiods (Before and After the Changes in Accounting Standards)**

Model	Residual Sum Square (RSS)	Degree of Freedom (df)	RSS/df	$F = \sigma_{\text{larger}}^2 / \sigma_{\text{smaller}}^2$
(1) before TAS (T=0)	243.468	1,845	0.132	1.553
(1) After TAS (T=1)	142.173	1,681	0.085	
(5) before TAS (T <sub>1</sub> =0)	146.581	1,143	0.128	1.829
(5) After TAS (T <sub>1</sub> =1)	79.863	1,142	0.070	
(5) before TASI No.4 (T <sub>2</sub> =0)	199.841	1,887	0.106	1.395
(5) after TASI No.4 (T <sub>2</sub> =1)	30.417	398	0.076	
(6) before TAS (T <sub>1</sub> =0)	146.474	1,143	0.128	1.829
(6) after TAS (T <sub>1</sub> =1)	79.734	1,142	0.070	
(9) before TAS (T <sub>1</sub> =0)	146.871	1,143	0.128	1.829
(9) after TAS (T <sub>1</sub> =1)	79.967	1,142	0.070	
(12) before TASI No.4 (T <sub>2</sub> =0)	198.952	1,887	0.105	1.364
(12) after TASI No.4 (T <sub>2</sub> =0)	30.461	398	0.077	

Critical value of F-statistics which degree of freedom is near the  $\infty$  value both the numerator and denominator (at  $\alpha$  0.05 level) is equal to 1.00. So the computed F-statistics are more than 1.00 for all models. So the variances for two sub-periods are not equal. However, they do not exceed 1.00 so much.

Moreover, the test of equality of variance of the models with each of new accounting items is summarized in TABLE D.3.

**TABLE D.3 The Results of Test the Equality of Variance between Firm-Quarters with New Accounting Items and Without New Accounting Items<sup>a</sup>**

Model	Residual Sum Square (RSS)	Degree of Freedom (df)	$\sigma^2 = \text{RSS}/\text{df}$	$F = \sigma^2_{\text{larger}} / \sigma^2_{\text{smaller}}$
$D_1 = 0$	122.181	1,559	0.078	2.12
$D_1 = 1$	19.900	120	0.166	
$D_2 = 0$	140.399	1,651	0.085	1.800
$D_2 = 1$	1.317	28	0.047	
$D_3 = 0$	122.299	1,418	0.086	1.13
$D_3 = 1$	19.813	261	0.076	
$D_4 = 0$	116.370	1,393	0.084	1.048
$D_4 = 1$	25.306	286	0.088	
$D_5 = 0$	123.169	1,458	0.084	1.020
$D_5 = 1$	18.977	221	0.086	

<sup>a</sup> Dummy variable  $D_1$  is equal to 1 if earnings include gain on TDR

Dummy variable  $D_2$  is equal to 1 if earnings include loss on TDR

Dummy variable  $D_3$  is equal to 1 if earnings include impairment loss of PPE

Dummy variable  $D_4$  is equal to 1 if earnings include impairment loss of investment in securities

Dummy variable  $D_5$  is equal to 1 if earnings include unrealized gain/loss of trading securities

The F value with the degree of freedom of numerator approximates to 120 and denominator approximate to  $\infty$  value (at  $\alpha$  0.05 level) for  $D_1$  is equal to 1.22. The computed value of F value is equal to 2.12. So the variance between the sample with and without gain on TDR is not equal.

The F value with the degree of freedom of numerator approximates to 200 and denominator approximate to  $\infty$  value (at  $\alpha$  0.05 level) for  $D_4$ , and  $D_5$  is equal to 1.17. The F – statistics with dummy variable  $D_4$ , and  $D_5$  are equal 1.048 and 1.020. So the variance between the sample with the dummy  $D_4$  (between firm-quarters with and without impairment loss of



investment) and  $D_5$  (between firm-quarters with and without unrealized gain/loss on trading securities) are equal.

The F value with the degree of freedom of numerator approximate to  $\infty$  and denominator approximate to 28 (at  $\alpha$  0.05 level) for  $D_2$  value is equal to 1.65. The F computed is equal to 1.800. It exceeds the critical value of F, but it is not so much.

The F value with the degree of freedom of numerator approximate to  $\infty$  and denominator approximate to 261 (at  $\alpha$  0.05 level) for  $D_3$  is equal to 1.19. The F computed is equal to 1.13. F computed does not exceed the F critical at 0.05 level. So the variances of sample with and without impairment loss of PPE are equal.

### 3. Autocorrelation

The term of autocorrelation is defined as “correlation between members of series of observations ordered in time (as in times series data) or space (as in cross-sectional data)”<sup>1</sup>. Given any two X values,  $X_i$  and  $X_j$  ( $i \neq j$ ), the correlation between any two  $u_i$  and  $u_j$  ( $i \neq j$ ) is zero. Symbolically,

$$\text{Cov}(u_i, u_j) = 0$$

Where  $i$  and  $j$  are two different observations and where cov means covariance.

Durbin-Watson d test is used to test the assumption of autocorrelation. Durbin-Watson d statistic is defined as

$$d = \frac{\sum u_t^2 + \sum u_{t-1}^2 - 2 \sum u_t u_{t-1}}{\sum u_t^2}$$

$$d \approx \frac{2(1 - \sum u_t u_{t-1})}{\sum u_t^2}$$

---

<sup>1</sup> Maurice G. Kendall and William R. Buckland. A Dictionary of Statistical Terms, Hafner Publishing Company, New York, 1971, p. 8.

$$\rho = \frac{\sum u_t u_{t-1}}{\sum u_t^2}$$

$$d \approx 2(1 - \rho)$$

Because the  $\rho$  lies between -1 and 1, there are the boundaries of d. The d value lies between 0 and 4.

If  $\rho = 0$  (no autocorrelation), so d statistic equals to 2.

The rule of thumb of, if Durbin-Watson d statistic is found to be 2 in an application, one may assume that there is no first-order autocorrelation, either positive or negative. The results of Durbin-Watson d statistics are summarized in TABLE D.4.

**TABLE D.4 The Results of Durbin-Watson d statistics of Each Model**

Model	Durbin-Watson (d statistics)
1	1.965
2	1.874
3	1.867
4.1 <sup>a</sup>	1.536
4.2 <sup>a</sup>	1.506
4.3 <sup>a</sup>	1.591
4.4 <sup>a</sup>	1.807
4.5 <sup>a</sup>	1.515
5	1.873
6	1.866
7	1.916
8	1.890
9	1.864
10	1.922
11	1.928
12	1.873

<sup>a</sup> Model 4.1 for sub sample of gain on TDR quarters, model 4.2 for sub sample of loss on TDR quarters, model 4.3 for sub sample of impairment of PPE-quarters, model 4.4 for sub sample of impairment of investment quarters, and model 4.5 for sub sample of unrealized gain/loss of trading securities.

From the results of Durbin-Watson d statistics, d statistics are about 2 for all models except model 4.1, 4.2, 4.3 and 4.5. There is no autocorrelation either positive or negative for all models except model 4.1, 4.2, 4.3 and 4.5. Model 4 uses the difference between future and current quarterly earnings as dependent variable and the difference between the current and previous quarterly earnings as independent variable. This situation is likely to deal with the

observations in such data follow a natural ordering overtime. It will make the violation of autocorrelation assumption.

However, the d statistics of model 4.1, 4.2 and 4.4 is below 2 which is not so much, so the violation of autocorrelation is not severe problem.

#### 4. Normality

Another fundamental assumption in regression model is normality referring to the slope of data distribution of an individual metric variable and its correspondence to the normal distribution.

This study uses the statistical test to assess normality. A simple test is a rule of thumb based on the skewness and kurtosis values. The statistic value (Z) for the skewness value is calculated as

$$Z_{\text{skewness}} = \frac{\text{skewness}}{\sqrt{6/N}}$$

where N is sample size.

In addition, Z value can be also calculated for the kurtosis value using the following formula:

$$Z_{\text{Kurtosis}} = \frac{\text{kurtosis}}{\sqrt{24/N}}$$

If the calculated Z value exceeds a critical value, then the distribution is non-normal distribution. The critical value is from a Z distribution based on the desired significance level.

This study will test the normality of dependent variable and unstandardized error terms. The tests of normality of dependent variables are summarized in TABLE D.5.

TABLE D.5 The Test of Normality of Dependent variables

Dependent Variables <sup>a</sup>	Model	N	skewness	$Z_{skewness}$	kurtosis	$Z_{kurtosis}$
$R_{it}$	1	3,530	0.091	2.207*	0.1915	2.322*
	2, 3	1,683	0.1528	2.559*	0.3057	2.560*
$(E_{it+1}-E_{it})/P_{it-1}$	4.1	118	0.613	2.854**	1.355	3.153**
	4.2	26	1.531	3.122**	3.555	3.700**
	4.3	287	0.370	2.559*	0.741	2.562*
	4.4	259	0.356	2.339*	0.722	2.372*
	4.5	220	0.551	3.334**	1.156	3.500**
$P_{it}/P_{it-1}$	5,6,9,12	2291	0.131	2.560*	0.251	2.452*
$P_{it}/P_{it-1}$	7,10	1,146	0.198	2.736**	0.414	2.861**
$P_{it}/P_{it-1}$	8,11	1,145	0.176	2.431*	0.359	2.479*

<sup>a</sup> The dependent variables are defined as follows.

$R_{it}$  = quarterly period return of firm i for quarter t,

$(E_{it+1}-E_{it})/P_{it-1}$  = future quarterly earnings less current quarterly earnings of firm i deflated by the stock price at the beginning period t, and

$P_{it}/P_{it-1}$  = the stock's price of firm i at the end of quarter t deflated by the stock's price of firm i at the beginning period of quarter t.

<sup>b</sup> Model (4) is run for each of new accounting item-quarter. That is, model 4.1 is run for 118 gain on TDR quarters, model 4.2 for 26 loss on TDR quarters, model 4.3 for 287 impairment of PPE-quarters, model 4.4 for 259 impairment of investment in securities-quarters, and model 4.5 for 220 unrealized gain/loss on trading securities-quarters.

\* significant at 0.05 level for Z statistics, and \*\* significant at 0.01 level for z statistics

The  $Z_{skewness}$  and  $Z_{kurtosis}$  are compared with  $Z_{0.05}$  (equal to 1.96) and  $Z_{0.01}$  (equal to 2.58). The  $Z_{skewness}$  and  $Z_{kurtosis}$  of Return in model 1, 2 and 3 exceed the 1.96, but not exceed 2.58. It can conclude that quarterly stock's return of model 1 have the normal distribution at 1% level.

The variable  $(E_{it+1}-E_{it})/P_{it-1}$  of model 4 for impairment of PPE and investment – quarters have the normal distribution at 1% level (both  $Z_{skewness}$  and  $Z_{kurtosis}$  do not exceed 2.58). But the distribution of  $(E_{it+1}-E_{it})/P_{it-1}$  of model 4 for gain and loss on TDR and unrealized gain/loss on trading securities are non-normal because both  $Z_{skewness}$  and  $Z_{kurtosis}$  exceed 2.58.

The dependent variables of balance sheet models ( $P_{it}/P_{it-1}$ ) have also normal distributions at 1% for model 5, 6, 9, and 12 (for pooled sample before and after the changes in accounting standards), and model 8, 11 (for sample after the changes in accounting standards period). The dependent variables of balance sheet models ( $P_{it}/P_{it-1}$ ) for model 7, 10 for the before the changes in accounting standards are non-normal.

In addition to the  $Z_{skewness}$  and  $Z_{kurtosis}$ , the Kolmogorov-Smirnov test of normality will be used. The Kolmogorov – Smirnov test show the same results as discussed above, so it is not presented once again.

The model with dependent variable which is non-normal distribution is the limitation of this study because the data available especially for new accounting items (e.g. gain and loss on troubled debt restructuring) is limited.

Moreover, there is the test of normality of residual of each model. The results is presented in TABLE D.6

**TABLE D.6 The Test of Normality of Residuals**

Model	N	skewness	$Z_{\text{skewness}}$	Kurtosis	$Z_{\text{kurtosis}}$
1	3,530	0.099	2.403*	0.1969	2.387*
2	1,683	0.153	2.560*	0.308	2.579*
3	1,683	0.124	2.077*	0.242	2.027*
4.1	118	0.685	3.038**	1.415	3.137**
4.2	26	1.640	3.414**	3.756	3.909**
4.3	259	0.360	2.364*	0.735	2.415*
4.4	287	0.372	2.573*	0.745	2.576*
4.5	220	0.578	3.510**	1.220	3.697**
5	2291	0.125	2.441*	0.219	2.139*
6	2291	0.129	2.520*	0.221	2.158*
7	1146	0.214	2.956**	0.458	3.165**
8	1145	0.185	2.555*	0.370	2.557*
9	2291	0.130	2.539*	0.225	2.197*
10	1146	0.230	3.176**	0.479	3.310**
11	1145	0.186	2.569*	0.373	2.576*
12	2291	0.123	2.402*	0.247	2.412*

\* significant at 0.05 level for z statistics, and

\*\* significant at 0.01 level for z statistics

The  $Z_{skewness}$  and  $Z_{kurtosis}$  are compared with  $Z_{0.05}$  (equal to 1.96) and  $Z_{0.01}$  (equal to 2.58). The  $Z_{skewness}$  and  $Z_{kurtosis}$  of Return in model 1, 2 and 3 exceed the 1.96, but not exceed 2.58. It can conclude that quarterly stock's return of model 1 have the normal distribution at 1% level

The residual distribution of model 4 for impairment of PPE and investment – quarters have the normal distribution at 1% level (both  $Z_{skewness}$  and  $Z_{kurtosis}$  do not exceed 2.58). But the distribution of model 4 for gain and loss on TDR and unrealized gain/loss on trading securities are non-normal because both  $Z_{skewness}$  and  $Z_{kurtosis}$  exceed 2.58.

The residual of balance sheet models ( $P_{it}/P_{it-1}$ ) have also normal distributions at 1% for model 5, 6, 9, and 12 (for pooled sample before and after the changes in accounting standards), and model 8, 11 (for sample after the changes in accounting standards period).

The residual of balance sheet models ( $P_{it}/P_{it-1}$ ) for model 7, 10 for the before the changes in accounting standards are non-normal.

In addition to the  $Z_{skewness}$  and  $Z_{kurtosis}$ , the Kolmogorov- Smirnov test of normality will be used. The Kolmogorov – Smirnov test show the same results as discussed above, so it is not presented once again.

From the comparison between the results presented in TABLE D.5 and TABLE D.6 are the same. That is, the results of residual of model 4 with gain on TDR, loss on TDR, model 4 with unrealized gain/loss on trading securities are non-normal distribution the same as balance sheet model for the period before the changes in accounting standards (model 7 and 10).

The residuals of model (1), (2), (3), (5), (6), (9), and model (12) have the normal distribution at 1% level.

However, Neter, Wasserman and Kutner (1990) summarized the effects of departures of normality of dependent variables. If the probability distribution of Y are not exactly normal but do not depart seriously, the sampling distributions of  $b_0$  and  $b_1$  will be approximately



normal, and the use of t distribution will provide approximately the specified confidence coefficient or level of significance.

## BIOGRAPHY

Miss Kittima Acaranupong was born on 25 February 1973 in Bangkok, Thailand. She was graduated the Bachelor Degree in Accounting from Thammasat University in 1994. She was graduated the Master Degree in Accounting (major of Financial Accounting) from Chulalongkorn University in 1996.

In 1997, she was a lecturer in University of Thai Chamber of Commerce. In 1998, she has been studied in the Doctoral program of accounting at Chulalongkorn University. During the study in doctoral program, she presented the research paper “The Performance Measurement of Thai Commercial Banks: The Financial Crisis Period” at The 2002 European Applied Business Research Conference held at Rothenburg, Germany on June, 2002. This research paper is accepted for the publication in The European Applied Business Research Conference Proceedings.