CHAPTER 3

LITERATURE REVIEW AND DEVELOPMENT OF RESEARCH HYPOTHESES

3.1 Introduction

The past studies have investigated the value relevance of accounting information in many perspectives. The researchers study value relevance of earnings in income statement. Earnings are found to be value relevant (e.g. Easton and Harris, 1991; Ely and Waymire, 1999). There are also studies on value relevance of specific accounting items in income statement such as value relevance of impairment of assets or assets write-down (Heflin and Warfield, 1997; Alciatore, Easton and Spear, 2000), value relevance of unrealizable gain/loss of investment in securities (Barth, 1994; Carroll and Linsmeire, 1996; Graham et al., 1998). The later studies find that total assets are value relevant (Francis and Schipper, 1999). The revalued assets are also value relevant information (Easton, Eddey, Harris, 1993; Barth and Clinch, 1998). Furthermore, the prior research indicates that the changes in accounting standards affect the value relevance of accounting information (Amir, 1996; Cheng, Liu, and Schaefer, 1997; Ayers, 1998).

Thai accounting standards have been changed in many issues to be corresponding with Thai economic condition and the changes in business environment. This study provides evidence on the effects of changes in accounting standards on value relevance of accounting information in income statement and balance sheet. Section 3.2 presents the theoretical concepts. In section 3.3, the prior research about value relevance of earnings, value relevance of earnings' components, and value relevance of balance sheet components are reviewed. Section 3.4 presents the development of research questions. Finally, section 3.5 development of research hypotheses is discussed.

3.2 Theoretical Concepts

There are theoretical concepts related to the valuation studies. This study summarizes two concepts. They are market efficiency and equity securities valuation.

3.2.1 Market Efficiency is important to the market based accounting research (MBAR) because the MBAR relies on the use of security price as the benchmark or operational measures of usefulness or value relevance of accounting data. That is, in efficiency markets prices fully reflect information.

The Definition of Market Efficiency

Fama (1970) (cited in Beaver, 1998) states that a capital market is efficient if security prices fully reflect the information available.

Foster (1986) defines the market efficiency as follows.

A capital market is efficient with respect to an information item if prices of capital market fully impound the return implications of that item.

The definition can be expressed as

$f(R_{it}, R_{jt}, \ldots\ldots\ldots/\emptyset_{t-1}^{M}) = f(R_{it}, R_{jt}, \ldots\ldots\ldots/\emptyset_{t-1}^{M}, \emptyset_{t-1}^{a})$

$f(.)$ = a probability distribution function,

R_{it} = the return of firm i at the end of year t,

R_{jt} = the return of firm j at the end of year t,

$\emptyset_{t-1}^{M}$ = the information set used by the market at t-1, and

$\emptyset_{t-1}^{a}$ = the specific information item placed in the public domain at t-1.

The implications of this definition are that investor can not use $\emptyset_{t-1}^{a}$ to earn nonzero abnormal returns consistently and in efficient market, when a new information is added to $\emptyset_{t-1}^{M}$, its revaluation implications for $f(R_{it}, R_{jt})$ are instantaneously and unbiased impounded into current market prices.

Beaver (1968) states that the market is efficient with respect to some specified information system, if only if security prices act as if everyone observes the information system.

Fama (1970) (cited in Beaver, 1998) delineated three major forms of market efficiency. That is,

1. The market is efficient in the weak forms if prices fully reflect information regarding the past sequence of prices. The form of market efficiency has obvious implications for technical analysis, and it includes the random walk of stock prices.

2. The market is efficient in the semi-strong forms if prices fully reflect all publicly available information including financial statement data. Trading strategies based on published financial statement data will not lead to abnormal returns.

3. The market is efficient in the strong forms if prices fully reflect all information, including inside information. Hence, even having access to information will not lead to strategies promising abnormal expected returns.

3.2.2 Equity Securities Valuation

Equity securities valuation can focus on at least one or more of following four attributes.

3.2.2.1 Stream of Future Earnings

The simplest form of a valuation model is for the certainty case in which all assets yield a uniform earnings stream in perpetuity. Given the appropriate assumptions about the capital markets, the equilibrium market value of (all equity) firm is

$$V_{it} = \frac{X_i}{r}$$

V_{it} = market value of firm i at the end of period t,

X_i = uniform certain earnings stream of firm i, and

r = market rate of interest for riskless investments.

Another extension form of the model is to recognize the risk-associated uncertainty (Miller and Modigliani, 1961; Brown, 1968 as cited in Foster, 1986).

$$V_{it} = \frac{E(X_i)}{r_k}$$

V_{it} = market value of firm i at the end of year t,

$E(X_i)$ = expected level of annual earnings generated by the assets that firm i currently holds, and

r_k = cost of capital of firms in risk k class.

3.2.2.2 Stream of Future Cash Flows (Discounted Cash Flow Approach-DCF)

The rationale for supporting DCF is that DCF takes into account the timing with which cash inflows and outflows occur. Accounting earnings are affected by arbitrary choices in such important areas as cost of goods sold, and depreciation.

$$V_{it} = \frac{CF_{it+1}}{(1+r_{t+1})} + \frac{CF_{it+2}}{(1+r_{t+1})(1+r_{t+2})} + \ldots\ldots + \frac{CF_{it+n}}{(1+r_{t+1})(1+r_{t+2})\ldots\ldots(1+r_{t+n})}$$

V_{it} = market value of firm i at the end of period t,

CF_{it} = cash flow of frim i in period t, and

r_t = market rate of interest in period t.

3.2.2.3 Stream of Future Dividend (Dividend Based Approach)

Dividend-based approach always assumes an infinite period in a certainty setting and the formula of market value of equity based on the future dividend stream.

Market value of equity arises from the dividend paid in period t, which is discounted with the market rate of interest in period t for riskless investment.

$$V_{it} = \frac{d_{it+1}}{(1+r_{t+1})} + \frac{d_{it+2}}{(1+r_{t+1})(1+r_{t+2})} + \ldots\ldots + \frac{d_{it+n}}{(1+r_{t+1})(1+r_{t+2})\ldots\ldots(1+r_{t+n})}$$

V_{it} = market value of firm i at the end of period t,

d_{it} = dividend paid of firm i in period t, and

r_t = market rate of interest in period t.

These three methods above are not independent of each other. The stream of future dividend, stream of future earnings, and future cash flows are linked together. The example of research that uses these approach linked together is Collins and Kothari (1989). They use an equity valuation model in which price is present value of future expected dividends. The price of firm i at time t may be written as

$$P_{it} = \sum_{k=1}^{\infty} E_t(D_{it+k}) \prod_{\tau=1}^{k} \{ 1/[1+E(R_{it+\tau})] \}$$

$E_t(D_{it+k})$ = expectation at time t of dividends to be received of firm i at the end of period t+k, and

$E(R_{it+T})$ = expected rate of return on the security of firm i from the end of t+T-1 to the end of t+T.

In writing equation above, the future expected rates of returns are assumed known and the only uncertainty about future prices is due to reassessments through time of expected future dividends. They assume that future expected dividends are related to current earnings. Hence, unexpected earnings cause investors to revise their expectations of future dividends leading to security price changes.

Future expected dividends are assumed to be related to current earnings according to

$E_t(D_{it+k}) = \lambda_{it+k}(X_{it}), \quad \lambda_{it+k} > 0, \quad k=1, 2,\ldots\ldots,\infty$

$E_t(D_{it+k})$ = expectation at time t of dividends to be received of firm i at the end of period t+k,

X_{it} = firm i's reported accounting earnings for period t, and

λ_{it+k} = the coefficient represented the extent that future expected dividends are related with current earnings.

This coefficient depends on the time series process that earnings follow as function of firm's investment and dividend policies.

3.2.2.4 Book Value Valuation Approach (The Value of Individual Asset and Liability based Approach)

Book value valuation approach is another concept that uses the link between the accounting information and the market value of firm. The idea that market value and book value of firms are both measures of the "stock" value of the shareholders' equity (Easton and Harris, 1991; Francis and Schipper, 1999) may be expressed as follows.

$V_{it} = BV_{it} + u_{it}$

V_{it} = market value of firm i at the end of period t,

BV_{it} = book value of equity which equals to total assets minus total liabilities of firm i at the end of period t, and

u_{it} = the difference between market value and book value of equity.

This approach is based on the concept that the individual assets and liabilities underlying a security have influence on the market value.

3.3 Prior Research

This section composes of meaning of value relevance and method of measuring value relevance, model used to test value relevance of accounting information, value relevance of earnings, value relevance of earnings' components and the effects of earnings' components on value relevance of earnings, information content and value relevance of earnings in Thailand, value relevance of balance sheet's components, and the effects of changes in accounting standards on value relevance of accounting information.

3.3.1 Meaning of Value Relevance and Method of Measuring Value Relevance

Many prior studies have defined the term "Value Relevance" in different perspectives, which can be summarized as follows.

1. Value relevance of accounting information is defined as how well particular accounting amounts reflect information that is used by investors in valuing firms' equity. It is considered whether investors actually use the accounting information in setting price, or the ability of financial statement information to capture or summarize information, regardless of sources, that affect share values. Value relevance can be measured by the association between equity market values and accounting amounts (Francis and Schipper, 1999; Lo and Lys, 2000).

2. Value relevance of accounting information is defined as the extent to which financial statement information leads stock prices by capturing intrinsic share values toward which stock prices drift. Value relevance can be measured by profits generated from implementing accounting-based trading rules (hedge portfolio approach) (Alford et al., 1993; Francis and Schipper, 1999).

3. Financial statement information is value relevant if it contains variables used in a valuation model or assists in predicting those variables. Value relevance can be measured from the ability of earnings or components of earnings to predict future dividends or future cash flows or future earnings (Finger, 1994; Fairfield, Sweeney, and Yohn, 1996).

Method of Measuring Value Relevance

Three main methods in measuring value relevance of accounting information are summarized as follows.

1. The value relevance of accounting data can be measured from coefficient of determination (R^2 or adjusted R^2) and slope coefficient (earnings response coefficient or earnings association coefficient) of the regression equations. The regression runs the market value of equity (share's prices or security's returns) on accounting numbers (or change in accounting numbers). Many prior studies have used this method (e.g. Warfield and Wild, 1992; Collins, Maydew and Weiss, 1997; Francis and Schipper, 1999; Lev and Zarowin, 1999; Ely and Waymire, 1999; Cahan et al., 2000).

2. The value relevance can be measured from the total returns (or market-adjusted returns) of hedge portfolio, which could be earned based on foreknowledge of accounting information (e.g. sign of change in earnings, the magnitude of change in earnings, percentage change of cash flows, financial ratios based on the fundamental values). The hedge portfolio can be done by taking long in high magnitude (or positive sign) of accounting information and short in low magnitude (or negative earnings) of accounting information in the same proportion. The examples of prior studies that use the hedge portfolio method are the paper of Alford et al. (1993), and Francis and Schipper (1999).

3. The value relevance of accounting information (e.g. earnings) can be measured by testing the ability of earnings or components of earnings to predict future earnings and cash flows. The regression runs the future earnings (or future return-on-equity or future cash flows) on the current earnings or components of earnings. The predictability is measured from the coefficient of determination (R-square and Adjusted R-square) and slope coefficient on current earnings or component of earnings (Finger, 1994; Fairfield et al., 1996).

3.3.2 Model Used to Test the Value Relevance of Accounting Information

The different models used to test value relevance of accounting information can be summarized as follows.

1. Balance Sheet Model (or Book Value Valuation Model) is used to test the value relevance of balance sheet components. It presents the relation between market value of

equity and book value of equity. The examples of prior studies use this model such as Barth (1994), Carroll and Linsmeire (1996), Graham et al. (1998), and Francis and Shipper (1999).

2. Earning Valuation Model is used to test the value relevance of earnings. It always tests the relation between the security's return and accounting earnings. The examples of prior studies use this model such as Easton and Harris (1991), Ali and Zarowin (1992a, 1992b), Francis and Shipper (1999), and Lev and Zarowin (1999).

3. Ohlson Model is used to test both value relevance of earnings and book value of equity. The examples of prior studies use this model such as Collins et al. (1997), Francis and Shipper (1999), and Lev and Zarowin (1999).

The balance sheet model is used to investigate whether the accounting number of interest is helpful in explaining security's value. Market value of equity at time t equals the market value of firm assets less the market value of its liabilities at time t (or the book value of equity). The model holds only if all markets are competitive so there are no expected above-competitive returns (rents) to the firms. The balance sheet model can be expressed as follows.

$$P_{it} = a_0 + a_1 BV_{it} + \varepsilon_{it} \qquad (a)$$

P_{it} = share's price of firm i at time t,

BV_{it} = book value of equity per share of firm i at time t, and

ε_{it} = error term.

The balance sheet model can be derived to earnings valuation model (Easton and Harris, 1991) by taking the first difference of variables of the model (a). It will be

$$\Delta P_{it} = a_0 + a_1 \Delta BV_{it} + \varepsilon_{it} \qquad (b)$$

$$\Delta BV_{it} = E_{it} - d_{it} \qquad (c)$$

E_{it} = earnings per share of firm i at time t, and

d_{it} = dividend per share of firm i at time t.

Substitute model (c) into (b), rearranging and dividing by P_{it-1} yields:

$$(P_{it} + d_{it} - P_{it-1})/P_{it-1} = a_0 + a_1 E_{it}/P_{it-1} + \varepsilon_{it} \qquad (d)$$

$$R_{it} = a_0 + a_1 E_{it}/P_{it-1} + \varepsilon_{it} \qquad (e)$$

The left hand side variable of the model (e) is the actual return include dividend (R_{it}). The right hand side variable of the model (e) is the level of earnings (E_{it}). That is, earnings divided by the beginning period of price can explain the variation in stock's returns.

The reasons that prior studies use the actual return (instead of unexpected returns) as dependent variable in model can be summarized as follows.

1. The actual return (R_{it}) is consistent with the analytical process of the derivation from the balance sheet model to earnings valuation model [from model (a) to (e)].

2. There are the measurement errors in expected returns (Collins and Kothari, 1989). They indicate that the true expected return [E (R_{it})] is an ex-ante measure of expected return, but ex-ante measure of riskless rates and risk premium are not available. Most studies use an ex-post measure of E (R_{it}) conditional on the realized market return for period t which introduces error into the return metric. Relative to the temporal and cross-sectional variability in R_{it}, the variability in E (R_{it}) is small. Hence, the use of unexpected return [R_{it} –E (R_{it})] essentially amounts to using actual return (R_{it}). Beaver, Lambert and Ryan (1987) report that the earnings/returns relation is essentially the same whether one uses actual return (inclusive or exclusive of dividends) or unexpected return (market model prediction errors).

The reasons that prior studies use level of earnings (instated of changes in earnings) as independent variable in model can be summarized as follows.

1. The analytical and empirical studies show that the levels of earnings are related with the stock's returns.

From the derivation of balance sheet model to earnings valuation model in analytical study, the earnings level divided by the beginning of period price should be appropriate variable in explaining returns (Eaton and Harris, 1991). Ohlson (1991) uses the analytical method in the study of relation between returns and earnings. The result indicates that earnings (rather than changes in earnings) serve as a premier explanatory for returns. Ohlson and Shroff (1992) study the relationship between earnings (level or changes in earnings) and returns using the analytical method. They summarize that the earnings levels deflated by price variables are related with the returns even though the time series of earnings follow random walk. Kothari (1992) also use the analytical method to evaluate the alternative specifications of price-earnings regression but in the term which price leads earnings. The result is that earnings level deflated by price has high earnings coefficient and explanatory power than the specification using earnings changes deflated by price or earnings.

For the empirical study, the earnings association coefficients (EAC) and R^2 of regression of returns and earnings levels are higher than the regression of returns and earnings

change variables (Easton and Harris, 1991). The empirical result in the paper of Kothari (1992) is consistent with his analytical analysis. The explanatory power of firm specific time-series regression is higher when returns are regressed on the level of earnings deflated by price variable than that of earnings change deflated by price variable.

2. The explanatory power of level of earnings is consistent with the presence of transitory components in annual earnings. Ali and Zarowin (1992a) find that for firms with predominantly transitory earnings in the previous period, the incremental explanatory power increases in earnings response coefficients (ERC) from including the earnings level. Thus, earnings level can capture the transitory component of earnings. Ali and Zarowin (1992b) also find that in the presence of transitory components of earnings, the previous period's earnings are a poor proxy for current period's expected earnings. The use of earnings changes as proxy for unexpected earnings causes ERC to be understated.

3. Biddle and Seow (1994) indicate that there is the measurement error in the use of change in earnings as unexpected earnings. They use the approach in which market earnings expectations are estimated jointly with response coefficients. The assumption is that the expected earnings rate will be similar across observations. The results indicate that the level of earnings is explanatory variable of return as well.

3.3.3 Value Relevance of Earnings

In early research (1960s), the main point of study of accounting information is earnings because earnings are the bottom-line operating measure. Many researchers have studied the value relevance of earnings. The research that initiates the empirical test is Ball and Brown (1968). They use the behavior of security price as the operational test of usefulness. By using the efficient market hypothesis, they can claim "if, as the evidence indicates, security prices do in fact adjust rapidly to new information as it becomes available, then changes in security price will reflect the flow of information to the market. An observed revision of stock prices associated with the release of income report would thus provide evidence that the information reflected in income numbers is useful."[1]

---

[1] Ball, R., and Brown, P. An Empirical Evaluation of Accounting Income Numbers. Journal of Accounting Research 6 (Autumn1968): 160-161.

Beaver (1968) uses both price and volume movement to examine the extent to which common stock investors perceive earnings to possess informational value.

Two studies above are the starting point in the study of usefulness of earnings. The evidence on usefulness of earnings can be summarized as follows.

Ball and Brown (1968) find that the information contained in the annual income number is useful. The direction of Abnormal Performance Index (API), which is abnormal return moves in the same direction of unexpected earnings (actual income differs from expected income). The drifts upward and downward of API begin at least 12 months before the report is released and continue for approximately one month after. That is, market begins to anticipate the earnings before announcement of earnings at least 12 months.

Beaver (1968) studies both the price and volume reaction around the weeks of announcement of earnings. The author finds that the bulk price reactions occur in the week of announcement the same as volume reactions. The dramatic increase both price and volume reactions indicate that earnings reported posse's information content.

Beaver, Clark, and Wright (1979) extend Ball and Brown (1968) and Beaver (1968)'s study. They examine the hypothesis whether there is a positive association between unsystematic returns and magnitude of earnings forecast error. The result shows that correlation between the unsystematic portfolio returns and magnitude of earnings forecast error is positive as expected.

Bamber (1987) studies the information content of quarterly earnings announcements. The author measures the magnitude and duration of trading volume reaction to quarterly earnings announcements. The evidence shows that as the absolute value of unexpected earnings increases, both the magnitude and duration of trading volume reaction to quarterly earnings announcements increase.

The prior studies mentioned above are the studies of usefulness of earnings in term of information content (or event studies). That is, earnings can convey information to investors at time earnings is announced. Earnings announcement causes investors to revise their cash flows expectations as revealed by security price changes measured over a short time period.

In addition, there are the studies which examine the relationship between earnings and returns calculated over a longer interval (association studies). They focus on whether accounting earnings measurements are consistent with the underlying events and information reflected in the stock prices. The prior association studies are summarized as follows.

Easton and Harris (1991) investigate value relevance of earnings both univariate regressions and multivariate regressions. The univariate regressions of returns and level of earnings (change variables) are run. The R^2 from the pooled regression based on levels is higher than regression on changes variables. For the multiple regressions (incorporating both the levels and changes of earnings), the coefficients on levels are significant in all 19 years, while the coefficients on changes variables are significant only 8 of 19 years.

Warfield and Wild (1992) examine value relevance of earnings for the different reporting periods. They study the association between the stock's returns and accounting earnings in three different reporting periods: quarter, semiannual and annual period. The result indicates that quarterly earnings is significant in explaining the variation in quarterly returns. For the relation between the quarterly return and earnings, the adjusted R-square for model running from the first quarter of 1983 through the forth quarter 1986 is 0.39%. The adjusted R-square is higher when they use the longer interval period for earnings and returns. The results also indicate that the pooled cross-sectional and time-series regression yields on adjusted R-square is 1.78% for the semiannual period, which presents a 350 percent increase in comparison with the adjusted R-square for quarterly periods (0.39%). The adjusted R-square for the pooled sample is 5.55% for annual period, which represents a 200 percent increase over that for the semiannual period and a 1300 percent increase over that for the quarterly period.

Ely and Waymire (1999) investigate value relevance of earnings for the longitudinal period. They measure the strength of association of stock returns on level and changes in annual earnings using adjusted R^2. They examine whether value relevance of earnings has increased following the changes in accounting standard organization [Committee on Accounting Procedure (CAP), Accounting Principle Board (APB), and Financial Accounting Standard Board (FASB)]. Their evidence provides only weak support for the hypotheses that earnings relevance is higher following the introduction of U.S. accounting standard-setting bodies and subsequent reorganization of the standard setting bodies.

Francis and Schipper (1999) investigate value relevance of earnings both portfolio measure and regression between returns and accounting earnings. The portfolio test shows the mean market-adjusted return to each accounting hedge portfolio and the proportion of the market-adjusted return to the returns-based hedge portfolio explained by each accounting measure. The average market-adjusted returns across the entire sample period is about 14% for the sign of the earnings' change hedge portfolio and 20% from the magnitude of earnings' change hedge portfolio. The 45% (59%) of total perfect foresight returns are available to investors with the advance knowledge of the sign of the earnings change (both the sign and magnitude of earnings change). The regression test shows that all slope coefficients of earnings are significant and adjusted R^2 of the yearly models range from 5% to 46%, with the earnings variables explaining an average of 22% of the variation in market-adjusted returns. The regression of adjusted R^2 on the time variable shows that the coefficient of time is negative. That is, there is a reduction in value relevance of earnings from year 1952 to year 1994.

Lev and Zarowin (1999) study the association between the reported earnings and stock returns in the longitudinal periods (1977-1996). They use both level and changes in earnings as explanatory power for returns. The results show that the association between stock returns and earnings as measured by R^2 has been declining throughout the 1977-1996: from R^2s of 6-12 % in the first ten years to R^2s of 4-8% in the last ten years. They also run the regression of annual R^2 on time variable. The result indicates that the decrease in value relevance of earnings is statistically significant.

In overall, the prior studies find the same results of value relevance of earnings. Earnings are value relevant information which investors use it in valuing the security.

3.3.4 Value Relevance of Earnings' Components

In addition to value relevance of earnings (bottom line), there are also the studies on value relevance of earnings' components (by line items - revenues and expenses).

Lipe (1986) examines the relations between stock returns and earnings components. The author divides the earnings' components into six components that compose of gross profits, general and administrative expense, depreciation expense, interest expense, income taxes, and other items. The results indicate that the significant cross-component variations in the magnitude of the return reactions associated with the unexpected changes in six components of

earnings. This can imply that each component has additional explanatory power, given the information in the other five components.

Swaminathan and Weintrop (1991) investigate information content of earnings' components. They use the Value Line (VL) forecast of earnings and revenues as a proxy for the market's expectations. They examine the relation between the cumulative abnormal returns (cumulative prediction error based on market model estimates) and the unexpected earnings, unexpected revenues and unexpected expenses. The results indicate that both revenues and expenses have the information content.

Ohlson and Penman (1992) investigate the disaggregated accounting data as explanatory variable for returns. They focus on regressions with returns as dependent variable and various components of earnings as independent variables. In income statement disaggregation, earnings is disaggregated into 3 components: earnings before depreciation, depreciation and dividends. They find that depreciation coefficient is much less than the earnings before depreciation in the short interval. The percentages of difference between earnings before depreciation and depreciation decrease when the estimation interval lengthens. When earnings is disaggregated into 7 components: gross margin, operating expenses, depreciation expense and amortization expense, tax expense, all other income except extraordinary items, extraordinary item and unusual item, and total dividend declared. The results show that gross margin and other income are positively related with returns. Operating expenses, depreciation, dividends are negatively related with returns. For long return intervals (10 years), the estimated coefficients associated with various line items have approximately the same magnitudes.

Strong and Walker (1993) study the relation between the abnormal returns (or annual adjusted returns) and three components of earnings: earnings before pre-exceptional and extraordinary items (pre-exceptional earnings), exceptional items, and extraordinary items. The results show that pre-exceptional earnings are related with the abnormal returns and unadjusted returns. Pre-exceptional earnings exhibit both permanent and transitory features. The results also show that exceptional items and extraordinary items are not significantly related with the stock's return. That is, exceptional items and extraordinary items are not value relevant information.

Fairfield et al. (1996) examine the predictive content of earnings disaggregation. They run the regression models with one year ahead return on equity (ROE) as dependent variables and current year ROE or components of earnings as independent variables. They find

forecast improvements from earnings disaggregation. These forecasting improvements go beyond separating extraordinary items and discontinued operations from the other components of earnings. Operating earnings are weighted heavily in forecasting next year's bottom line ROE, followed by non-operating earnings. Special items (items that are unusual or infrequent but not both) are given a small, positive weight in forecasting next year's bottom-line ROE, but should be given zero weight in forecasting ROE before special items, extraordinary items and discontinued operations (ROEBSI). Extraordinary items and discontinued operations have no power to forecast bottom-line ROE and ROEBSI.

Overall, the earnings' components have the value relevance. The earnings forecasts are improved when earnings are disaggregated into operating earnings, non-operating earnings, special items, and extraordinary items. Moreover, there are also studies of value relevance of specific accounting items in income statement. This study summarizes only the accounting items that are examined as follows.

3.3.4.1 Value Relevance of Impairment of Assets (or Assets Write-Downs)

Most prior studies find that the market reacts to asset write-downs (or impairment of assets) negatively (Strong and Mayers, 1987; Elliott and Shaw, 1988; Francis, Hanna, and Vincent, 1996). Strong and Mayers (1987) stated that the distributions of security returns around the announcement date of write-downs are non-normal. Elliott and Shaw (1988) document a significant one-day, two-day industry adjusted negative share returns on average when the write-down is announced. Francis et al. (1996) investigate the market reactions to the different types of asset write-downs (inventory, goodwill, PPE, miscellaneous, and restructuring charge). The results show that market reacts to inventory write-down negatively (convey information about the declines in economic values) and positively reacts to restructuring charges (items signaling information about improvement of future performance). They find no significant market reaction to write-downs of either goodwill or PPE.

Bartov, Lindhal and Ricks (1998) study the stock price behavior around announcements of write-down, both in total and by category. They divide the write-downs into two categories: asset write-down category and operating decision category. The asset write-down category comprises purely accounting decisions to reduce the carrying value of assets with no

apparent changes in operations, while the operating decision category consists of decisions to change operations (e.g. to sell assets) in connection with a charge against earnings. They find that for the full sample, the market reaction to write-downs announcements appears rather small and its statistical significance is at least marginal. There are clear differences between write-down types. The portfolio returns of firm's operating decision are small and insignificant, but the portfolio returns of asset write-downs are negatively significant.

The prior studies above are the examination of stock's price movement around the announcement of asset write-downs. In addition, there are many studies that investigate the relation between the asset write-downs or impairment of assets and return over the longer interval. Prior researches find that the amount of asset write-downs or impairment loss of assets and contemporaneous long window returns are negatively related (Heflin and Warfield, 1997; Bartov et al., 1998; Alciatore et al., 2000).

Heflin and Warfield (1997) investigate value relevance of asset write-downs and the timeliness of asset write-downs. They use all samples of write-downs by publicly traded firms in the period 1987-1992. The results indicate that the write-downs amount is negatively related with returns and it is significant in explaining write-downs year returns. But the magnitude of relation between the write-down amount and return is less than expected. They also find that the write-down amounts are correlated with returns up to 3 fiscal years prior to write-down recognition in earnings. That is, write-down recognition is not timely information.

Bartov et al. (1998) extend the return window for two years before the write-downs announcements (in addition to short interval around announcement of write-downs). They divide the write-downs into two categories: asset write-down category and operating decision category the same as short interval of return around the announcements. The large stock price declines before the asset write-downs announcements both asset write-down category and operating decision category. That is, the market anticipates the write-downs before the asset write-downs announcements. Moreover, in the year following the write-down announcement, both asset write-down and operating decision category portfolio continue to exhibit the substantial stock prices declines. The results suggest that the disclosure standards may not be sufficient allow market agents to understand the economic consequences of the write-downs.

Alciatore et al. (2000) investigate value relevance of impairment of long-lived assets especially for the oil and gas firms due to the application of SEC full-cost

ceiling test during the period of largest decline in oil and gas price. The evidence indicates that the correlation between impairment loss amounts and contemporaneous returns is statistically significant. The impairment amounts have significantly incremental explanatory power over pre-impairment earnings for returns of the quarter in which the impairment is recorded. That is, earnings are more highly correlated with impairment-quarter returns when the impairment is included in earnings.

Moreover, they also find that correlation between impairment amounts and preceding period returns are also significant. The results suggest that, although the impairments are correlated with current period returns, some of the decreases in asset values have already captured in the returns of the prior period. Thus, the impairment amount is not timely recognition.

All prior studies find the similar results. That is, the impairment of assets (or asset write-down) is value relevant information. However, some of the impairment on asset values has already recognized by the market in the prior period. The impairment amount is not timely information.

3.3.4.2 Value Relevance of Unrealized Gains/Losses of Investment in Securities

The prior studies investigate the value relevance of investment in securities both gains/losses of investment in the income statement and assets in the balance sheet. The details of the value relevance of investment in securities in the balance sheet are discussed in the section 3.3.6.3.

Barth (1994) examines whether fair value securities gains and losses provide the explanatory power in explaining bank share's returns beyond earnings before securities gains and losses and realized securities gains and losses. The significance of any incremental explanatory power of fair value beyond the historical cost depends on the specification of the estimating equation. The fair value securities gains and losses are insignificantly different from zero in the annual regressions, but it is significantly positive using the fixed effect estimation. The findings are consistently with fair value gains and losses being relevant to investors. Errors in estimating them reduce the significant relation with the security's returns.

Carroll and Linsmeier (1996) investigate value relevance of fair value accounting for investments in securities held by closed-end mutual funds. They find a significant association between stock's returns and fair value estimates of securities gains and losses regardless of whether a closed-end mutual fund's investments are mostly invested in securities traded in active markets or thin markets. That is, fair value disclosures provide the incremental explanatory power of observations both in the lowest turnover portfolio and the highest turnover portfolio.

Graham, Lefanowicz, and Petroni (1998) examine the value relevance of fair value for investments in securities accounted under the equity method. They assess the relationship between the monthly cumulative stock returns and the difference between fair value earnings on the equity investment and the recognized equity method of earnings. The result indicates that fair values securities gains and losses are positively related to the stock returns significantly.

Overall, the prior studies find that fair value gains and losses of investment in securities (or unrealized gains and losses of investment in securities) are value relevant information.

3.3.4.3 The Effects of Earnings' Components on Value Relevance of Earnings

Prior research also studies the effects of inclusion the accounting items (e.g. special item) in income statement on value relevance of earnings, which can be summarized according to the types of accounting items.

One-time Items (Special Items, Discontinued Operations, and Extraordinary Items)

Elliott and Hana (1996) investigate the information content of earnings in presence of large nonrecurring or unusual charge. They find that information content of earnings decreases in quarters following the recognition of large special items.

Collins et al. (1997) investigate the factors that affect incremental value relevance of earnings and book values both cross-sectional and intertemporal. One factor that affects value relevance of earnings is one-time items. They define the one–time items as special items, discontinued operations and extraordinary items. In cross-sectional analysis, they find that incremental explanatory power of earnings is approximately one-half the level in firm-years with

one-time items as in those without one-time items. In the temporal analysis, the magnitude of one-time items (average one-time items as a percentage of core net income) has been increased from 1953 to 1993. The incremental value relevance of earnings decreases. It is consistent with one-time items being more transitory and thus reducing the value relevance of earnings.

Easton, Shroff, and Taylor (2000) also study the effects of inclusion of one-time items in income statement on value relevance of earnings. They define one-time items the same as Collins et al. (1997). One-time items include special items, discontinued operations and extraordinary items. The result is consistent with Collins et al. (1997). The estimates of the earnings coefficients for firms that report one-time items are much less than those for firms that do not report one-time items. That is, the inclusion of one-time items in income statement decreases value relevance of earnings.

Transitory Components of Earnings

The components of earnings can be divided in another perspective instead of dividing the earnings components into by-line items. Earnings can be disaggregated into three components: the permanent component, transitory component, and price-irrelevant component which provide the evidence on the effects of earnings components on value relevance of earnings. Ramakrishnan and Thomas (1998) define three components of earnings as follows.

"Permanent component is permanent shocks that cause all future earnings to change by the amount of the shock and have been associated with earnings following a random walk process.

Transitory component is transitory shocks that have been described as affecting only current period earnings and have been associated with earnings following a mean reverting process.

Price-irrelevant component is garbling or measurement error and represents the difference between reported earnings and economic earnings."[2]

---

[2] Ramakrishnan, R.T.S., and Thomas, J.K. "Valuation of Permanent, Transitory, and Price-Irrelevant. Components of Reporting Earnings" Journal of Accounting, Auditing and Finance 13 (Summer 1998): 303.

They derive the relations for price responses to three shocks. Price response is greater for permanent shock than transitory and price-irrelevant shock. This result is consistent with other studies. That is, the low annual earnings coefficients are attributed to the existence of transitory elements of earnings (Ramesh and Thiagarajan, 1994; Collins et al., 1997; Easton, Shroff, and Taylor, 2000).

The test of transitory component of earnings is to examine time-series properties of special items. Burgstahler, Vo and Shevlin (1999) claim that each component of earnings may have different time-series properties. The separate presentation of components in financial statements is required under GAAP, at least in the past, because of differences in their expected relation to future earnings. Their evidence show that special items are much more transitory than other component of earnings, as the portion that persists in subsequent quarters is nearly zero. The autocorrelation coefficients of firm quarters with the special items either positive or negative are closer to zero. The coefficients of autocorrelations of earnings with the special items are very small compared with earnings without special items. They also examine the extent which prices reflect serial correlation in quarterly earnings. The result shows that prices reflect differences in the time-series properties of special items and non-special item components of earnings.

Earnings Volatility

In addition to the effects of one-time items and transitory components of earnings on value relevance of earnings, there are the studies the effects of earnings volatility on value relevance of earnings. Kormedi and Lipe (1987) model stock returns as a function of the revisions in expectations of earnings, assume that earnings can be represented by a univariate time-series process, and then show that the time-series properties of earnings will be an important factor in the returns-earnings relation. The earnings response coefficient is positively related with the earnings persistence and negatively related with earnings volatility.

Lipe (1990) studies the relation between stock returns and accounting earnings under the assumption that the market observes current-period information other than earnings. The analysis shows that the returns-earnings relation depends on the relative ability of earnings versus alternative information to predict future earnings as well as the time-series persistence of earnings. That is, the earnings response coefficient is positively related to both predictability and persistence across firms. Earnings persistence and earnings volatility are

reverse related. Thus, earnings response coefficient is negatively related with the earnings volatility.

3.3.5 Evidence on the Information Content and Value Relevance of Earnings in Thailand

Prior studies investigate the usefulness of earnings both in short-tem interval (around earnings announcement) and in long interval (annual period or quarterly period) in Thailand which are summarized as follows.

Vacharajittipan (1991) examines the information content of quarterly earnings announcements on the Thai stock market around the timing of earnings announcements. The evidence shows that there is information content of quarterly earnings. The most information contained in quarterly reported earnings is anticipated by the stock market before the quarterly report is released. The study also examines whether there is a positive association between earnings and stock prices. The results do not support the hypothesis of a positive relationship between earnings and stock prices especially in the case of bad news. There is negative relationship between the unexpected earnings and stock prices for bad news. The security price increases as bad news in earnings is reported.

Srisawadi (1996) extends the prior research in the viewpoint of investigating the relationship between returns and earnings information by using both the event study and association study. The author explores the interaction effect of changes in quality and information environment on return-earnings relationship. The evidence indicates that for overall samples, there is a positive association between return and earnings. When partitioning the samples into the firm-years, there are insignificant of earnings association coefficients (EAC) at the early stages (1979-1981), but the significant and positive earnings association coefficients at the later years (1986-1990). The relationship between returns and earnings that varies across years can be explained by the changes in the accounting regulations and information environment through time. The quality of earnings is low and the information environment is poor at the early year in the capital markets. The findings of insignificant of EAC at the early stage imply that the quality of earnings is a dominant factor in the relationship between returns and earnings. The availability of information improves and earnings quality is still high at the later years. The highly significant

of EAC at the later years imply that the effect of quality of earnings dominates the effect of information environment.

Moreover, the author studies the market reaction to quarterly earnings announcements. When firms announce good news in earnings (positive unexpected earnings), there is an increasing level of accumulated abnormal returns. When firms announce bad news in earnings (negative unexpected earnings), there is a decreasing level of accumulated abnormal returns. The market reacts to the information contained in the first quarterly earnings announcements prior earnings announcements. The results of second, third and three-quarters combined earnings announcements (the first quarter to the third quarter) are similar to the first earnings announcements. That is, market reacts positively to the information contained in the quarterly earnings announcements and market reacts to earnings prior to earnings announcements.

In addition to the sign of the relation, the author also considers the magnitude of market reaction to earnings announcement (ERC-earnings response coefficient). In the first, second and third earnings announcements, the findings are that there is the positive relation between the magnitude of quarterly unexpected earnings and cumulative abnormal returns. For the fourth quarter, the good news samples shows an increase in level of accumulated abnormal returns around earnings announcement. However, the positive abnormal returns are earned, even if bad news of fourth quarter earnings is announced. It is inconsistent with the behavior of abnormal returns for the first to third quarter earnings announcements.

Keorath (1996) studies the effect of the differential information environment on the market reaction to quarterly earnings announcement. This study focuses on whether the magnitude of market reaction to quarterly earnings announcement depends on the extent of information environment. The firm's size and the proportion of shares held by the institutional investors are measures of the information environment. In the case of good news, the direction of market reaction (CAR) is the same as the direction of unexpected earnings. In the case of bad news, the relationship of CAR and unexpected earnings are negative. This result is consistently with Vacharajittipan (1990) and Srisawadi (1996). In the section of information environment, the proportion of shares held by the institutional investors are not related with the market reaction, while the firm size are negatively related to the market reaction significantly. The results can imply that the market value of firm (firm size) can be used as the factor representing the information environment, but the proportion of shares held by the institutional investor are not.

3.3.6 Value Relevance of Balance Sheet's Components

This section presents the studies on value relevance of the balance sheet components which are total assets, total liabilities, book value of equities, property, plant and equipment, investment in securities, and other assets.

3.3.6.1 Value Relevance of Total Assets, Total Liabilities and Book Values of Equities

Some prior studies investigate the value relevance of accounting information only in the balance sheet, but some of them investigate the value relevance of both book value of equity in the balance sheet and earnings in the income statement.

Collins, et al. (1997) investigate the changes in value relevance of earnings and book values over the past forty years using the Ohlson model. They runs three cross-sectional regressions. Price is regressed on (1) earnings, (2) book values, and (3) both book values and earnings. They also decompose total explanatory power into three parts: the incremental explanatory power of book value (R^2 from regression 3 less R^2 from regression 1), the incremental explanatory power of earnings (R^2 from regression 3 less R^2 from regression 2), and the explanatory power to both earnings and book value (remaining explanatory power). Earnings and book values are significant at better than 1% in almost every year. The average adjusted R^2 indicates that earnings and book values can explain the changes in stock's prices at 54%. The combined value relevance of earnings and book values has not been declined; in fact, it appears to have increased slightly, from adjusted R^2 of 0.502 in 1953-1962 to 0.754 in 1983-1993. The incremental explanatory power of earnings has declined, but the incremental explanatory power of book value has increased over past forty years.

Francis and Schipper (1999) investigate the value relevance of total assets and total liabilities in longitudinal period (1952-1994). They run the balance sheet model that share's price is dependent variable while the total assets and total liabilities are independent variables. The results show that all slope coefficients are significant and their signs are generally consistent with investors placing a positive (negative) weight on book value of firm's assets (liabilities). The average of coefficient of total assets (total liabilities) is 0.70 (-0.64). The adjusted R^2 of the yearly balance sheet models range from 6% to 68%; and on average, the book value of total assets and total liabilities explain the variation in the stock's price at 41%. They run

regression of adjusted R^2 from the balance sheet relation on time variable. The coefficient of time variable is positive. The result shows no evidence of decline in value relevance, but in fact, there has been an increase in value relevance of total assets and total liabilities. In addition to balance sheet model, they also examine the value relevance of combined earnings and book value of equity. The average coefficient of book value (earnings) is 0.25 (6.70). The explained variation of this model is more stable with an average of 62% and a range of 47% to 78%. They also run the regression of adjusted R^2 from the book value & earnings relation on time variable. The time coefficient is positive. The result shows no evidence of a decline in the value relevance of combined earnings and book value. But there is an increase in value relevance of combined earnings and book value. This result is the same as the balance sheet components.

Lev and Zarowin (1999) investigate the value relevance of combined earnings and book value of equity using the Ohlson model. They examine the relation between the share's price, earnings and book value of equity in the long-term period (1977-1996). The associations between stock prices, earnings and book values of equities decrease during 1977-1996, from the R^2 levels of 0.90 in the late 1970s, to 0.80 in the 1980s, and to 0.50-0.60 in the 1990s. The result of a regression of the yearly R^2 on time variable presents a negative and statistically significant for all samples. That is, the value relevance of combined earnings and book value decreases over twenty years. This result is contrast with Collins, et al. (1997) and Francis and Schipper (1999).

3.3.6.2 Value Relevance of Revaluation of Property, Plant and Equipment

In addition to value relevance of total asset, total liability and book value of equity, the past studies also investigate value relevance of components of total assets. They investigate value relevance of revaluation of property, plant and equipment in Australian firms and U.K. firms (because the Accounting Standard in America-SFAS does not allow to revalue fixed assets). The studies emphasis on whether the revaluation of assets associate with stock prices and returns (Standish and Swee-Im Ung, 1982; Easton et al., 1993; Barth and Clinch, 1998), the motivation of asset revaluation (Easton et al., 1993; Aboody, Barth and Kasznik, 1999; Lins and Peasnell; 2000), and the correlation between the upward revaluation of fixed assets and changes in future performances (Aboody et al., 1999).

Standish and Swee-Im Ung (1982) examine the stock price changes (cumulative average residuals –CAR) around the announcement date of asset revaluations of U.K. companies. They find that there is an upward movement in stock prices in the months prior to and including the month of revaluation announcement with the level being maintained in the post announcement period. It implies that revaluations are taken in some instances as a pointer to other favorable signals from a company and to increase future benefits to stockholders.

Easton et al. (1993) examine the revaluation of property, plant and equipment of Australian firms. They use both empirical tests from published financial statements and follow–up interviews with chief financial officers. They find that both the balance of revaluation reserve and the net incremental revaluation reserve have the significant explanatory power when (i) the debt level is relatively high, (ii) the change in debt level is relatively high, (iii) the balance in the asset revaluation as a portion of book value is relatively high, or (iv) the net increment to revaluation reserve as a proportion of book value is relatively high. The results can imply that level of asset revaluation reserve has significant explanatory power for price–to-book ratio, particularly for sub samples of industries firms with a relatively high level of revaluation activity. Thus, the inclusion of revaluation reserve in book value provide a better summary of current financial statement of the firm. They use the survey method to find the opinion about the motivation for revaluation. The primary motivation is to present true and fair financial statement. The second motivation is to reduce debt-to-equity (D/E) ratios.

Barth and Clinch (1998) also investigate value relevance of asset revaluation of Australia firms. This study classifies the types of the assets into investments, property plant and equipment, and intangibles. The results indicate that revalued investments are positively related with share prices significantly except for the revalued investments in associated companies of non-financial firms. The revalued intangible assets are significantly positively associated with share prices. Revalued aggregate property, plant and equipment are significantly positively associated with share prices for firms in all three industries (mining, financial, and non-financial industry). The revalued plant and equipment is related positively with share prices for mining firms and significantly negatively related to financial firms, but it is insignificantly related to share prices for non-financial firms. Revalued property is not significantly associated with share prices for any industry.

Aboody et al. (1999) test whether the revaluation of fixed assets by U.K. firms are associated with future firm performance. The future firm performance is measured by ex post-realized operating income and cash flow from operations. This study extends other studies in the viewpoints that it uses the future performance as dependent variable instead of shares' prices or returns. If the asset revaluation reflects true asset value and it is timely, a positive association between revaluation and future changes in firm performance will be found. The results show that current year revaluations are significantly positively associated with changes in operating performance. They also examine the relation between share prices and the revaluation balances, net income, and book value of equity. They find that revaluation balance is significantly positively associated with prices incremental to net income and book value of equity. Current year upward revaluations and returns are significant positively related. It indicates that upward UK revaluation reflect at least some change in asset values on a timely basis. They also use the result of survey of Easton et al. (1993) to study the motivation of asset revaluation. They estimate the equations which allow the coefficients to vary with debt-to-equity ratios. The results indicate that the relation between revaluations and future operating performance is weaker for firms with higher debt-to-equity ratios.

Lin and Peasnell (2000) study the factors associated with the choice of the revalued fixed asset. The results show that upward revaluation is associated positively with depletion of equity, size, gearing and fixed asset intensity and negatively associate with liquidity. The conclusion of this research is that reserve depletion, indebtedness and market-to-book ratios are consistently important in explaining the probability of a firm being classified as an upward revaluer. The most important factor is reserve depletion (because of large measure of goodwill write-downs) in the revaluation in U.K.

In summary, revaluation balance is positively associated with share price and change in revaluation balance is also positively associated with returns. Motivation for revaluing assets is lower debt-to-equity ratio and equity depletion (only in U.K. firms).

3.3.6.3 Value Relevance of Investment in Securities

The prior studies investigate the value relevance of fair values of investment in securities. These studies always examine both investment in securities in the balance sheet and unrealized gains and losses (or fair value securities gain/loss) in the income

statement (Barth, 1994; Carroll and Linsmeier, 1996; Graham et al., 1998; Park, Park and Ro, 1999), which can be summarized as follows.

Barth (1994) examines the value relevance of fair value estimates of banks' investment in securities and securities gains and losses. The result indicates that fair value estimates of investment in securities in balance sheet provide significantly explanatory power for stock's prices beyond historical costs. Bank share prices act as if the fair values have more information content than historical costs. The findings of securities gains and losses are different. The significance of any incremental explanatory power for fair values securities gains and losses beyond realized gains and losses depend on the specification of estimation equation. In some specification, fair value securities gains and losses have no significant incremental explanatory power. Significant explanatory power is found only in more powerful specifications. In conclusion, fair value securities in balance sheet are reliable and relevant to investors, but the fair values securities gains and losses depend on model specifications.

Carroll and Linsmeier (1996) study value relevance of fair value accounting for investment in securities of closed-end mutual funds. They find the significance association between the stock prices and fair values of investment in securities as well as between stock's returns and fair value securities' gains/losses. Thus, fair values of investments in securities are value relevant information.

Graham et al. (1998) study value relevance of fair value for investments in equity securities that the investor has the significant influence over the investee. For price model, there is the positive relationship between share prices, book value of investment in securities, the difference between fair value and book value of investment. In return model, the recognized equity earnings per share and difference between fair value earnings on the equity investment and recognized equity method earnings are significantly related with security's returns. Thus, fair values of investments under the equity method are value relevant information.

Park et al. (1999) investigate whether the intent-based classification of investments in securities under Statement of Financial Accounting Standard (SFAS) No. 115 provides information about the market value of bank equity. SFAS No. 115 requires their fair value disclosure for trading securities, available-for-sales securities (AFS), and held-to-maturity securities (HTM). The classification is based on firm's ability and intent to hold them as investments. They investigate value relevance of disclosed fair value less than historical cost book

values (value difference) of available-for-sales and held to maturity securities. They run balance sheet model. The market value less book value of equity is dependent variable. The value differences (market values less book values) of AFS, HTM, non securities assets, non securities liabilities, and off-balance sheet items are independent variables. The results show that levels of and changes in value differences of both AFS and HTM securities have distinct ability to explain levels of and changes in value differences (market less book values) of equities. Value differences of AFS are more closely related than those of HTM securities to value differences of bank equities.

The prior research shows the same results that fair values of investments in securities in balance sheet are value relevant information (Barth, 1994; Carroll and Linsmeire, 1996; Graham et al., 1998; Park et al., 1999). For fair values securities gains/losses, Barth (1994) finds that the value relevance of fair value securities gains/losses depends on model specification. Carroll and Linsmeire (1996) and Graham et al. (1998) find that fair value (or unrealized) securities gains/losses are value relevant information.

3.3.6.4 Value Relevance of Other Assets

There is no direct research on the value relevance of other assets. But there are studies on value relevance of specific items of other assets such as research and development (R&D) and software capitalization.

Lev and Sougiannis (1996) investigate the value relevance of R&D capitalization. The U.S. GAAP mandates the full expensing of R&D in financial statement. They estimate the relation between R&D expenditures and subsequent earnings for a large cross-section of R&D-intensive firms. The authors can compute firm-specific R&D capital and its amortization rate, as well as the measurement of the periodic R&D amortization from the relation between R&D expenditures and subsequent earnings. Then, they adjust reported earnings and book values of sample firms for R&D capitalization. The evidence shows that the adjusted book values are significantly related with stock prices and the adjusted values of earnings are also related with returns. The result indicates the value relevance to investors of R&D capitalization process.

Aboody and Lev (1998) examine the value relevance of information on the capitalization of software development costs (in accordance with the SFAS No. 86). They find that annually capitalized development costs are positively associated with the stock returns

and the cumulative software asset reported on the balance sheet is associated with the stock prices. Moreover, software capitalization data are associated with subsequent reported earnings, indicating another dimension of relevance to investors.

Overall, the specific items of other assets are value relevant information (Lev and Sougiannis, 1996; Aboody and Lev, 1998).

3.3.7 The Effects of Changes in Accounting Standards on Value Relevance of Accounting Information

The changes in accounting standards (including the adoption of new accounting issues) may change the recognition criteria, the measurement criteria and the ways to disclose accounting information. There are prior studies to investigate the effects of changes in accounting standards (or the adoption of new accounting standards) on value relevance of accounting information.

Amir (1996) studies the effects of the adoption of a new accounting standard SFAS No. 106 *Postretirement Benefit*. SFAS No. 106 requires detailed disclosure of the funded status of post retirement benefit (PRB) plans, annual cost announcement, present value of PRB obligation by age group, estimation parameters (e.g. discount rate and health care cost trend rate), and sensitivity of PRB obligation and cost to a one percent change in the health care cost trend rate. The evidence indicates that the funded status of the PRB plan and the components of the net PRB cost are useful to equity investors in addition to pension information. Sensitivity disclosures provided by SFAS No. 106 are also useful in explanatory cross-sectional variation in market-to-book value ratios after controlling for the PRB funded status and cost components.

Cheng, Liu, and Schaefer (1997) investigate value relevance of cash flows from operations as reported under new accounting standard SFAS No. 95 *Statement of Cash Flows*. Cash flows were not required prior to SFAS No. 95. They examine incremental value relevance of cash flow from operations beyond accrual-based earnings in explaining security returns and value relevance of reported cash flows from operations beyond readily available estimates of cash flows from operations. The results indicate that SFAS No. 95 reported cash flows from operations have significant incremental explanatory power for security returns even after controlling for accounting earnings information.

Ayer (1998) studies the effects of change in accounting standard on income taxes. It examines whether the net deferred tax liabilities disclosed under SFAS No. 109 *Accounting for Income Taxes* provides additional value relevant information over the disclosure required by APB No. 11. SFAS No. 109 requires an asset and liability approach for the accounting for income taxes. Deferred income taxes are viewed as assets and liabilities of the firm, and deferred tax expense is determined by current-year change in the firm's deferred tax liabilities and assets. APB No. 11 requires a deferral approach to accounting for income taxes. The primary intent of deferral approach was to match tax expenses with corresponding revenues and expenses for the year in which the revenues and expenses were recognized in financial statement. The investigation of value relevance of deferred tax under SFAS No. 109 decomposes net deferred tax liability into 2 components (1) APB No. 11 deferred tax liability and (2) the cumulative effect of adopting SFAS No. 109. The evidence indicates that SFAS No. 109 cumulative effect is significantly negatively associated with firm value. SFAS No. 109 provides value relevant information above and beyond that of APB No. 11.

3.4 Development of Research Questions

Most prior studies indicate that accounting information is value relevant, which investors use in valuing their securities. Earnings are the premier information that almost investors use (Lev, 1989; Easton and Harris, 1991). Earnings components are also value relevant information (Lipe, 1986; Swaminanthan and Weintrop, 1991; Ohlson and Penman, 1992; Strong and Walker, 1993). Furthermore, the total assets and total liabilities are found to be value relevant information (e.g. Francis and Schipper, 1999) including the revaluation of property, plant and equipment (e.g. Easton et al., 1993; Barth and Clinch, 1998) and fair values of investments in securities (e.g. Barth, 1994; Carroll and Linsmeire, 1996).

The issuance of new accounting standards changes the criteria of recognition and measurement or requires recognizing the new accounting items in financial statements. The changes in accounting standards affect value relevance of accounting items. There are several empirical evidences from developed markets as follows. The new accounting items from the adoption of SFAS No. 106 *Postretirement Benefit* and SFAS No. 95 *Statement of Cash Flow* also have value relevance (Amir, 1996; Cheng et al., 1997). Amir (1996) finds that the net

postretirement cost is useful to equity investors. Cheng et al. (1997) find that cash flows from operations also explain a significant portion of security returns. The change from APB No. 11 to SFAS No. 109 *Accounting for Income Taxes* has the effect on value relevance of deferred tax liability in the direction of an increase in value relevance of deferred tax (Ayers, 1998).

For developing market in Thailand, the ICAAT has issued the new accounting framework and many new accounting standards in 1999. The ICAAT applies the International Accounting Standards (IAS) as the main concept in issuing new accounting standards with some adaptations in order to be suitable for Thailand's economic environment. The new accounting framework and new accounting standards emphasis on the importance of the recognition of accounting items as the assets and liabilities and reduce the importance of matching principle (see TAS No. 35 and TAS interpretation No. 4). Moreover, there are new accounting practice issues such as TAS No. 34 *Accounting for Troubled Debt Restructurings* and TAS No. 36 *Impairment of Assets*.

From summary of new accounting standards discussed in Chapter 2, the accounting items that are directly affected by year 1999 changes in Thai accounting standards can be summarized in TABLE 3.1

TABLE 3.1 Accounting Items Directly Affected by Year 1999 Changes in Thai Accounting Standards

Financial Statement	**TAS No.**	**Accounting Items that are Directly Affected By Year 1999 Changes in Thai Accounting Standards**
Income Statement	TAS No. 34	Gain/loss on troubled debt restructurings
	TAS No. 36	Impairment loss of assets
	TAS No. 40	Unrealized gain/loss on trading securities
Balance Sheet	TAS No. 32	PPE stated at the higher of discounted cash flows from use of asset or net selling price.
	TAS No. 36	Allowance for impairment loss of assets
	TAS No. 40	Investment in securities is classified into types as intention to hold.
		Trading securities and available-for-sales (AFS) securities are stated at fair values.
		Unrealized gain/loss of AFS is presented in the shareholder's equity.
	TAS Interpretation No. 4	Other assets are reduced by the accounting items which do not meet the definition of assets.

As stated in TABLE 3.1, the new accounting standards change the recognition and measurement criteria of accounting items and also introduce the new accounting items in financial statements. Thus, changes in accounting standards may affect the value relevance of accounting information. The main research questions in this study are:

1. Are there any effects of year 1999 changes in the accounting standards (TAS No.32 to 40 and TAS interpretation No.1-4) on value relevance of accounting information both in income statement and balance sheet?

2. How do year 1999 changes in accounting standards affect the value relevance of accounting information both in income statement and balance sheet?

3.5 Development of Research Hypotheses

3.5.1 The Effects of Year 1999 Changes in Accounting Standards on Value Relevance of Earnings

The importance item in income statement is earnings. Most prior studies find that earnings are value relevant information (e.g. Lev, 1989; Easton and Harris, 1991). In Thailand, the past studies also find that investors use earnings in valuing the security prices (Vacharajittipan, 1991; Srisawadi, 1996; Keorath, 1996).

In 1999, Thai accounting standards have been changes in many issues. The changes in accounting standards affect the components of earnings. There are the new accounting items in income statement due to changes in accounting standards. They are gain/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 (see TABLE 3.1). Impairment losses are value relevant information (Heflin and Warfield, 1997; Alciatore et al., 2000). Unrealized gains/losses on trading securities are also value relevant information (Carroll and Linsmeire, 1996; Graham et al., 1998). Therefore, the inclusion of these new accounting items in income statement may have the effects on value relevance of earnings in direction of an increase. However, the impairment loss of assets and unrealized gain/loss on trading securities also make more earnings volatility. Earnings volatility reduces value relevance of earnings (Kormedi and Lipe, 1987; Lipe, 1990). For trouble debt restructurings (TDR), investors may view gains on TDR as one-time items or special items because the classification of these items are extraordinary items in income statement. The value relevance of earnings of firms-year with one-time items will be less than the value relevance of earnings without them (Collins et al., 1997; Easton et al., 2000). Because of the inclusion of many new accounting items in income statement, there will be the effects of these new items on value relevance of earnings.

As the results of changes in the accounting standards in 1999, the value relevance of earnings will change. The first hypothesis (in term of alternative hypothesis) is set as follows.

H_1: The value relevance of earnings changes due to the effects of year 1999 changes in Thai Accounting Standards.

For the first hypothesis, it is predicted that value relevance of earnings is affected by the changes in accounting standards. Some of new accounting items are expected to increase value relevance of earnings, but some of them are expected to decrease value relevance of earnings. Thus, the direction of the change in value relevance of earnings is not predicted.

3.5.2 Value Relevance of New Accounting Items and the Effects of the Inclusion of New Accounting Items in Income Statement on Value Relevance of Earnings

This study investigates whether the new accounting items are value relevant information. The effects of the inclusion of new accounting items in income statement on value relevance of earnings are also examined. The accounting items examined are as follows.

3.5.2.1 Gain and Loss on Troubled Debt Restructurings (TDR)

No prior research directly studies the value relevance of gain/loss on troubled debt restructurings. There is a study on the value relevance of special items (or exceptional items) and extraordinary items in term of their relation with the stock's return. Strong and Walker (1993) study value relevance of earnings for U.K. firms by partitioning earnings into earnings before exceptional item and extraordinary item, exceptional item, and extraordinary item. They find that earnings before exceptional item and extraordinary item are significantly related with the stock's return, while the exceptional item and extraordinary item are not related with the stock's return. That is, exceptional item and extraordinary item are not value relevant information.

In addition, Fairfield et al. (1996) study on the usefulness of special items (items that are unusual or infrequent items but not both), extraordinary items and discontinued operations in term of their predictability of future earnings. They find that special items do not provide information for forecasting returns on equity before special items, extraordinary items and discontinued operations (ROEBSI), but do provide information for forecasting bottom-line return on equity (ROE). Extraordinary items and discontinued operations are uninformative regarding future earnings. They do not provide any information for future earnings.

TAS No. 34 requires that gain on TDR is presented as an extraordinary item, while loss on TDR is presented as the portion of ordinary operation in income statement. So

the nature of gain on troubled debt restructurings is clearly distinct from loss on troubled debt restructurings. Thus, this study will test value relevance of gain on TDR and loss on TDR separately. The research hypotheses for testing the value relevance of gain on TDR (Hypothesis 2.1A) and loss on TDR (Hypothesis 2.2 A) are set as follows.

$H_{2\,1A}$: Gain on trouble debt restructurings is not value relevant information.

$H_{2\,2A}$: Loss on trouble debt restructurings is value relevant information.

The characteristic of gain on TDR is like one-time item or special item. Thus, gain on TDR is expected not to be value relevant information (Hypothesis 2.1A). For loss on TDR, it is a portion of ordinary operation. It can convey the information to investors in which values of account receivables decrease because of the debt restructuring process. So loss on TDR is expected to be value relevant information (Hypothesis 2.2A).

In addition, the effects of inclusion of gain and loss on TDR in income statement on value relevance of earnings are examined. Elliott and Hanna (1996) find that the inclusion of special items in income statement reduces the information content of earnings. Collins et al. (1997) find that the earnings of firms with the one-time items are less value relevance than firm without the one-time items. Easton et al. (2000) also find that the same result provided by Collins et al. (1997). The inclusion of one-time items in income statement reduces value relevance of earnings. As stated above, gain on TDR is like one-time item or special item. Thus, gain on TDR is expected to reduce value relevance of earnings.

For loss on TDR, if it is found to be value relevant information, it can imply that the inclusion of loss on TDR will increase value relevance of earnings. However, the inclusion of loss on TDR may induce earnings volatility in income statement. Earnings volatility reduces value relevance of earnings (Kormedi and Lipe, 1987; Lipe, 1990). So the inclusion of loss on TDR in income statement is predicted to affect value relevance of earnings. Because there are the arguments on the effects of loss on TDR on value relevance of earnings, the direction of effect is not predicted.

The effects of gain on TDR (Hypothesis 2.1B) and loss on TDR (Hypothesis 2.2 B) on value relevance of earnings can be set as the alternative hypotheses as follows.

$H_{2.1B}$: The inclusion of gain on trouble debt restructurings in income statement reduces value relevance of earnings.

$H_{2.2B}$: The inclusion of loss on trouble debt restructurings in income statement will have the effect on value relevance of earnings.

From the discussion above, gain on TDR will have the effect on value relevance of earnings in direction of the reduction. Loss on TDR is predicted to have the effect on value relevance of earnings, but the direction is not predicted.

3.5.2.2 Impairment Loss of Property, Plant and Equipment (PPE) and Impairment Loss of Investments in Securities

The prior studies find that market reacts to impairment of asset (asset write-downs) announcements negatively and significantly (Elliott and Shaw, 1988; Francis, Hanna, and Vincent, 1996; Bartov, Lindahl, and Ricks, 1998). The relations between the long window returns and the amounts of impairment loss (asset write-downs) are also negative and significant (Heflin and Warfield, 1997; Bartov et al., 1998; Alciatore et al., 2000). All prior studies find that impairment losses of assets (assets write-downs) are value relevant information.

The investigation of value relevance of impairment loss of property, plant, and equipment (Hypothesis 3A) and impairment loss of investment in securities (Hypothesis 4A) will be set as alternative hypotheses as follows.

H_{3A}: Impairment loss of property, plant and equipment is value relevant information.

H_{4A}: Impairment loss of investment in securities is value relevant information.

The impairment losses of PPE and investment in securities are predicted to be value relevant information because they provide the information in which values of property, plant and equipment and values of investment in securities decline.

Furthermore, Alciatore et al. (2000) also find that earnings are more highly correlated with quarterly returns when impairment amount is included in earnings. This

may imply that the inclusion the impairment loss of assets in income statement will increase the value relevance of earnings. However, the investors may view the impairment losses as special items because of infrequent or unusual characteristics. The presence of special items reduces value relevance of earnings (Collin et al., 1997; Easton et al., 2000). The impairment loss in income statement may induce the earnings volatility. The earnings volatility reduces value relevance of earnings (Kormedi and Lipe, 1987; Lipe, 1990). In addition, impairment loss may distort earnings pictures by packing the large losses in one quarter, it make the difficulty for investors to evaluate firm's performance (Bartov et al., 1998). So this will make the reduction in value relevance of earnings. Because there are arguments on the effects of these items on value relevance of earnings, the directions of the effects are not predicted. The effects of the inclusion of impairment loss of PPE (Hypothesis 3B) and investment in securities (Hypothesis 4B) in income statement on value relevance of earnings will be set as research hypotheses as follows.

H_{3B}: The inclusion of impairment loss of property, plant and equipment in income statement will have the effect on value relevance of earnings.

H_{4B}: The inclusion of impairment loss of investment in securities in income statement will have the effect on value relevance of earnings.

Impairment loss of PPE and investment in securities are predicted to have the effects on value relevance of earnings, but the directions of effects are not predicted.

3.5.2.3 Unrealized Gain/Loss of Trading Securities

Fair values securities gains/losses are positively related with stock's returns significantly (Carroll and Linsmeire, 1996; Graham et al., 1998). But Barth (1994) finds that value relevance of fair value securities gains/losses depends on the power of the estimation equations. Overall, the prior studies find that fair value securities gains/losses are value relevant information. The hypothesis for the investigation of value relevance of unrealized gain/loss on trading securities (Hypothesis 5A) will be set as follows.

H_{5A}: Unrealized gain/loss on trading securities is value relevant information.

Unrealized gain/loss on trading securities is predicted to be value relevant information because it can provide information in which there are the changes in values of trading securities to investors.

In addition, the effects of inclusion of unrealized gain/loss of trading securities on value relevance of earnings will be also examined. The result in which unrealized gain/loss of trading securities is value relevant information (Carroll and Linsmeire, 1996; Graham et al., 1998) may imply that the inclusion of this item in income statement will increase the value relevance of earnings. However, unrealized gain/loss of trading securities may also introduce earnings volatility the same as impairment loss. This effect will reduce value relevance of earnings (Kormedi and Lipe, 1987; Lipe, 1990). Because there are arguments on the effects of unrealized gain/loss on trading securities on value relevance of earnings, the direction of the effect is not be predicted. The effect of this item on value relevance of earnings will be set as the research hypothesis (Hypothesis 5B) as follows.

H_{5B}: The inclusion of unrealized gain/loss of trading securities in income statement will have the effect on value relevance of earnings.

Unrealized gain/loss of trading securities is predicted to have the effect on value relevance of earnings, but the direction of effect is not predicted.

3.5.3 The Effects of Year 1999 Changes in Accounting Standards on Value Relevance of Accounting Items in Balance Sheet

In addition to the effects of changes in accounting standards on value relevance of earnings and earnings components, this study will investigate the effects on value relevance of accounting items in balance sheet. Accounting items in balance sheet that are affected by the changes in accounting standards in 1999 are total assets, property, plant, and equipment, investment in securities, and other assets.

3.5.3.1 Total Assets

This study investigates the effects of year 1999 changes in accounting standards on value relevance of accounting items in balance sheet. Total assets are found to be value relevant information (e.g. Francis and Schipper, 1999). Due to the adoption of a new accounting framework, the recognition of assets and liabilities mainly relies on the definition of assets and liabilities. The asset (liability) definition focuses on the future economic benefits (sacrifices). Total assets do not include the accounting items which do not meet the definition of assets. Furthermore, the changes in accounting standards also change the recognition and measurements of components of total assets such as property, plant, and equipment (TAS No. 32 and TAS No. 36), and investment in securities (TAS No. 40). Under TAS No. 32, property, plant and equipment are allowed to revalue. However, this point does not differ from the old accounting standard's requirement. TAS No. 32 requires that when an item of PPE is revalued, the entire class of PPE to which that asset belongs to should be revalued. So the effect is that the same class of asset is stated in the same value. The revalued amount of PPE is positively related with the share's price (Easton et al., 1993; Barth and Clinch, 1998). In addition, there are the requirements of impairment of assets under TAS No. 36. So PPE is stated at net realizable value after the changes in accounting standards. For investment in securities, TAS No. 40 requires the marketable securities stated at fair values. The fair value of the investments in securities provides significant explanatory power beyond the historical costs (Barth, 1994; Carroll and Linsmeier, 1996; Graham et al., 1998). As the consequences of changes in accounting standards in 1999, the value relevance of total assets will increase. Research hypothesis 6A in term of alternative hypothesis is set as follows.

H_{6A}: The value relevance of total assets increases due to the effects of year 1999 changes in Thai Accounting Standards.

It is predicted that value relevance of total assets will increase because the asset's values are stated at net realizable value more than before the changes in accounting standards.

Moreover, the adoption of TAS interpretation No. 4 may affect the value relevance of total assets. This interpretation requires that accounting transactions, which do

not meet the definition of assets and liabilities, be classified as either revenues or expenses. So other assets are reduced by the amounts of expenditure, which do not meet the definition of assets. Because the adoption of this interpretation is not the same time as the adoption of other new accounting standards (TAS No. 32-40), the investigation for the effect of the adoption of this interpretation will be set as another hypothesis. The adoption of this interpretation makes other assets reflect the true future economic benefits. It will increase the value relevance of other assets which also induces an increase in value relevance of total assets. Research hypothesis 6B is set as follows.

H_{6B}: The value relevance of total assets increases due to the adoption of TAS interpretation No. 4.

From the reason discussed above, the value relevance of total assets is expected to increase from the adoption of TAS interpretation No. 4.

3.5.3.2 Property, Plant, and Equipment

This study examines the effects of year 1999 changes in accounting standards on value relevance of property, plant and equipment (PPE). TAS No. 32 requires that all items in the same class of the assets should be revalued simultaneously (TAS No. 9 does not specify this requirement). Therefore, the values of all assets in the same class are stated at revalued amount. There is a new accounting practice on the impairment of property, plant and equipment (TAS No. 36). The value of PPE is stated at the higher of discounted future cash flows from the use of asset or the net selling price. Thus, value relevance of property, plant and equipment may change. The prior studies show that the revalued assets are value relevant information (Easton et al., 1993; Barth and Clinch, 1998) and the revaluation of fixed assets is also related to future operating performance (Aboody et al., 1999).

This study will test whether the changes form TAS No. 9 and No. 10 to TAS No. 32 and the adoption of TAS No. 36 affect value relevance of property, plant and equipment. Research hypothesis 7A in term of alternative hypothesis is set as follows.

H_{7A}: The value relevance of property, plant and equipment increases due to the effects of year 1999 changes in Thai Accounting Standards.

It is predicted that the value relevance of property, plant and equipment will increase after the adoption new accounting standards because PPE values are stated at net realizable value.

In addition, this study will also examine whether the revaluation surplus and allowance for impairment loss of property, plant and equipment under TAS No. 32 and TAS No. 36 are value relevant information. The research hypothesis 7B and hypothesis 7C are set as follows.

H_{7B}: The revaluation surplus amount of property, plant and equipment under TAS No. 32 is value relevant information.

H_{7C}: The allowance for impairment amount of property, plant and equipment under TAS No. 36 is value relevant information.

It is expected that the revalued surplus amount and the allowance for impairment amount of property, plant and equipment under new standards are value relevant information. If the results follow the prediction, it can imply that the revaluation and impairment of PPE under TAS No. 32 and TAS No. 36 make an increase in value relevance of PPE.

3.5.3.3 Investments in Securities

TAS No. 40 changes both the classification and the valuation of investments in securities. Trading securities and available-for-sale securities are stated at fair value, while the old accounting standard requires marketable securities to state at lower of cost or market value (LCM). Prior studies indicate that fair value of investments in balance sheet have incremental value relevance beyond historical costs (Barth, 1994; Carroll and Linsmeire, 1996; Graham et al., 1998; Park et al., 1999). In addition, the firm should asses whether there is the impairment of investment in securities (TAS No. 36 and TAS No. 40). So values of investment in securities do not exceed the net realizable values. Therefore, this study will examine whether and how the changes from TAS No. 12 and TAS No. 17 to TAS No. 40 affect value relevance of investments in securities. The effect of changes in accounting standards on value relevance of investment in securities is set in term of alternative hypothesis (Hypothesis 8A) as follows.

H_{8A}: The value relevance of investment in securities increases due to the effects of year 1999 changes in Thai Accounting Standards.

It is predicted that the value relevance of investment in securities will increase after the adoption new accounting standards because the marketable securities are stated at fair values and the values of investment do not exceed the net realizable values.

Furthermore, the value relevance of fair values of trading securities and available-for-sale securities after the changes in accounting standards is also examined. The research hypothesis 8B and hypothesis 8C are set as follows.

H_{8B}: Fair values of trading securities under TAS No. 40 are value relevant information.

H_{8C}: Fair values of available-for-sale securities under TAS No. 40 are value relevant information.

Fair values of trading and available-for-sale securities are expected to be value relevant information because fair values can provide information on the changes in values of securities both the increase and decrease directions. If the results follow the prediction, it can imply that value relevance of investment increases because of the adoption TAS No. 40.

3.5.3.4 Other Assets

The main effect on value relevance of other assets is the adoption of TAS interpretation No. 4. The other assets in balance sheets will reflect only the transactions that will have the future economic benefits to firms. The prior studies indicate the specific items of other assets (e.g. R&D capitalization and software capitalization) are value relevant information (Lev and Sougiannis, 1996; Aboody and Lev, 1998). This study will examine whether and how the adoption of this interpretation affects the value relevance of other assets. The research hypothesis (ninth hypothesis) is set as follows.

H_9: The value relevance of other assets increases due to the adoption of TAS interpretation No. 4.

It is predicted that value relevance of other assets increases because the other assets will reflect true future economic benefits after the adoption of TAS interpretation No. 4.