CHAPTER 5

EMPIRICAL RESULTS

5.1 Sample Characteristics

The sample composes of listed companies in the Stock Exchange of Thailand (SET) in the period during the first quarter of year 1997 to the second quarter of the year 2001. The numbers of firms listed in the SET are 454 firms on 1 January 1997.

As discussed in Chapter 4, the sample does not include the firms in financial institution sectors. There are 91 firms in banking industry, finance and securities industry, and insurance industry. Thus, numbers of firms listed in the SET excluding the financial institution sectors are 363 firms on 1 January 1997. This study also excludes firms' financial statements which are non-December year-ended. There are 31 firms which are excluded from the sample for this criterion.

During year 1997, there are 5 new listed companies in the SET. These companies are included in the sample of this study. In addition, there is a new listed company in 1998. This firm is listed in the SET at the end of year 1998, so there is only one-quarter financial statement before the changes in accounting standards. This new listed company is not included in the sample. New listed companies in 1999 and 2000 are not included in the sample because there is no accounting data of these companies in the period before the changes in accounting standards.

Moreover, there are 14 firms delisted from the SET before the changes of accounting standards (3 firms in year 1997 and 11 firms in year 1998). These firms are excluded from the sample. Twenty firms are delisted in year 1999, thus numbers of financial statements after the changes in accounting standards are less than 4 quarters. They will also be deleted from the sample.

As discussed in Chapter 4, TAS No. 34 *Accounting for Troubled Debt Restructurings* becomes operative for financial statements ending on or after 30 September 1998, which is mandated before other new accounting standards. This study investigates the effects of

year 1999 changes in accounting standards and the adoption of new accounting conceptual framework. Three firms that have gain/loss on TDR in income statement for the third quarter and the fourth quarter in year 1998 will be deleted from the sample.

In addition, ICAAT issued TAS No. 41-48 in year 2000 and TAS No. 49 in year 2001. Data used in analyses covers the quarterly financial statements in year 2000 and 2001, too. So 12 firms that are directly affected by the accounting standards (TAS No. 41-49) are deleted from the sample.

Furthermore, the companies under the rehabilitation during the all period of study are also excluded from the sample.

The numbers of firms used as the sample are summarized in TABLE 5.1.

TABLE 5.1 Numbers of Firms in the Study

Listed Companies	Number of Listed Companies
Listed companies of The Stock Exchange of Thailand (SET) on 1 January 1997	454
minus Firms in financial institution sectors	(91)
Listed companies excludes the financial institution sectors on 1 January 1997	363
minus Non-December year-ended firms	(31)
add New listed companies in 1997[a]	5
minus Delisted companies in 1997[b]	(3)
Delisted companies in 1998[b]	(11)
Delisted companies in 1999[c]	(20)
minus Firms' financial statement have gain and loss on troubled debt restructurings in the third quarter and the fourth quarter in 1998	(3)
Firms directly affected by TAS No. 41-49	(12)
minus Companies under rehabilitation [d]	(50)
Total listed companies	**238**

[a] In fact, there is a new listed company in year 1998, but it has only one quarter of financial statement before the changes in accounting standards. So this firm is not included in the sample.

[b] Firms are delisted from the SET before the changes in accounting standards.

[c] Firms are delisted from the SET after the changes in accounting standards, but the numbers of financial statements are less than 4 consecutive quarters.

[d] Companies under rehabilitation are the companies which are in "SP" sign (not trade their securities) and have the minus sign of book values of equities.

From TABLE 5.1, listed companies used in the study are 238 firms in each quarter. The period of data analysis is during the first quarter of year 1997 to the second quarter of year 2001. Total numbers of quarters are 18 quarters. Thus, total numbers of firm-quarters are 4,284 firm-quarters.

The numbers of firm-quarters for return model and balance sheet model (price model) are different. The balance sheet model uses the stocks' prices at the dates which the listed companies send their financial statements to SET as dependent variable. Thus, there are some missing stocks' prices with no trading volume at this date. The return model uses stocks' returns for quarterly period (compounded daily returns for each quarter period) as dependent variable. For the day with missing price (with no trading volume), the daily return is computed from the closing price of previous day. So the numbers of firm-quarters in return model are more than balance sheet model. The numbers of samples are summarized in TABLE 5.2

TABLE 5.2   Characteristics and Numbers of Samples

Listed Companies	For the Return Model	For the Price Model (Balance Sheet Model)
	Numbers of firm-quarters	Numbers of firm-quarters
Firms listed in SET	4,284	4,284
Missing returns data in Data Stream	(239)	
Missing prices with no trading volume at the dates of sending the financial statements		(1,269)
Extreme values of observations and outlier of return model[a]	(515)	
Extreme values of observations and outlier of price model[b]		(724)
Total numbers of samples	**3,530**	**2,291**

[a] Extreme values of observations are the observations which have the highest and the least values of earnings (at 1% of all observations) in return-earnings model. The outlier observations are the observations whose residuals are more than +3 standard deviations or less than - 3 standard deviations.

[b] Extreme values of observations are the observations which have the highest and the least values of total assets and total liabilities (at 1% of all observations) in balance sheet model. The outlier observations are the observations whose residuals are more than + 3 or less than -3 standard deviations.

5.2 Results of Data Analyses

This Chapter provides the empirical results of data analyses and hypotheses testing. There can be divided into two main sections: the effects of changes in accounting standards on value relevance of earnings and accounting items in income statement and the effects of changes in accounting standards on value relevance of accounting items in balance sheet.

For the first section, the results provide the evidence on how the changes in accounting standards affect value relevance of earnings. They also show whether the new accounting items in income statement (gain on TDR, loss on TDR, impairment loss of PPE, impairment loss of investment in securities, and unrealized gain/loss on trading securities) are value relevant information. How the inclusion of these accounting items in income statement affects value relevance of earnings is also examined. In addition, the investigation of properties of new accounting items in that whether each of new items is the transitory component of earnings is also reported.

For the second section, the results describe the effects of changes in accounting standards on value relevance of total assets, property plant and equipment, investment in securities, and other assets. The evidence also provides the value relevance of revaluation surplus amount of PPE (both before and after the changes in accounting standards) and value relevance of allowance for impairment of PPE (after the changes in accounting standards). The results of the investigation of value relevance of investment in securities partitioned by types of investment are also presented.

Before the presentation of the data analyses results, TABLE 5.3 summarizes the descriptive statistics of variables used in the model.

TABLE 5.3   Descriptive Statistics

PANEL A   Total Sample (Q1/1997-Q2/2001) [a]

Variables	Number of Observations	Mean	Standard Deviation
Return-Earnings	**Model**		
R_{it}	3,530	0.019978	0.333032
E_{it}/P_{it-1}	3,530	-0.041352	0.417275
Balance Sheet	**Model**		
P_{it}/P_{it-1}	2,291	1.010777	0.326225
TA_{it}/P_{it-1}	2,291	6.801340	7.315726
TL_{it}/P_{it-1}	2,291	4.632580	6.220513
PPE_{it}/P_{it-1}	2,291	3.049893	4.024971
BVP_{it}/P_{it-1}	2,291	-0.881133	3.578498
INV_{it}/P_{it-1}	2,291	0.455134	1.222268
BVI_{it}/P_{it-1}	2,291	1.713626	2.105679
$OTHA/P_{it-1}$	2,291	0.226553	1.177232
BVO_{it}/P_{it-1}	2,291	1.942207	2.130118

TABLE 5.3   Descriptive Statistics (Continued)

PANEL B   Sample Partitioned by the Adoption of Accounting Standards [a, b]

Variables	Before	Changes in	Standards	After	Changes in	Standards
	N	Mean	S.D.	N	Mean	S.D.
Return-Earnings	Model					
R_{it}	1,847	-0.010225	0.363788	1,683	0.053125	0.292155
E_{it}/P_{it-1}	1,847	-0.037142	0.462616	1,683	-0.045973	0.361104
$EADJ_{it}/P_{it-1}$	-	-	-	1,683	0.092052	5.712970
$GTDR_{it}/P_{it-1}$	-	-	-	1,683	0.017912	0.126970
$LTDR_{it}/P_{it-1}$	-	-	-	1,683	-0.000491	0.010685
$IMPPE_{it}/P_{it-1}$	-	-	-	1,683	- 0.009977	0.101445
$IMINV_{it}/P_{it-1}$	-	-	-	1,683	-0.145586	5.706652
$TRADE_{it}/P_{it-1}$	-	-	-	1,683	0.000150	0.012967
Balance Sheet	Model					
P_{it}/P_{it-1}	1,146	0.990288	0.367212	1,145	1.031284	0.277900
TA_{it}/P_{it-1}	1,146	7.595576	8.121639	1,145	6.006411	6.312702
TL_{it}/P_{it-1}	1,146	5.164326	6.638599	1,145	4.100370	5.725466
BVP_{it}/P_{it-1}	1,146	-0.964157	3.810485	1,145	-0.798035	3.329771
PPE_{it}/P_{it-1}	1,146	3.395407	4.553522	1,145	2.704076	3.381884
$PPEC_{it}/P_{it-1}$	1,146	3.168275	4.107478	1,145	2.261816	2.680198
$PPER_{it}/P_{it-1}$	1,146	0.240455	1.205262	1,145	0.482997	1.316515
$PPEI_{it}/P_{it-1}$	-	-	-	1,145	0.008458	0.056473
BVI_{it}/P_{it-1}	1,146	1.932912	2.210538	1,145	1.494148	1.971900
INV_{it}/P_{it-1}	1,146	0.498338	1.075894	1,145	0.411893	1.352105
$STMS/P_{it-1}$	1,146	0.071915	0.312784	-	-	-
$LTMS/P_{it-1}$	1,146	0.014433	0.087147	-	-	-
$LTRINV/P_{it-1}$	1,146	0.295918	0.775097	1,145	0.249968	1.263939
$LTOINV/P_{it-1}$	1,146	0.115236	0.478489	1,145	0.077787	0.241182
TRD_{it}/P_{it-1}	-	-	-	1,145	0.038914	0.138056
AFS_{it}/P_{it-1}	-	-	-	1,145	0.033894	0.158806
HTM_{it}/P_{it-1}	-	-	-	1,145	0.011330	0.060043
$OTHA_{it}/P_{it-1}$	1,890	0.245500	1.287878	401	0.137250	0.302606
BVO_{it}/P_{it-1}	1,890	2.006013	2.244175	401	1.641475	1.443160

[a] The variables are defined as follows.

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

E_{it} = earnings per share of firm i for quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

$EADJ_{it}$ = adjusted earnings or accounting earnings per share exclude the effects of new accounting items of firm i for quarter t,

$GTDR_{it}$ = gain on troubled debt restructuring per share of firm i for quarter t,

$LTDR_{it}$ = loss on troubled debt restructuring per share of firm i for quarter t,

$IMPPE_{it}$ = impairment loss (reversal of impairment loss) of PPE per share of firm i for quarter t,

$IMINV_{it}$ = impairment loss (reversal of impairment loss) of investment in securities per share of firm i for quarter t,

$TRADE_{it}$ = unrealized gain/loss on trading securities per share of firm i for quarter t,

P_{it} = stock's price of firm i at the end of quarter t,

TA_{it} = firm i's total asset per share at the end of quarter t,

TL_{it} = firm i's total liability per share at the end of quarter t,

PPE_{it} = firm i's net property, plant and equipment per share at the end of quarter t,

BVP_{it} = firm i's book value of equity per share after subtracting the amount of property, plant and equipment at the end of quarter t,

$PPEC_{it}$ = firm i's cost of property, plant and equipment per share at the end of quarter t,

$PPER_{it}$ = firm i's revaluation surplus amount of PPE per share at the end of quarter t,

$PPEI_{it}$ = firm i's allowance for impairment of PPE per share at the end of quarter,

INV_{it} = firm i's total investment in securities per share at the end of quarter t,

BVI_{it} = firm i's book value of equity per share after subtracting the value of investment in securities at the end of quarter t,

$STMS_{it}$ = firm i's short-term investment in securities per share at the end of quarter t,

$LTMS_{it}$ = firm i's long-term marketable securities per share at the end of quarter t,

$LTRINV_{it}$ = firm i's investment in associated company per share at the end of quarter t,

$LTOINV_{it}$ = firm i's other investment or general investment per share at the end of quarter t,

TRD_{it} = firm i's trading securities per share at the end of quarter t,

AFS_{it} = firm i's available-for-sales securities per share at the end of quarter t,

HTM_{it} = firm i's held-to-maturity debt securities per share at the end of quarter t,

$OTHA_{it}$ = firm i's other assets per share at the end of quarter t, and

BVO_{it} = firm i's book value of equity per share after subtracting other asset at the end of quarter t.

[b] Some of variables are introduced because of the adoption of new accounting standards such as gain on TDR, loss on TDR and impairment loss of PPE. So their amounts appear only in the period after the changes in accounting standards. Moreover, the partition of types of investment differs between before and after the changes in accounting standards. Thus, amounts partitioned by types of the investment in securities will appear either in the period of before or after the changes in accounting standards.

From the TABLE 5.3 (PANEL A), the mean of stock's return (R_{it}) is positive for the period from Q1/1997 to Q2/2001. It is also positive in the period after the changes in accounting standards period, but it has a negative sign in the period before changes in accounting standards (TABLE 5.3 PANEL B).

For the earnings deflated with price at the beginning of quarter (E_{it}/P_{it-1}), mean value is net loss in the period from Q1/1997 to Q2/2001. It is also net loss in the periods before and after the changes in accounting standards.

After the changes in accounting standards (TABLE 5.3 PANEL B), mean of earnings before the inclusion of four new accounting items ($EADJ_{it}$) has a positive sign. That is, earnings are gain before the inclusion of new accounting items. Gain on TDR ($GTDR_{it}/P_{it-1}$) has the absolute value more than loss on TDR ($LTDR_{it}/P_{it-1}$) so much. Mean of unrealized gain/loss of trading securities has a positive sign ($TRADE_{it}/P_{it-1}$). That is, prices of trading securities are higher, so the holder of trading securities earns the gain from investing. For the impairment loss, mean values of impairment loss of PPE ($IMPPE_{it}/P_{it-1}$) and investment in securities ($IMINV_{it}/P_{it-1}$) have negative signs. Although there are the reversals for impairment losses in some firm-quarters, the impairment loss values are more than the reversals. So the mean values of impairment losses are negative both for PPE and investment in securities.

For the balance sheet model, mean of price deflated by price at the beginning of quarter (P_{it}/P_{it-1}) is more than one from Q1/1997 to Q2/2001 (TABLE 5.3 PANEL A). Mean of price deflated by price at the beginning of quarter (P_{it}/P_{it-1}) is also more than one in the period of after the changes in accounting standards, but it is less than one in the period before the changes in accounting standards (TABLE 5.3 PANEL B). That is, stock's price at ending of quarter is higher (less) than price at beginning of quarter in the period after (before) the changes in accounting standards. This result is the same as mean value of return in return-earnings model. Return has a positive sign after the changes in accounting standards, but it has a negative sign before the changes in accounting standards period.

In addition to total assets (TA_{it}/P_{it-1}), this study also examines three components of assets. They are property, plant and equipment (PPE_{it}/P_{it-1}), investment in securities (INV_{it}/P_{it-1}), and other assets ($OTHA_{it}/P_{it-1}$). PPE value has the highest portion and other assets value has the least portion among three components. The high value of PPE makes the book value of equity after subtraction of PPE (BVP_{it}/P_{it-1}) be negative both before and after the changes in accounting standards. But book values of equity after subtraction of investment in securities (BVI_{it}/P_{it-1}) and other assets (BVO_{it}/P_{it-1}) have the positive signs because investment in securities and other asset's values are much less than PPE (TABLE 5.3 PANEL B).

Property, plant and equipment (PPE_{it}/P_{it-1}) is partitioned into cost amount ($PPEC_{it}/P_{it-1}$) and revaluation surplus amount ($PPER_{it}/P_{it-1}$) in the period before the changes in accounting standards. PPE is composed of three components after the changes in accounting standards: cost amount ($PPEC_{it}/P_{it-1}$), revaluation surplus amount ($PPER_{it}/P_{it-1}$), and allowance for impairment of PPE ($PPEI_{it}/P_{it-1}$). Mean of allowance for impairment of PPE ($PPEI_{it}/P_{it-1}$) in TABLE 5.3 (PANEL B) has a positive sign because this study use the allowance for impairment of PPE as the positive sign in the model.

Before the changes in accounting standards, investments in securities are divided into short-term investment ($STMS_{it}/P_{it-1}$) and long-term investment in securities. Long-term investments are separated into long-term marketable securities ($LTMS_{it}/P_{it-1}$), long-term investment in subsidiary and associated company ($LTRINV_{it}/P_{it-1}$), and other investments ($LTOINV_{it}/P_{it-1}$). From TABLE 5.3 (PANEL B), mean of long-term investment in subsidiary and associated company ($LTRINV_{it}/P_{it-1}$) has the highest value, while mean of long-term marketable securities ($LTMS_{it}/P_{it-1}$) has the least value.

After the changes in accounting standards, investments in securities are divided into trading securities (TRD_{it}/P_{it-1}), available-for-sales securities (AFS_{it}/P_{it-1}), long-term investment in subsidiary and associated company stated at equity method ($LTRINV_{it}/P_{it-1}$), other investment or general investment ($LTOINV_{i}/P_{it-1}$), and investment in debenture or held-to-maturity debt securities (HTM_{it}/P_{it-1}). From TABLE 5.3 (PANEL B), mean of long-term investment in subsidiary and associated company ($LTRINV_{it}/P_{it-1}$) has the highest value, while mean of held-to-maturity debt securities (HTM_{it}/P_{it-1}) has the least value.

TAS interpretation No. 4 becomes operative for financial statements ending on or after 31 December 1999. So the number of observations of firm-quarters after the adoption of this interpretation is much less than the others. From TABLE 5.3 (PANEL B), mean value of other assets ($OTHA_{it}/P_{it-1}$) after the adoption this interpretation is less than that of before the adoption period. The interpretation requires that expenditure, which does not meet the definition of assets, does not recognize as the assets. The examples are organization establishment expense, pre-opening expense, and pre-operating expense. If they are recognized as assets in the previous periods, they should be written off. Thus, other assets are reduced after the adoption of this interpretation, so the mean of value of other assets after the adoption the interpretation is less than that of before the adoption period.

5.2.1 The Effects of Changes in Accounting Standards on Value Relevance of Earnings and Accounting Items in Income Statement

5.2.1.1 The Effects of Changes in Accounting Standards on Value Relevance Earnings (Hypothesis 1)

As discussed in Chapter 4, the following model is used to test the effects of changes in accounting standards on value relevance of earnings:

$$R_{it} = \beta_0^1 + \beta_1^1 T + \beta_2^1 (E_{it}/P_{it-1}) + \beta_3^1 T(E_{it}/P_{it-1}) + \varepsilon_{it} \tag{1}$$

TABLE 5.4 shows the results of test of model (1) when R_{it} is quarterly return calculated by compounding the daily returns from a day after prior quarterly earnings' announcement through the day of current quarterly earnings' announcement.

TABLE 5.4 Regression to Test the Effects of Changes in Accounting Standards on Value Relevance of Earnings [a]

$$R_{it} = \beta_0^1 + \beta_1^1 T + \beta_2^1 (E_{it}/P_{it-1}) + \beta_3^1 T(E_{it}/P_{it-1}) + \varepsilon_{it} \tag{1 [b]}$$

Variable	Coefficient Estimate	t –statistics [c]	p value [c]
Intercept	-0.009	-1.103	0.270
T	0.065	5.826**	0.000**
E_{it}/P_{it-1}	0.046	2.763**	0.006**
$T (E_{it}/P_{it-1})$	0.034	1.211	0.226

F-statistics 17.563 (0.000) [#]

Adj. R-square 0.014

[a] The sample consists of 3,530 firm-quarters during Q1/1997 to Q2/2001.

[b] The variables are defined as follows.

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

T = 1 if firms-quarter's are earnings after the changes in accounting standards, and 0 otherwise.

E_{it} = earnings per share of firm i for quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t, and

ε_{it} = error term.

[c] t statistics and [p] value for two tail t –test, * significance at $0.01 < \alpha \leq 0.05$ level

** significance at $\alpha \leq 0.01$ level

[#] The number in the parenthesis is p value of F-statistics. It is the same definition for all models.

TABLE 5.4 shows that the overall model is significant (F-statistics is equal to 17.563). The value of adjusted R-square is 0.014. Earnings and interaction term between dummy variable (T) and earnings (E_{it}) can explain the variation in quarterly stock's returns at 1.4%.

The earnings coefficient (β_2^{1}) has a positive sign and significant at 0.01 level. There is the positive association between earnings and returns over the quarterly period. That is, when earnings increase (decrease), the stock's return will increase (decrease). The investors use earnings in setting their security prices. Earnings are value relevant information. This result is consistent with results on U.S. data provided by Lev (1989), Easton and Harris (1991), Ely and Waymire (1999), Francis and Schipper (1999), Lev and Zarowin (1999).

The coefficient of interaction term between dummy variable (which partitions the firm-quarters into before and after the changes in accounting standards) and earnings (β_3^{1}) is used test whether the changes in accounting standards affect value relevance of earnings. The coefficient (β_3^{1}) has a positive sign, but insignificant. It indicates that value relevance of earnings does not change due to the effect of changes in accounting standards.

5.2.1.2 Value Relevance of New Accounting Items in Income Statement (Hypotheses 2.1A, 2.2 A, 3A, 4A, 5A)

As discussed in Chapter 3 and Chapter 4, there are the new accounting items in income statement. They are gain and loss on troubled debt restructurings, impairment loss of property, plant and equipment, impairment loss of investment in securities, and unrealized gain/loss on trading securities. The following model is used to test whether the new accounting items are value relevant information.

$$R_{it}= \beta_0^{2}+ \beta_1^{2}(EADJ_{it}/P_{it-1})+ \beta_2^{2}(GTDR_{it}/P_{it-1})+ \beta_3^{2}(LTDR_{it}/P_{it-1})+ \beta_4^{2}(IMPPE_{it}/P_{it-1})$$
$$+ \beta_5^{2}(IMINV_{it}/P_{it-1}) + \beta_6^{2}(TRADE_{it}/P_{it-1})+ \varepsilon_{it} \qquad (2)$$

The model (2) is run for the period after the adoption of new accounting standards. It is run by separating gain and loss on TDR because gain on TDR is an extraordinary item and loss on TDR is an ordinary item. The results are presented in TABLE 5.5.

TABLE 5.5 Regression to Test the Value Relevance of New Accounting Items in Income Statement [a]

$$R_{it} = \beta_0^2 + \beta_1^2(EADJ_{it}/P_{it-1}) + \beta_2^2(GTDR_{it}/P_{it-1}) + \beta_3^2(LTDR_{it}/P_{it-1}) + \beta_4^2(IMPPE_{it}/P_{it-1})$$

$$+ \beta_5^2(IMINV_{it}/P_{it-1}) + \beta_6^2(TRADE_{it}/P_{it-1}) + \varepsilon_{it} \qquad (2)^b$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.058	8.032**	0.000**
E_iADJ_{it}/P_{it-1}	0.076	3.584**	0.000**
$GTDR_{it}/P_{it-1}$	0.013	0.220	0.826
$LTDR_{it}/P_{it-1}$	0.149	**0.225**	**0.411**
$IMPPE_{it}/P_{it-1}$	0.144	**2.051***	**0.020***
$IMINV_{it}/P_{it-1}$	0.077	**3.613****	**0.000****
$TRADE_{it}/P_{it-1}$	1.354	**2.478****	**0.007****

F-statistics 4.109 (0.000)

Adj. R-square 0.012

[a] The sample consists of 1,683 firm-quarters after the changes in accounting standards.

[b] The variables are defined as follows.

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

$EADJ_{it}$ = adjusted earnings or accounting earnings per share exclude the effects of the new accounting items of firm i for quarter t,

$GTDR_{it}$ = gain on troubled debt restructuring per share of firm i for quarter t,

$LTDR_{it}$ = loss on troubled debt restructuring per share of firm i for quarter t,

$IMPPE_{it}$ = impairment loss (reversal of impairment loss) of property, plant, and equipment per share of firm i for quarter t,

$IMINV_{it}$ = impairment loss (reversal of impairment loss) of investment in securities per share of firm i for quarter t,

$TRADE_{it}$ = unrealized gain/loss on trading securities per share of firm i for quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two tail tests; * significance at $0.01 < \alpha \leq 0.05$, ** significance at $\alpha \leq 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \leq 0.05$, ** significance at $\alpha \leq 0.01$ level.

The results presented in TABLE 5.5 show that the overall model is significant. All of the independent variables can explain the variation in stock returns at 1.2%. The coefficient of adjusted earnings (β_1^2) has a positive sign and significant at 0.01 level. It shows that earnings before the inclusion of the new accounting items are value relevant information.

The coefficient of gain on troubled debt restructuring (β_2^2) is positive sign but insignificant. It is not related with the stock's return. Thus, gain on TDR is not value relevant information. It is consistent with the prediction in research hypothesis. Gain on TDR is not value relevant because the nature of this item is like one-time item or special item.

The coefficient of loss on troubled debt restructuring (β_3^2) has a positive sign (put value of loss on TDR as negative sign in model), but insignificant. Thus, it is not value relevant information. This result contrasts with the expectation in research hypothesis. Although loss on TDR is presented as an ordinary item in income statement, the investors perceive it as special item since it is not the usual event. The supporting evidence is that the occurrences of this item are very few (only 26 loss on TDR observations) for the samples which are the manufacturing firms.

The coefficient of impairment loss on property plant and equipment (β_4^2) has a positive sign (put gain from reversal of impairment loss as positive sign and impairment loss as negative sign in the model) and significant at 0.05 level. The coefficient of impairment loss on investment in securities (β_5^2) has a positive sign and significant at 0.01 level. The coefficient of unrealized gain/loss on trading securities (β_6^2) is also positively significant at 0.01 level the same as impairment loss of investment in securities.

The impairment loss (reversal of impairment loss) of property, plant and equipment, impairment loss (reversal of impairment loss) of investment in securities, and the unrealized gain/loss on trading securities are positively related with the quarterly returns. They are value relevant information. That is, gain from the reversal of impairment loss of PPE and investment in securities and unrealized gain from the changes in values of trading securities make an increase in security's return, while the loss from impairment of PPE and investment in securities and unrealized loss of trading securities make a reduction in security's return. Thus, it can conclude that investors consider the impairment loss of PPE, impairment loss of investment

in securities, and unrealized gain/loss on trading securities in income statement in setting their security prices. These results can imply that these earnings components are value relevant information. The existence of value relevance of earnings components is consistent with results of U.S. data provided by Lipe (1986), Swaminathan and Weinthrop (1991), Ohlson and Penman (1992).

The results in that impairment loss of PPE and investment in securities are value relevant information correspond with Heflin and Warfield (1997) and Alciatore et al. (2000). The unrealized gain/loss on trading securities are value relevant information the same as the results of Barth (1994), Carroll and Linsmeier (1996), and Graham, et al. (1998).

Furthermore, this study will examine the effects of the inclusion of these new accounting items in income statement on value relevance of earnings. The next section will report these results.

5.2.1.3 The Effects of the Inclusion of New Accounting Items in Income Statement on Value Relevance of Earnings (Hypotheses 2.1B, 2.2B, 3B, 4B, 5B)

The following model is used to test the effects of inclusion gain on TDR, loss on TDR, impairment loss of PPE, impairment loss of investment in securities, and unrealized gain/loss on trading securities in income statement on value relevance of earnings. It will provide the evidence on whether the inclusion of each of new accounting items increases or decreases value relevance of earnings.

$$R_{it} = \beta_0^3 + \beta_1^3 D_1 + \beta_2^3 D_2 + \beta_3^3 D_3 + \beta_4^3 D_4 + \beta_5^3 D_5 + \beta_6^3 (E_{it}/P_{it-1}) + \beta_7^3 D_1 (E_{it}/P_{it-1})$$
$$+ \beta_8^3 D_2(E_{it}/P_{it-1}) + \beta_9^3 D_3(E_{it}/P_{it-1}) + \beta_{10}^3 D_4(E_{it}/P_{it-1}) + \beta_{11}^3 D_5(E_{it}/P_{it-1}) + \varepsilon_{it} \quad (3)$$

Model (3) is run for firm-quarters after the adoption of new accounting standards the same as model (2). Each dummy variable is used to partition the samples into firm-quarters with or without each of new accounting items. The coefficients of interaction terms between dummy variables and earnings are used to test the effects of the inclusion of new accounting items on value relevance of earnings. The results are reported in TABLE 5.6.

TABLE 5.6 Regression to Test the Effects of the Inclusion of New Accounting Items on Value Relevance of Earnings [a]

$$R_{it} = \beta_0^3 + \beta_1^3 D_1 + \beta_2^3 D_2 + \beta_3^3 D_3 + \beta_4^3 D_4 + \beta_5^3 D_5 + \beta_6^3 (E_{it}/P_{it-1}) + \beta_7^3 D_1 (E_{it}/P_{it-1})$$

$$+ \beta_8^3 D_2(E_{it}/P_{it-1}) + \beta_9^3 D_3(E_{it}/P_{it-1}) + \beta_{10}^3 D_4(E_{it}/P_{it-1}) + \beta_{11}^3 D_5(E_{it}/P_{it-1}) + \varepsilon_{it} \quad (3)^b$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.043	5.615**	0.000**
D_1	-0.062	-2.629**	0.009**
D_2	-0.228	-2.901**	0.004**
D_3	-0.002	-0.095	0.924
D_4	-0.023	-1.436	0.151
D_5	-0.009	-0.491	0.623
E_{it}/P_{it-1}	0.116	4.853**	0.000**
$D_1 (E_{it}/P_{it-1})$	-0.111	**-2.280***	**0.012***
$D_2 (E_{it}/P_{it-1})$	-0.036	-0.435	0.664
$D_3 (E_{it}/P_{it-1})$	0.013	0.285	0.775
$D_4(E_{it}/P_{it-1})$	0.115	2.745**	0.006**
$D_5(E_{it}/P_{it-1})$	0.014	0.295	0.766

F-statistics 4.591 (0.000)

Adj. R-square 0.023

[a] The sample consists of 1,683 firm-quarters after the changes in accounting standards.

[b] The variables are defined as follows.

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

E_{it} = earnings of firm i for quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

D_1 = 1 if earnings include gain on TDR, 0 otherwise,

D_2 = 1 if earnings include loss on TDR, 0 otherwise,

D_3 = 1 if earnings include impairment loss (reversal of impairment loss) of PPE, 0 otherwise,

D_4 = 1 if earnings include impairment loss (reversal of impairment loss) of investment in securities, 0 otherwise,

D_5 = 1 if earnings include unrealized gain/loss on trading securites, 0 otherwise, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests; * significance at $0.01 < \alpha \le 0.05$, ** significance at $\alpha \le 0.01$ level.

[c] t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \le 0.05$, ** significance at $\alpha \le 0.01$ level.

TABLE 5.6 shows that the overall model is significant. All independent variables can explain the variation in stock's returns at 2.3 %. The coefficient of earnings (β_6^3) is significantly positive. The result indicates that earnings is related with the stock's return. That is, earnings are value relevant information. It is consistent with the result provided by model (1) as presented in TABLE 5.4.

The coefficient of interaction term between D_1 and E_{it}/P_{it-1} (β_7^3) is significantly negative (at 5% level) as the prediction in research hypothesis 2.1B. The earnings coefficients for firms that report gains on TDR are significantly less than those of firms that do not report gains on TDR. That is, the inclusion of gain on TDR will reduce the value relevance of earnings. The nature of this item is like one-time item or special item. This result is also consistent with Elliott and Hana (1996), Collins et al. (1997), and Easton et al. (2000). They find that earnings with one-time items are less value relevance than earnings without.

For loss on TDR, the coefficient of interaction term between D_2 and E_{it}/P_{it-1} (β_8^3) is negative, but insignificant. That is, the inclusion of loss on TDR does not affect value relevance of earnings. Although both gain and loss on TDR are not value relevant information (as presented in TABLE 5.5), the effects of gain and loss on TDR on value relevance of earnings are different. The plausible explanation is that the presentation of gain and loss on TDR in income statement is clearly distinct (gain on TDR is presented as an extraordinary item, while loss on TDR is presented as an ordinary item). The inclusion of an extraordinary item in income statement reduces value relevance of earnings (Collins et al., 1997; Easton et al., 2000). In addition, numbers of transactions and values of loss on TDR in income statement are much less than gain on TDR. So the effect of loss on TDR on value relevance of earnings is not the same as gain on TDR.

The coefficient β_9^3 which captures the effect of the inclusion impairment loss of PPE (or gain from reversal of impairment loss of PPE) on value relevance of earnings is insignificantly positive. The earnings coefficients of firms with impairment loss of PPE do not differ from the earnings coefficients of firms without it. Thus, the impairment loss of PPE does not affect the value relevance of earnings.

The coefficient β_{10}^3 which is used to investigate the effect of the inclusion impairment loss of investment in securities (or gain from reversal of impairment loss of

investment) on value relevance of earnings is significantly positive. The earnings coefficients for firms that report impairment loss of investment in securities in income statement are significantly more than the earnings coefficients for firms that do not report it. The inclusion of impairment loss of investment in securities increases value relevance of earnings.

The coefficient β_{11}^{3} is used to test the effect of the inclusion of unrealized gain/loss on trading securities on value relevance of earnings. It is positive, but not significant. This result is the same as the effect of impairment loss of PPE. That is, the earnings coefficients do not differ between the firms with and without unrealized gain/loss on trading securities in income statement.

Although impairment loss of PPE, impairment loss of investment in securities, unrealized gain/loss on trading securities are value relevant information (as presented in TABLE 5.5), their effects on value relevance of earnings are different. The inclusion of impairment loss of investment in securities increases value relevance of earnings, while the inclusion of impairment loss of PPE and unrealized gain/loss on trading securities does not affect value relevance of earnings. The plausible explanations are that impairment loss of PPE is positively related with the stock's return only at 0.05 level, while impairment loss of investment in securities and unrealized gain/loss on trading securities is positively significant at 0.01 level (see TABLE 5.5). Thus, the adjusted earnings ($EADJ_{it}$) including the impairment loss of PPE ($EADJ_{it}+IMPPE_{it}$) are less related with stock's return than those of adjusted earnings including impairment loss of investment in securities ($EADJ_{it}+IMINV_{it}$) or adjusted earnings including unrealized gain/loss on trading securities ($EADJ_{it}+TRADE_{it}$). So the effect of inclusion of impairment loss of PPE on value relevance of earnings is not significant.

TABLE 5.6 indicates that only impairment loss of investment in securities has the significant effect on value relevance of earnings in the direction of an increase, while unrealized gain/loss on trading securities does not affect value relevance of earnings. The reason is that the types of impaired investments are not trading securities. Types of impaired investments in securities are available-for-sales securities, general investment, and held-to-maturity debt securities. Values of impairment loss of investments in securities are much higher than those of unrealized gain/loss on trading securities (see TABLE 5.3). So the inclusion of unrealized gain/loss on trading securities in income statement does not statistically affect value relevance of earnings.

From the result of TABLE 5.4, value relevance of earnings is not affected by the changes in accounting standards. It can be explained by the results of TABLE 5.6. That is, impairment loss of investment in securities increases value relevance of earnings, while gain on TDR decreases value relevance of earnings. Other new accounting items (loss on TDR, impairment loss of PPE, and unrealized gain/loss on trading securities) do not affect the value relevance of earnings.

Furthermore, this study will investigate the reasons for the reduction of value relevance of earnings. The results in TABLE 5.6 show that only the inclusion of gain on TDR in income statement decreases value relevance of earnings. One plausible explanation is that gain on TDR is the transitory component of earnings (Collins et al., 1997; Easton et al., 2000).

The next section will report the results of the test of transitory components of earnings.

5.2.1.4 Additional Test: Test of Transitory Components of Earnings

As discussed above, the model (4) is used to test whether each of new accounting items is the transitory component of earnings.

$$(E_{it+1}-E_{it})/P_{it-1} = \beta_0^4 + \beta_1^4 (E_{it}- E_{it-1})/P_{it-1} + \varepsilon_{it} \tag{4}$$

The results in TABLE 5.6 indicate that the inclusion of only gain on TDR in income statement decreases value relevance of earnings, the inclusion of other new accounting items in income statement does not affect or increase value relevance of earnings. However, this study will examine all of these accounting items about the transitory properties. Ramakrishnan and Thomas (1998) and Burgstahler et al. (1999) conclude that special items are much more transitory than other components of earnings, as portion that persists in subsequent quarter is nearly zero. The autocorrelation coefficients of firm-quarters with the special items either positive or negative are closer to zero. That is, if the coefficient β_1^4 of firm with new accounting item is zero (the coefficient β_1^4 is insignificant), this new item will be the transitory component of earnings.

Model (4) is run for sub-sample with each of new accounting items. The significance of coefficient β_1^4 will be examined. The results are reported in TABLE 5.7.

TABLE 5.7 Regression to Investigate the Transitory Components of Earnings [a]

$$(E_{it+1}-E_{it})/P_{it-1} = \beta_0^4 + \beta_1^4 (E_{it} - E_{it-1})/P_{it-1} + \varepsilon_{it} \tag{4}^b$$

PANEL A: Firm-Quarters with only Gain on TDR

Variable	Coefficient Estimate	t –statistics[c]	p value[c]
Intercept	-0.087	-1.225	0.223
$(E_{it} - E_{it-1})/P_{it-1}$	-0.134	-2.364[*]	0.020[*]
F-statistics 5.587 (0.020)	Adj. R-square 0.038		

PANEL B: Firm-Quarters with only Loss on TDR

Variable	Coefficient Estimate	t –statistics[c]	p value[c]
Intercept	-0.024	-0.337	0.737
$(E_{it} - E_{it-1})/P_{it-1}$	-0.198	-3.508[**]	0.001[**]
F-statistics 12.305 (0.001)	Adj. R-square 0.081		

PANEL C: Firm-Quarters with only Impairment Loss of PPE

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.105	2.428[*]	0.016[*]
$E_{it} - E_{it-1}$	-0.420	-6.958[**]	0.000[**]
F-statistics 48.414 (0.000)	Adj. R-square 0.155		

PANEL D: Firm-Quarters with only Impairment Loss of Investment in Securities

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.052	1.398	0.163
$E_{it} - E_{it-1}$	-0.440	-7.010[**]	0.000[**]
F-statistics 49.137 (0.000)	Adj. R-square 0.144		

PANEL E: Firm-Quarters with only Unrealized Gain/Loss on Trading Securities

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.036	1.758	0.080
$E_{it} - E_{it-1}$	-0.404	-10.009[**]	0.000[**]
F-statistics 100.190 (0.000)	Adj. R-square 0.312		

[a] The numbers of sample in each panel are not equal. The sample consists of 118 gain on TDR firm-quarters, 26 loss on TDR firm-quarters, 259 impairment loss of PPE firm-quarters, 287 impairment loss of investment in securities firm-quarters, and 220 unrealized gain/loss on trading securities firm-quarters.

[b] The variables are defined as follows.

E_{it} = earnings per share of firm i for quarter t,

E_{it+1} = earnings per share of firm i for quarter t+1, and

E_{it-1} = earnings per share of firm i for quarter t-1.

[c] [*] significance at $0.01 < \alpha \le 0.05$ level, [**] significance at $\alpha \le 0.01$ level for two tail t-test.

For the results of TABLE 5.7, the coefficients of β_1^4 have the negative signs and significant at 0.01 level for all new accounting items except the firm-quarters with gain on TDR. The coefficient of β_1^4 of firm-quarters with gain on TDR is negatively significant at 0.05 level. The difference of future earnings and current quarterly earnings ($E_{it+1}-E_{it}$) is negatively related to the difference of current earnings and previous quarterly earnings ($E_{it}-E_{it-1}$) significantly for the firm-quarters with each of new accounting items. That is, all of new accounting items are not the transitory components of earnings.

However, the comparison between each of new accounting items indicates that the absolute value of the coefficient of β_1^4 of firm-quarters with only gain on TDR (0.134) is less than the coefficient β_1^4 of firm-quarters with loss on TDR (0.198), impairment loss of PPE (0.420), impairment loss of investment in securities (0.440), and unrealized gain/loss on trading securities (0.404). That is, the correlation of $E_{it+1}-E_{it}$ and $E_{it}-E_{it-1}$ of firm-quarters with gain on TDR is much less than those of firm-quarters with loss on TDR and other three new accounting items. Although gain on TDR is not transitory component of earnings, it has the absolute value of the coefficient β_1^4 less than other new accounting items.

The results in which loss on TDR, impairment loss of PPE, impairment loss of investment in securities and unrealized gain/loss on trading securities are not transitory items are consistent with results in TABLE 5.6. That is, the inclusion of these items in income statement does not decrease (increases or does not affect) value relevance of earnings, and they are not transitory components of earnings. The result in which gain on TDR is not transitory component of earnings contrasts with TABLE 5.6. Gain on TDR reduces value relevance of earnings, but it is not transitory components of earnings. However, the attempt to find other plausible explanations in which gain on TDR reduces value relevance of earnings is not in the scope of this study.

The evidence supporting that gain on TDR is not transitory component of earnings is the frequencies of occurrences of gain on TDR in same firm for consecutive quarters. From the observation of data of firms with TDR transactions, gain on TDR occurs repeatedly in the same firm. The frequencies of the occurrence of gains and losses on TDR in the same firm are summarized in TABLE 5.8.

TABLE 5.8 The Frequencies of the Occurrence of Gains and Losses on TDR in the Same Firm for Quarterly Financial Statements

Frequencies	Gain on TDR		Loss on TDR	
	Numbers of Firms	Percentage	Numbers of Firms	Percentage
One quarter	27	45.76%	11	64.70%
Two consecutive quarters	15	25.42%	3	17.65%
Three consecutive quarters	5	8.48%	3	17.65%
More than three consecutive quarters	12	20.34%	0	0.00%
Total	59	100%	17	100%

From TABLE 5.8, the occurrence of gain on TDR in one quarter is equal to 45.76%. The sum of percentage of frequencies which gains on TDR occur more than one quarter in the same firm is equal to 54.24% (two consecutive quarters is equal to 25.42%, three consecutive quarters is equal to 8.48% and more than three consecutive quarters is equal to 20.34%). That is, there are the possibilities that gains on TDR occur in the same firm for consecutive quarters. This evidence supports the result in which gain on TDR is not the transitory component of earnings. Although loss on TDR mostly occurs once (64.70%), there are still the possibilities that loss on TDR occurs more than one consecutive quarters. So the result also supports that loss on TDR is not transitory component of earnings.

The debt restructuring between the creditor and debtor always takes a long time in making the agreement. So it is possible that the gains on TDR occur in same firms in the consecutive quarters. It is the reason why the gain on TDR is not transitory component of quarterly earnings.

This study also examines the frequencies of the occurrence of gains and losses on TDR in the same firm for yearly financial statements. As discussed in Chapter 4, data used in the analyses for the period after changes in accounting standards is quarterly financial statements from Q1/1999 to Q2/2001. Thus, there are yearly financial statements for the period of year 1999 and 2000 in the examination of frequencies of TDR. The result is presented in TABLE 5.9.

TABLE 5.9 The Frequencies of the Occurrence of Gains and Losses on TDR in the Same Firm for Yearly Financial Statements.

Frequencies	Gain on TDR		Loss on TDR	
	Number of firms	Percentage	Number of firms	Percentage
One year	39	69.64%	11	100.00%
Two consecutive years	17	30.36%	0	0.00%
Total	56	100.00%	11	100.00%

From TABLE 5.9, the percentage of the occurrence of gain on TDR for two consecutive years is 30.36%, which is less than percentage of the occurrence for one year (69.64%) as half. It is also less than percentage of the occurrence of gain on TDR more than one quarter (54.24% in TABLE 5.8). However, there are the possibilities that gains on TDR also occur repeatedly in the same firm for yearly financial statement data.

The results of TABLE 5.8 and 5.9 are the same. That is, there is the supporting evidence that gain on TDR occur in consecutive quarters or consecutive years for the same firm. These results thus support the conclusion that gain on TDR is not transitory component of earnings.

All of losses on TDR occur in one year. There is no repeatedly loss on TDR in samples. This evidence supports the results presented in TABLE 5.5 in which loss on TDR is not value relevant information because the nature of loss on TDR item like one-time item.

5.2.2 The Effects of Changes in Accounting Standards on Value Relevance of Accounting Items in Balance Sheet

5.2.2.1 The Effects of Changes in Accounting Standards (TAS No. 32-40) and the Adoption of TAS Interpretation No. 4 on Value Relevance of Total Assets (Hypothesis 6A and Hypothesis 6B)

As discussed in Chapter 4, the following model is used to test the effects of changes in accounting standards on the value relevance of total assets:

$$P_{it}/P_{it-1} = \beta_0^5 + \beta_1^5 T_1 + \beta_2^5 T_2 + \beta_3^5 (TA_{it}/P_{it-1}) + \beta_4^5 (TL_{it}/P_{it-1}) + \beta_5^5 T_1 (TA_{it}/P_{it-1})$$
$$+ \beta_6^5 T_1 (TL_{it}/P_{it-1}) + \beta_7^5 T_2 (TA_{it}/P_{it-1}) + \beta_8^5 T_2 (TL_{it}/P_{it-1}) + \varepsilon_{it} \qquad (5)$$

The model (5) is run pooled samples for both the sample of before and after the changes in accounting standards. TABLE 5.10 shows the results of model (5).

TABLE 5.10 Regression to Test the Effects of Changes in Accounting Standards (TAS No. 32-40) and the Adoption of TAS Interpretation No. 4 on Value Relevance of Total Assets[a]

$$P_{it}/P_{it-1} = \beta_0{}^5 + \beta_1{}^5 T_1 + \beta_2{}^5 T_2 + \beta_3{}^5 (TA_{it}/P_{it-1}) + \beta_4{}^5 (TL_{it}/P_{it-1}) + \beta_5{}^5 T_1 (TA_{it}/P_{it-1})$$

$$+ \beta_6{}^5 T_1 (TL_{it}/P_{it-1}) + \beta_7{}^5 T_2 (TA_{it}/P_{it-1}) + \beta_8{}^5 T_2 (TL_{it}/P_{it-1}) + \varepsilon_{it} \qquad (5)^b$$

Variable	Coefficient Estimate	t-statistics	p value
Intercept	0.900	65.285**	0.000**
T_1	0.038	1.719	0.086
T_2	-0.035	-1.130	0.258
TA_{it}/P_{it-1}	0.031	6.242**	0.000**
TL_{it}/P_{it-1}	- 0.028	-4.618**	0.000**
$T_1 (TA_{it}/P_{it-1})$	0.018	**2.202***	**0.014***
$T_1 (TL_{it}/P_{it-1})$	-0.017	-1.788	0.074
$T_2 (TA_{it}/P_{it-1})$	-0.004	**-0.282**	**0.389**
$T_2 (TL_{it}/P_{it-1})$	0.002	0.126	0.900
F-statistics	22.696 (0.000)		
Adj. R-square	0.070		

[a] The sample consists of 2,291 firm-quarters from Q1/1997 to Q2/2001.

[b] The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

T_1 = 1 if the firm-quarters' total assets (total liabilities) are total assets (total liabilities) after the changes in accounting standards, 0 otherwise,

T_2 = 1 if the firm-quarters' total assets (total liabilities) are affected by the adoption of TAS interpretation No.4, 0 otherwise,

TA_{it} = firm i's total asset per share at the end of quarter,

TL_{it} = firm i's total liability per share at the end of quarter t, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests;* significance at $0.01 < \alpha \leq 0.05$, and ** significance at $\alpha \leq 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \leq 0.05$, and ** significance at $\alpha \leq 0.01$ level.

In TABLE 5.10, the overall model is significant at 0.01 level. The adjusted R^2 value is 0.070. All independent variables can explain the variation in stock prices at 7.0%.

The coefficient of total assets (β_3^s) has a positive sign and significant at 0.01 level. Value of total assets increases (decreases), the stock's price also increases (decreases). The coefficient of total liabilities (β_4^s) has a negative sign and also significant at 0.01 level. Value of total liabilities increases (decreases), the stock's price decreases (increases). Thus, both total assets and total liabilities are value relevant information. Investors use total assets and total liabilities in balance sheet in setting the security prices. This result corresponds to the results of U.S. data provided by Collins et al. (1997), Francis and Schipper (1999) and Lev and Zarowin (1999).

The coefficient β_5^s, which captures the effects of the changes in accounting standards (TAS No. 32-40) on value relevance of total assets, is positive and significant at 0.05 level (t-statistics is 2.202 for one tail t-test). As predicted in the research hypothesis 6A, the coefficient of total assets after the changes in accounting standards is significantly more than those of before the changes in accounting standards. That is, value relevance of total assets increases due to the adoption of TAS No. 32-40.

As discussed in Chapter 4, the adoption of TAS interpretation No. 4 does not occur at the same time as TAS No. 32-40. Thus, the study uses another dummy variable (T_2) to partition firm-quarters into before and after the adoption of this interpretation. The coefficient of interaction term between dummy variable (T_2) and total assets (β_7^s) is used to test whether the adoption of TAS interpretation No. 4 (Expenditures Capitalized by Developing Stage Enterprises and Developed Enterprises) affects the value relevance of total assets. This coefficient β_7^s has a negative sign, but insignificant (t statistics is -0.282 for one tail t-test). Thus, the adoption of TAS interpretation No.4 does not affect the value relevance of total assets. This result contrasts with the expectation in the research hypothesis 6B. The plausible explanation is that TAS interpretation No. 4 affects especially for other assets which is the least portion among of components of assets. The effect on other assets may be insignificant for investors in the use of total assets in setting their security prices. So the adoption of this interpretation does not affect

value relevance of total assets. The effects of the adoption of this interpretation on value relevance of other assets will be further examined.

Although the effects of the adoption of TAS No. 32-40 and accounting standard interpretations on value relevance of total liabilities are not stated in the research hypotheses, TABLE 5.10 also presents these results. The coefficient β_6^5 and β_8^5 is used to test the effects of the adoption of TAS No. 32-40 and TAS interpretation No. 4 on value relevance of total liabilities, respectively. The coefficient β_6^5 has a negative sign and insignificant (although it is significant at 0.10 level). It indicates that value relevance of total liabilities does not change after the adoption of TAS No. 32-40. This result is the same as prediction because the new accounting standards do not change the recognition and measurement criteria of components of total liabilities. The coefficient β_8^5 is positive, but insignificant. The adoption of TAS interpretation No. 4 does not affect the value relevance of total liabilities as the prediction.

From the results stated above, there are three plausible explanations of an increase in value relevance of total assets due to the adoption of TAS No. 32-40. First, value relevance of both PPE and investment in securities increases. Thus, PPE and investment in securities are directly affected by the adoption of new accounting standards. Second, value relevance of PPE increases, but value relevance of investment in securities decreases or value relevance of investment is not affected by the changes in accounting standards. Thus, the effect of PPE dominates the effect of investment in securities. Third, value relevance of investment in securities increases, but value relevance of PPE decreases or value relevance of PPE is not affected by the changes in accounting standards. Thus, the effect of investment in securities dominates the effect of PPE. The detailed of this point will be further examined in section 5.2.2.2 and 5.2.2.4. The result in section 5.2.2.2 shows that value relevance of PPE increases, while the result in section 5.2.2.4 shows that value relevance of investment in securities does not change after the changes in accounting standards. This evidence supports the second explanation of an increase in value relevance of total assets.

For the result of the adoption TAS interpretation No. 4, the other assets is directly affected by the adoption of this interpretation. The effect of adoption this interpretation on value relevance of other assets will be examined in section 5.2.2.6.

5.2.2.2 The Effects of Changes in Accounting Standards on Value Relevance of Property, Plant and Equipment (PPE) (Hypothesis 7A)

As discussed in Chapter 4, the following model is used to test whether the adoption of TAS No. 32 and TAS No. 36 affects the value relevance of PPE.

$$P_{it}/P_{it-1} = \beta_0^6 + \beta_1^6 T_1 + \beta_2^6 (PPE_{it}/P_{it-1}) + \beta_3^6 (BVP_{it}/P_{it-1}) + \beta_4^6 T_1(PPE_{it}/P_{it-1}) + \beta_5^6 T_1(BVP_{it}/P_{it-1}) + \varepsilon_{it} \quad (6)$$

Model (6) is run pooled sample for firm-quarters both the sample before and after the changes in accounting standards. TABLE 5.11 reports the regression results.

TABLE 5.11 Regression to Test the Effects of Changes in Accounting Standards on Value Relevance of Property, Plant and Equipment (PPE) [a]

$$P_{it}/P_{it-1} = \beta_0^6 + \beta_1^6 T_1 + \beta_2^6 (PPE_{it}/P_{it-1}) + \beta_3^6 (BVP_{it}/P_{it-1}) + \beta_4^6 T_1(PPE_{it}/P_{it-1}) + \beta_5^6 T_1(BVP_{it}/P_{it-1}) + \varepsilon_{it} \quad (6)^b$$

Variable	Coefficient Estimate	t –statistics[c]	p value[c]
Intercept	0.900	65.412**	0.000**
T_1	0.025	1.244	0.214
PPE_{it}/P_{it-1}	0.035	8.565**	0.000**
BVP_{it}/P_{it-1}	0.030	6.158**	0.000
$T_1 (PPE_{it}/P_{it-1})$	0.018	**2.594****	**0.005****
$T_1 (BVP_{it}/P_{it-1})$	0.018	2.382*	0.017*

F-statistics 35.356 (0.000)   Adj. R-square 0.070

[a] The sample consists of 2291 firm-quarters from Q1/1997 to Q2/2001.

[b] The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

T_1 = 1 if firms-quarters' PPE are PPE under new accounting standards requirements, 0 otherwise.

PPE_{it} = firm i's net property, plant and equipment per share at the end of quarter t,

BVP_{it} = firm i's book value of equity per share after subtracting the amount of property, plant and equipment at the end of quarter t, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests; * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

TABLE 5.11 indicates that the overall model is significant. The adjusted R^2 value is 0.070. The coefficient of PPE (β_2^6) has a positive sign and significant at 0.01 level. So PPE is positively related with stock's price. Thus, PPE is value relevant information. This result corresponds with Easton et al. (1993), Barth and Clinch (1998), and Aboody et al. (1999).

The coefficient β_4^6, which is the interaction term between dummy variable (T_1) and PPE, is used to test whether the adoption of new accounting standards affects value relevance of PPE. The result shows that the coefficient β_4^6 has a positive sign and significant at 0.01 level (t-statistics equal to 2.594 for one tail t-test). This result is the same as prediction in the research hypothesis 7A. Thus, value relevance of PPE increases due to the adoption of new accounting standards (TAS No. 32 and TAS No. 36).

In addition, the coefficient of dummy variable on book value of equity after subtraction of PPE (β_5^6) is positively significant. It indicates that value relevance of other components of balance sheet after the subtraction of PPE also changes.

There will be further analyses for the reasons of an increase in value relevance of PPE. TAS No. 32 has the alternative treatment of PPE valuation which allows the firms to revalue. This point does not differ from the old accounting standard. TAS No. 36 requires that firms should record impairment loss of PPE in income statement and allowance for the impairment loss of PPE in balance sheet in the case that the book value exceeds the recoverable amount. The value relevance of components of PPE will be further examined in the next section.

5.2.2.3 Value Relevance of the Revaluation Surplus and Allowance for Impairment of Property, Plant and Equipment (Hypothesis 7B and Hypothesis 7C)

As discussed in Chapter 4, model (7) is used to investigate whether the revaluation surplus amount of property, plant and equipment (PPE) under the old accounting standards' requirements (TAS No.9 and TAS No. 10) is value relevant information. Model (8) is used to examine the value relevance of revaluation surplus amount and allowance for impairment of PPE under new accounting standards' requirements (TAS No. 32 and TAS No. 36).

$$P_{it}/P_{it-1} = \beta_0^7 + \beta_1^7(BVP_{it}/P_{it-1}) + \beta_2^7(PPEC_{it}/P_{it-1}) + \beta_3^7(PPER_{it}/P_{it-1}) + \varepsilon_{it} \qquad (7)$$

$$P_{it}/P_{it-1} = \beta_0^8 + \beta_1^8(BVP_{it}/P_{it-1}) + \beta_2^8(PPEC_{it}/P_{it-1}) + \beta_3^8(PPER_{it}/P_{it-1}) + \beta_4^8(PPEI_{it}/P_{it}) + \varepsilon_{it} \qquad (8)$$

Model (7) is run for firm-quarters before changes in accounting standards. The components of PPE are composed only cost amount and revaluation surplus amount before the changes in accounting standards. Model (8) is run for firm-quarters after the changes of accounting standards. The components of PPE are composed of three components: cost amount, revaluation surplus amount, and allowance for impairment of PPE. The results are presented in TABLE 5.12.

TABLE 5.12 Regression to Test Value Relevance of Cost Amount, Revaluation Surplus Amount, and Allowance for the Impairment Amount of PPE

PANEL A: For the firm-quarters before the changes in accounting standards [a]

$$P_{it}/P_{it-1} = \beta_0^7 + \beta_1^7(BVP_{it}/P_{it-1}) + \beta_2^7(PPEC_{it}/P_{it-1}) + \beta_3^7(PPER_{it}/P_{it-1}) + \varepsilon_{it} \qquad (7)^b$$

Variable	Coefficient Estimate	t –statistics[c]	p value[c]
Intercept	0.908	58.121[**]	0.000[**]
BVP_{it}/P_{it-1}	0.026	4.791[**]	0.000[**]
$PPEC_{it}/P_{it-1}$	0.032	6.655[**]	0.000[**]
$PPER_{it}/P_{it-1}$	0.029	2.926[**]	0.003[**]

F-statistics 17.620 (0.000)

Adj. R-square 0.042

TABLE 5.12 Regression to Test Value Relevance of Cost Amount, Revaluation Surplus Amount, and Allowance for the Impairment Amount of PPE (Continued)

PANEL B: For the firm-quarters after the changes in accounting standards [a]

$$P_{it}/P_{it-1}=\beta_0^8+\beta_1^8(BVP_{it}/P_{it-1})+\beta_2^8(PPEC_{it}/P_{it-1})+\beta_3^8(PPER_{it}/P_{it-1})+\beta_4^8(PPEI_{it}/P_{it})+\varepsilon_{it} \qquad (8)^{b}$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.941	78.636**	0.000**
BVP_{it}/P_{it-1}	0.039	8.723**	0.000**
$PPEC_{it}/P_{it-1}$	0.049	10.283**	0.000**
$PPER_{it}/P_{it-1}$	0.031	**3.856****	**0.000****
$PPEI_{it}/P_{it-1}$	-0.452	**-3.236****	**0.001****

F-statistics 30.284 (0.000)

Adj. R-square 0.093

[a] The numbers of sample in each panel are not equal. PANEL A consists of 1,146 firm-quarters before the changes in accounting standards. PANEL B consists of 1,145 firm-quarters after the changes in accounting standards.

[b] The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

BVP_{it} = firm i's book value of equity per share after subtracting the amount of property, plant and equipment at the end of quarter t,

$PPEC_{it}$ = firm i's amount of cost of property, plant and equipment per share at the end of quarter t,

$PPER_{it}$ = firm i's amount of revaluation surplus per share at the end of quarter t,

$PPEI_{it}$ = firm i's amount of allowance for impairment of property, plant an equipment per share at the end of quarter t, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests, * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

TABLE 5.12 (PANEL A) shows that the overall model is significant (F-statistics is equal to 17.620, significant at 0.01 level). The coefficient of property, plant and

equipment stated at cost (β_2^7) has a positive sign and significant at 0.01 level. The coefficient of revaluation surplus of PPE (β_3^7) has also a positive sign and also significant at 0.01 level the same as cost value of PPE. That is, the revaluation surplus amount of PPE is positively related with stocks' price. In addition to cost amount, investors also use the revaluation surplus amount of PPE in valuing their securities. This result is consistent with U.S. data provided by Easton et al. (1993), Barth and Clinch (1998), and Aboody et al. (1999).

TABLE 5.12 (PANEL B) shows that the overall model is significant (F-statistics is equal to 30.284, significant at 0.01 level). The coefficient of property, plant and equipment stated at cost (β_2^8) has a positive sign and significant at 0.01 level the same as before the changes in accounting standards (TABLE 5.12 PANEL A).

In addition, the coefficient of revaluation surplus of PPE (β_3^8) is also positively related with the stock's prices the same as before the changes in accounting standards (TABLE 5.12 PANEL A). Thus, revaluation surplus of PPE increases, the stock price also increases. The coefficient of allowance for impairment loss of PPE (β_4^8) has a negative sign (put the allowance for the impairment data as the positive sign in model) and significant at 0.01 level. That is, the allowance for the impairment loss of property, plant and equipment is negatively related with the stock's price. Thus, the amount of allowance for impairment of PPE increases, the stock price decreases. It indicates that both revaluation surplus amount and the allowance for impairment of PPE are value relevant information in the after changes in accounting standards period.

As the results presented in section 5.2.2.2, it concludes that value relevance of PPE increases due to the adoption of new accounting standards (the adoption of TAS No. 32 and No. 36). The components of PPE compose of cost amount and revaluation surplus amount in the period of before and after the changes in accounting standards. The cost amount and revaluation surplus amounts of PPE are value relevant information in the period of before and after changes in accounting standards (TABLE 5.12 PANEL A and B). Allowance for impairment of PPE is the additional accounting item in balance sheet after the changes in accounting standards. The allowance for impairment of PPE is value relevant information (TABLE 5.12 PANEL B). Thus, value relevance of PPE increases because of the allowance for impairment of PPE.

5.2.2.4 The Effects of Changes in Accounting Standards on Value Relevance of Investment in Securities (Hypothesis 8A)

The following model is used to test whether the adoption of TAS No. 40 affects the value relevance of investment in securities.

$$P_{it}/P_{it-1} = \beta_0^9 + \beta_1^9 T_1 + \beta_2^9 (INV_{it}/P_{it-1}) + \beta_3^9 (BVI_{it}/P_{it-1}) + \beta_4^9 T_1(INV_{it}/P_{it-1}) + \beta_5^9 T_1(BVI_{it}/P_{it-1}) + \varepsilon_{it} \quad (9)$$

Model (9) is run pooled sample both before and after the changes in accounting standards. The result is reported in TABLE 5.13.

TABLE 5.13 Regression to Test the Effects of Changes in Accounting Standards on Value Relevance of Investment in Securities [a]

$$P_{it}/P_{it-1} = \beta_0^9 + \beta_1^9 T_1 + \beta_2^9 (INV_{it}/P_{it-1}) + \beta_3^9 (BVI_{it}/P_{it-1}) + \beta_4^9 T_1(INV_{it}/P_{it-1}) + \beta_5^9 T_1(BVI_{it}/P_{it-1}) + \varepsilon_{it} \quad (9)^b$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.903	65.651**	0.000**
T_1	0.030	1.491	0.136
INV_{it}/P_{it-1}	0.039	4.366**	0.000**
BVI/P_{it-1}	0.035	8.239**	0.000**
$T_1(INV_{it}/P_{it-1})$	0.018	**1.527**	**0.064**
$T_1(BVI_{it}/P_{it-1})$	0.015	2.133*	0.033*

F-statistics 33.988 (0.000)   Adj. R-square 0.067

[a] The sample consists of 2,291 firm-quarters during Q1/1997 to Q2/2001.

[b] The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

T_1 = 1 if firms-quarters' investment in securities are investment in securities under new accounting
        standards' requirements, 0 otherwise,

INV_{it} = firm i's total investment in securities per share at the end of quarter t,

BVI_{it} = firm i's book value of equity per share subtract investment in securities at the end of quarter t,

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests; * significance at $0.01 < \alpha \le 0.05$, and
        ** significance at $\alpha \le 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \le 0.05$, and
        ** significance at $\alpha \le 0.01$ level.

From TABLE 5.13, the overall model is significant (F-statistics is equal to 33.988) with the adjusted R–square of 0.067. The coefficient of investment in securities (β_2^9) has a positive sign and significant at 0.01 level. There is the positive relationship between the stock prices and investment in securities. Investment in securities is value relevant information the same as the results of U.S. data provided by Barth (1994), Carroll and Linsmeier (1996), Graham et al. (1998), and Park et al. (1999).

The coefficient of interaction term between dummy variable and the investment in securities (β_4^9) is positive, but insignificant at 0.05 level (although it is significant at 0.10 level for one tail t-test). That is, value relevance of investment in securities after the changes in accounting standards does not differ from value relevance of investment in securities before the changes in accounting standards. Thus, the value relevance of investment in securities is not affected by the adoption of TAS No. 40.

However, the coefficient of dummy variable and book value of equity after subtraction of investment in securities (β_5^9) is positively significant. It indicates that value relevance of other components in balance sheet after the subtraction of investment in securities changes after the adoption of new accounting standards.

TAS No. 40 requires that marketable securities both short-term and long-term are stated in fair value, while old accounting standards (TAS No. 12) requires that the marketable securities are stated at lower of cost or market (LCM). Value relevance of investment in securities partitioned by types both before and after the changes in accounting standards will be further examined. It will provide the evidences on whether the value relevance of each type of investment under the old and new accounting standards is different.

5.2.2.5 Value Relevance of the Components of Investment in Securities (Hypothesis 8 B and Hypothesis 8C)

As discussed in Chapter 4, model (10) is used to examine whether the investment in securities partitioned by types according to the old accounting standards' requirements are value relevant information. The types of investment in securities of old accounting standard and new accounting standard are different. The model (11) is used to investigate the value relevance of investment in securities partitioned by types according to the

new accounting standards' requirements. Because some firms do not show the amount of allowance for the impairment of investment in securities, the data of allowance for the impairment of investment in securities are not completed. So this study cannot separate the allowance for the impairment for each type of investment in securities.

$$P_{it}/P_{it-1} = \beta_0^{10} + \beta_1^{10}(BVI_{it}/P_{it-1}) + \beta_2^{10}(STMS_{it}/P_{it-1}) + \beta_3^{10}(LTMS_{it}/P_{it-1}) + \beta_4^{10}(LTRINV_{it}/P_{it-1})$$
$$+ \beta_5^{10}(LTOINV_{it}/P_{it-1}) + \varepsilon_{it} \qquad (10)$$

$$P_{it}/P_{it-1} = \beta_0^{11} + \beta_1^{11}(BVI_{it}/P_{it-1}) + \beta_2^{11}(TRD_{it}/P_{it-1}) + \beta_3^{11}(AFS_{it}/P_{it-1}) + \beta_4^{11}(LTRINV_{it}/P_{it-1})$$
$$+ \beta_5^{11}(LTOINV_{it}/P_{it-1}) + \beta_6^{11}(HTM_{it}/P_{it-1}) + \varepsilon_{it} \qquad (11)$$

The model (10) is run for firm-quarters before the changes in accounting standards. The model (11) is run for the firm-quarters after the changes in accounting standards.

TABLE 5.14 Regression to Test the Value Relevance of Components of Investment in Securities

PANEL A: For the firm-quarters before the changes in accounting standards [a]

$$P_{it}/P_{it-1} = \beta_0^{10} + \beta_1^{10}(BVI_{it}/P_{it-1}) + \beta_2^{10}(STMS_{it}/P_{it-1}) + \beta_3^{10}(LTMS_{it}/P_{it-1}) + \beta_4^{10}(LTRINV_{it}/P_{it-1})$$
$$+ \beta_5^{10}(LTOINV_{it}/P_{it-1}) + \varepsilon_{it} \qquad (10)^{b}$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.903	57.595[**]	0.000[**]
BVI_{it}/P_{it-1}	0.036	7.394[**]	0.000[**]
$STMS_{it}/P_{it-1}$	-0.019	-0.551	0.582
$LTMS_{it}/P_{it-1}$	-0.009	-0.076	0.939
$LTRINV_{it}/P_{it-1}$	0.038	2.699[**]	0.007[**]
$LTOINV_{it}/P_{it-1}$	0.063	2.729[**]	0.006[**]

F-statistics 12.498 (0.000)

Adj. R-square 0.048

TABLE 5.14 Regression to Test the Value Relevance of Components of Investment in Securities (Continued)

PANEL B: For the firm-quarters after the changes in accounting standards [a]

$$P_{it}/P_{it-1} = \beta_0^{11} + \beta_1^{11}(BVI_{it}/P_{it-1}) + \beta_2^{11}(TRD_{it}/P_{it-1}) + \beta_3^{11}(AFS_{it}/P_{it-1}) + \beta_4^{11}(LTRINV_{it}/P_{it-1})$$
$$+ \beta_5^{11}(LTOINV_{it}/P_{it-1}) + \beta_6^{11}(HTM_{it}/P_{it-1}) + \varepsilon_{it} \qquad (11)^b$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.927	76.765**	0.000**
BVI_{it}/P_{it-1}	0.053	10.993**	0.000**
TRD_{it}/P_{it-1}	0.058	**0.970**	**0.166**
AFS_{it}/P_{it-1}	0.244	**4.585****	**0.000****
$LTRINV_{it}/P_{it-1}$	0.058	7.771**	0.000**
$LTOINV_{it}/P_{it-1}$	0.017	0.522	0.602
HTM_{it}/P_{it-1}	-0.153	-1.160	0.246

F-statistics 23.155 (0.000)

Adj. R-square 0.104

[a]PANEL A consists of 1,146 firm-quarters before the changes in accounting standards. PANEL B consists of 1,145 firm-quarters after the changes in accounting standards.

[b]The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t,

BVI_{it} = firm i's book value of equity per share after subtracting the value of investment in securities at the end of quarter t,

$STMS_{it}$ = firm i's short-term marketable securities per share at the end of quarter t,

$LTMS_{it}$ = firm i's long-term marketable securities per share at the end of quarter t,

$LTRINV_{it}$ = firm i's long-term investment in subsidiary or associated company per share at the end of quarter t,

$LTOINV_{it}$ = firm i's other investment or general investment per share at the end of quarter t,

TRD_{it} = firm i's trading securities per share at the end of quarter t,

AFS_{it} = firm i's available-for -sales securities per share at the end of quarter t,

HTM_{it} = firm i's held-to-maturities debt securities per share at the end of quarter t.

[c] t-statistics and p value without bold character for two-tail tests; * significance at $0.01 < \alpha \leq 0.05$, and ** significance at $\alpha \leq 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \leq 0.05$, and ** significance at $\alpha \leq 0.01$ level.

In TABLE 5.14 (PANEL A), the overall model is significant (F-statistics is equal to 12.498) with the adjusted R-square of 0.048. The coefficients of short term marketable securities (β_2^{10}) and long term marketable securities (β_3^{10}) in model (10), which stated at lower of cost or market value (LCM), are not significant. The coefficient of investment in subsidiary and associated company (β_4^{10}) has a positive sign and significant at 0.01 level. That is, investment in subsidiary and associated company under the equity method is value relevant information. Investors also consider this type of investment in setting their securities' prices. The results are the same as U.S. data provided by Graham et. al. (1998).

Furthermore, the coefficient of other investment stated at cost value (β_5^{10}) has a positive sign and significant at 0.01 level. Thus, the other investment is value-relevant information, too.

The new accounting standard of investment in securities (TAS No. 40) divides the investments in securities as trading securities, available-for-sales securities, other or general investment, and held-to-maturity debt securities. The results of their value relevance are presented in TABLE 5.14 (PANEL B).

From the TABLE 5.14 (PANEL B), the overall model is significant (F-statistics is equal to 23.155) with the adjusted R-square of 0.104. The coefficient of trading securities (β_2^{11}) which is stated at fair value has a positive sign, but insignificant. The coefficient for available-for-sales securities (AFS) stated at fair value (β_3^{11}) has a positive sign and significant. AFS securities are positively related with the stock's price. That is, fair values of AFS securities are value relevant information which is consistent with Barth (1994), Carroll and Linsmeire (1996), Graham et al. (1998), and Park et al. (1999). Although trading securities and AFS securities are stated at fair values, trading securities are not value relevant information. The reason is that trading securities are securities which firms have the intention to hold for short-term purposes. It is rapid turnover so that investors do not consider it in valuing the securities.

The coefficient of investment in subsidiary and associated company (β_4^{11}) have a positive sign and significant at 0.01 level. Thus, the investment in subsidiary and associated company is value relevant information, which is the same result as before the changes in accounting standards (TABLE 5.14 PANEL A). It is also consistent with the result provided

by Graham et al. (1998). The coefficients for general investment (stated at cost β_5^{11}), and held-to-maturity debt securities (stated at amortized cost β_6^{11}) are not significant.

Fair value of AFS securities from the adoption of TAS No. 40 is value relevant information, while marketable securities stated in LCM (before the changes in accounting standards) is not value relevant information. It indicates that investors consider fair values of AFS in setting their securities' prices. The value relevance of general investment is diminished after the changes in accounting standards. It can imply that investors use fair values for investment in securities in valuing the securities' prices in stead of cost values.

5.2.2.6 The Effect of the Adoption of TAS Interpretation No. 4 on Value Relevance of Other Assets (Hypothesis 9)

As discussed in Chapter 4, the following model is used to test whether the adoption of TAS interpretation No. 4 affects the value relevance of other assets.

$$P_{it}/P_{it-1} = \beta_0^{12} + \beta_1^{12} T_2 + \beta_2^{12} (OTHA_{it}/P_{it-1}) + \beta_3^{12} (BVO_{it}/P_{it-1}) + \beta_4^{12} T_2 (OTHA_{it}/P_{it-1})$$
$$+ \beta_5^{12} T_2 (BVO_{it}/P_{it-1}) + \varepsilon_{it} \tag{12}$$

The model (12) is run pooled sample both before and after the adoption of TAS interpretation No. 4. The dummy variable (T_2) partitions the firm-quarters into affected and not affected by the adoption of the interpretation. The result is presented in TABLE 5.15.

TABLE 5.15 Regression to Test the Effects of Adoption of TAS Interpretation No.4 on Value Relevance of Other Assets [a]

$$P_{it}/P_{it-1} = \beta_0^{12} + \beta_1^{12} T_2 + \beta_2^{12} (OTHA_{it}/P_{it-1}) + \beta_3^{12} (BVO_{it}/P_{it-1}) + \beta_4^{12} T_2(OTHA_{it}/P_{it-1})$$
$$+ \beta_5^{12} T_2(BVO_{it}/P_{it-1}) + \varepsilon_{it} \qquad (12)^{b}$$

Variable	Coefficient Estimate	t-statistics[c]	p value[c]
Intercept	0.928	86.608**	0.000**
T_2	-0.023	-0.837	0.403
$OTHA_{it}/P_{it-1}$	0.044	7.032**	0.000**
BVO_{it}/P_{it-1}	0.037	10.560**	0.000**
$T_2(OTHA_{it}/P_{it-1})$	0.033	**0.630**	**0.265**
$T_2(BVO_{it}/P_{it-1})$	0.011	0.908	0.364

F-statistics 28.476 (0.000)

Adj. R-square 0.057

[a] The sample consists of 2,291 firm-quarters during Q1/1997 to Q2/2001.

[b] The variables are defined as follows.

P_{it} = stock's price of firm i at the end of quarter t,

P_{it-1} = stock's price of firm i at the beginning of quarter t

T_2 = 1 if the firm-quarters' other assets is affected by the adoption of TAS interpretation No. 4, 0 otherwise.

BVO_{it} = firm i's book value of equity per share after subtracting the book value of other assets at the end of quarter t,

$OTHA_{it}$ = firm i's other assets per share at the end of quarter t, and

ε_{it} = error term.

[c] t-statistics and p value without bold character for two-tail tests; * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

t-statistics and p value with bold character for one-tail tests; * significance at $0.01 < \alpha \le 0.05$, and ** significance at $\alpha \le 0.01$ level.

In TABLE 5.15, it shows that the overall model is significant at 0.01 level (F statistics is equal to 28.476) with the adjusted R-square of 0.057. The coefficient of other assets (β_2^{12}) is positive and also significant at 0.01 level the same as PPE and investment in securities. It reveals the positive relationship between the stock prices and values of other assets

(Lev and Sougiannis, 1996; Aboody and Lev, 1998). Investors also consider the amount of other assets for the setting of securities prices.

The coefficient of interaction term between the dummy variable and other assets (β_4^{12}) is used to test whether the adoption of TAS Interpretation No. 4 affects value relevance of other assets. The result reveals the positive sign of β_4^{12}, but it is not significant. The value relevance of other assets does not change after the adoption of TAS Interpretation No. 4. This result contrasts with the prediction in research hypothesis. The plausible explanation is that the other assets are the least portion among of components of assets, therefore the effect of the adoption TAS Interpretation No. 4 on the value relevance of other assets is insignificant for the investors in valuing the securities.

The result in TABLE 5.15 also indicates that the coefficient of interaction term between the dummy variable and other components of balance sheet excludes other assets (β_5^{12}) is also positively insignificant. Thus, the adoption of this TAS interpretation does not affect value relevance of other components of balance sheet.

The result in that value relevance of other assets does not change corresponds with the result in the section 5.2.2.1. Value relevance of total assets does not change due to the adoption of this TAS interpretation. Thus, the adoption of TAS interpretation No. 4 does not affect both value relevance of other assets and value relevance of total assets.