LACK OF TIMELINESS IN REPORTED EARNINGS AND FUNDAMENTAL FINANCIAL STATEMENT ANALYSIS

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THE objective of this paper is to compare the explanatory power of two competing concepts – the lack of timeliness and the 'fundamental' financial statement analysis – in explaining the stock returns. The paper extends the work of identifying value-adding variables from the financial statements that could help in explaining the annual returns on stocks, in context of two competing concepts.

Accounting literature on prediction of stock returns can broadly be classified in two classes: first, the relationship between earnings and the second, stock returns and other is the use of financial statement information to explain the stock returns.

The relationship between stock returns and firms' earnings has been a critical issue in accounting, finance, and economics literature. Despite the presence of an apparent relationship between the earnings and return, the explanatory power of earnings is weak (Cheung and Mandy, 1993). The weak contemporaneous relation between returns and earnings may be explained by the lack of timeliness in reporting.

An efficient market perceives changes in expected future returns due to any news or event and incorporates its impact in the stock prices. These anticipated changes in future earnings result in bidding up (down) of stock prices. Unlike the market, the impact of these changes is not recognized in accounting earnings instantaneously. The change in earnings is recognized only when the earnings are actually realized or earned. Thus, changes in earnings will lag the changes in stock return and current period stock returns will have relation with the future period earnings. This concept is referred to as lack of timeliness.

Fundamental Financial Statement Analysis is aimed at valuation of stock prices using the information from financial statements. The 'Fundamental financial statement analysts claim that the stock prices are over or under-priced in relation to their true intrinsic worth or book value and the stock prices over a period of time will move towards their 'fundamental' value or the book value. This stream of research provides evidence that change in stock return follows the reporting/recognition of actual earnings, implying that the current periods' stock returns can be explained by previous period earnings or lagged earnings.

Our paper proposes to compare the explanatory power of two concepts – the lack of timeliness and the fundamental financial statement analysis – in explaining stock returns. The results may indicate the superiority of one concept over the other. A comparison between these two apparently conflicting and well-established concepts has not been done in the accounting literature.

Lack of Timeliness and Recognition in Financial Statements

Accounting recognition is "the process of formally recording or incorporating an item in the accounts and financial statement of the entity" (FASB 1980, SFAC No. 3 paragraph 83). The decision as to when a specific transaction or an event is to be recognized depends upon several measurement and recognition concepts, like reliability, objectivity, verifiability, matching, and conservatism. In order to meet these fundamental concepts, the transaction

should have been completed and there should be no uncertainty about the measurement of realized income. However, many times this may not be the case. Transactions or events related to contingencies, long term guaranteed contracts, short term marketable securities, inventory, human capital, and many others may lead to lag in recognition. For example, loss contingencies may not reach the income statement unless the loss is probable and can be measured with reasonable degree of accuracy. Gain contingencies are never recognized unless realized. Unlike accounting recognition rules, the market takes into consideration the impact of the news and revises its future expectations. Thus the compliance with the recognition rules lead to delay in recognition of contingent loss or gain in the earnings number.

Other examples are signing a very favorable guaranteed long term contract with the government, or the discovery of new oil reserves by an oil company is positive news for the market. The market is presumed to be efficient and it immediately revises the expectations of future cash flows and incorporates the effect in the stock price. However this change in net value of assets is not immediately reflected in the accounting numbers, because recognition criterion is not met. Similarly, capital expenditure in Research and Development in the current period may produce benefit in the future periods, however the accrual accounting will not account for it in the current period.

For example, APB Opinion 29 specifies the accounting for exchange transactions and non-reciprocal transfers of non-monetary liabilities and assets. For the non-monetary transactions where the earnings process is not culminated, it needs to be determined if the exchange will result in a loss. A loss on an exchange is indicated if the fair value of the item transferred is less than that of the book value of the item given up. In those cases where loss is indicated, the non-monetary assets received should be recorded at the fair value of the item transferred, and the loss is recognized in full. However, if the exchange results in gain, the gain can not be recognized because the exchange does not culminate the earning process.

The traditional accrual accounting emphasizes historical cost measurement and transaction based accounting. Also, there are many macro factors, which might lead to lag in recognition of earnings, for example: legislative changes, changes in the industry, and technological changes. Lack of timeliness in reporting of earnings has been attributed to meeting conventions underlying the accounting measurement process, based on the accrual and recognition concept of accounting. These conventions many times force accountants to trade timeliness for objectivity, verifiability, and/or conservatism.

Above discussion shows that when there is a lag in recognition of economic event, the accounting earnings tend to lag that of the market. This lack of timeliness is primarily due to delay in recognition of events in the current period. These events may relate to change in the value of net assets (discovery of an oil reserve) or change in expected future benefits (research and development expenditure in the current period). In short, the impact of economic events that causes revisions in the market's expectation about the future period's earnings is not accounted for in the current period earnings. The economic event may be captured in future period's earnings, when the conditions for recognition are satisfied. Thus lack of timeliness may be one explanation for the contemporaneous low returns-earnings relation.

Fundamental Financial Statement Analysis

The fundamental financial statement analysis uses the accounting numbers to determine the 'intrinsic value' of the stock. Accounting can play an important role in valuation because of the following two reasons. One, financial accounting is historically concerned with tracking the book value of equity or net worth and two, reporting of transactions in accountancy follows a set of rules, which ensures consistency over a period of time.

Fundamental Financial Analysts maintains that the firms' value is indicated in the financial statements and can be derived independent of its stock price. In case the market price deviates from the fundamental value, the stock is under priced or overpriced and is expected to move to its true value. The analysis of published financial statements can therefore reveal values that are not reflected in the stock. The intrinsic worth derived from the financial statement analysis is taken as the 'benchmark' for identifying the under priced or overpriced shares. Therefore, to obtain abnormal profits the investment strategy will be to compare the stock price with its 'fundamental' value. When the stock is under priced that is, the intrinsic is more than the stock price then the

strategy should be to buy the stock because the stock prices are expected to move towards the intrinsic worth. However, if the intrinsic worth of the share is less than the stock price, the stock is probably overpriced and its market price is expected to fall in the future.

Ou and Penman (1990) extracted a summary measure, aimed at finding value-relevant characteristics of the firms based upon variables in financial statements. Their summary measure robustly predicts the future stock returns. The perfect way to extract 'fundamental' value of the firm, however, is not available. The researchers have looked at various items of financial statements that could explain the stock prices. In doing so the pure definition of the traditional fundamental financial analysis has been slightly modified.

Researchers have used the stock return as given and have identified other value adding variables to explain the stock returns. These variables in some form represent the breakup of earnings' figure. We did not develop a new measure to predict future stock prices. We propose to use earnings itself as a proxy for the summary measure. Ball and Brown (1968) and many other research papers have indicated that earnings and capture information that is contained in the stock price. It has been shown over time that earnings has a relationship to the stock returns and is the final number which summarizes the impact of most of the economic events or transactions that take place in an organization. Investors value earnings positively and earnings also has relation to the future dividends. Given that earnings do reflect important attributes of financial statement financial statement analysis, we feel that use of earnings is appropriate.

Rationale for Assets: Current and Non-Current

One of the aims of fundamental analysis is valuation of securities using information contained in the financial statements. In addition to earnings there are nonearnings numbers, which are presented, in the financial statements. Analysts have identified some of these financial variables which are useful in security valuation. These variables have been shown to have explanatory power in addition to earnings number. As per the theory of fundamental analysis, the change in value of these variables provides relevant information to the investors. Many of these variables are assets.

Lev and Thiagrajan (1993) have used accounts receivables, inventory, and capital expenditure besides others, as relevant financial variables for prediction of stock returns. Ou and Penman (1990) have used change in assets as an important financial variable in computation of financial ratios used to derive one summary measure for financial statements. Similarly, Holthausen and Larcker (1992) have used the assets in the financial ratios used for prediction of stock returns. All of these studies concluded that assets do play an important role in determination of stock returns, as they indicate net investment activities undertaken by the organization.

FASB in its Conceptual Statement 6 defines asset as "probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events." An essential characteristic of assets is that "it embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly to the future net cash inflows." (Concept Statement No. 6) These assets are also referred to as economic resources. The common characteristic possessed by all assets is the potential future economic benefit or service potential. In a corporate organization this service potential translates into net cash inflows to the enterprise.

Assets and stock value have certain common characteristics. Both represent the expected future benefits and are expected to move together. It is important to separate the current and non-current assets. Current assets are expected to provide benefit over this accounting year only, whereas the non-current assets are expected to give benefit over a longer duration. The distinction is significant in the context of 'lack of timeliness' and 'fundamental financial analysis.' In either case the impact of change in the value of non-current asset will not reflect in the current year itself. This implies that more than one year of data on non-current assets will be required to explain the annual stock returns. The separation of assets into two broad categories may provide evidence that additional investment in non-current assets is perceived as a growth oriented long-term strategy. On the other hand a disproportionate growth in the current assets may signal a short-term growth strategy.

Previous Research

Empirical accounting research on prediction of stock returns can be classified in two categories. The first is the relation between stock returns and earnings and the other is the use of the 'earnings and returns' relationship in its present form are very weak. Potential reasons for this weak relation are also discussed in the literature. This weak explanatory power of earnings with respect to the stock returns directed researcher's attention to the fundamental financial statement analysis as an alternate explanation. One of the objectives of fundamental financial analysis is to approximate the value of corporate securities using a set of fundamental financial variables, with a particular focus on accounting information. Significant empirical research has gone into identification of these variables, so as to identify the value-adding variables, which can enhance the utility of financial statement analysis in predicting the stock prices.

The seminal work of Ball and Brown (1968) followed by other empirical research indicate that accounting earnings can explain the changes in stock prices. The normal approach was to associate abnormal stock returns to unexpected earnings. In regressing abnormal return over unexpected earnings, the regression slope coefficient is termed as 'earnings response coefficient.' However, Cheung and Mandy (1993), Strong and Walker (1993), and others concluded that the explanatory value of earnings for stock returns tends to be low, making earnings' disclosures less useful.

Warfield and Wild (1992) attribute low earning and stock return relation to the delay in "recognition of economic events in accounting earnings" in the financial statements. This delay in reporting of earnings has been attributed to the necessity of meeting the standards of objectivity, verifiability, and conservatism that underlie the accounting measurement process. Warfield and Wild (1992) investigated the explanatory power of earnings over different time periods, in explaining the returns. They found that explanatory power of earnings is less in shorter time interval and increases as the time interval is increased. Their findings revealed substantial earnings lag for several periods implying that the current returns are more closely related to the future earnings than to current earnings.

Kothari, Shanken, and Sloan (1994) evaluate two explanations for weak contemporaneous return-earnings' association. One is the lack of timeliness and the other is value irrelevant noise in earnings. They showed that earnings lack of timeliness is more important factor in explaining the low contemporaneous earnings-returns relationship than noise in earnings. Easton and Oshlon (1992) also provide evidence on the presence of lack of timeliness.

Fundamental analysis involves the determination of market value of securities using the accounting information. Ou and Penman (1989) developed a model to value the firm from the information contained in the financial statements. Their paper performs a financial statement analysis that combines a large set of financial statement items into one summary measure that indicates the direction of one-year ahead earnings changes. On the basis of their extensive financial statement analysis of 68 accounting predictor, they derived a summary measure from financial statements that predict future stock returns. The summary measure (Pr) expresses the probability of future earnings increase or decrease that is indicated by the financial statement analysis. They show that this fundamental measure capture equity values that are not reflected in the stock prices.

A firm's value is indicated by information in financial statements and analysis of published financial statements can discover the values that are not reflected in the stock prices. Wilson and O'Brien (1986) show that cash and total accruals have incremental information content beyond earnings themselves. Also, total accrual component has incremental information beyond the cash component. Fama and French (Unpublished 1992) indicate that low price to book ratio is one measure that produces above average returns over time. Other criteria are reasonable debt to capital structure, dividend growth over time, and above normal earnings. Ruth and Gallian (1995) have used financial ratios that predict future earnings to predict the stock returns. Holthausen and Lacker (1992) used 68 financial ratios developed by Ou and Penman to predict the excess returns. Their results support the Ou and Penman's findings that financial statement items can be combined into one summary measure to get more information about stock prices movement.

Lev and Thiagrajan (1993) tested a set of financial variables (fundamentals) claimed to be useful by analysts in security valuation. These fundamentals add approximately 70% on an average, to the explanatory power of earnings in explaining the excess returns. Authors also examined the relation among identified fundamentals,

earnings persistence and earnings response coefficients. They concluded that investors do use the fundamentals to assess the extent of earnings persistence and growth.

Lipe and Freeman (1986) examine the relationship between components of accounting studies and stock returns. In particular they test whether, the six commonly reported components of earnings, namely gross profit, general and administrative expense, depreciation expense, interest expense, income taxes, and other items provide additional information that is not contained in the earnings figure. The results revealed significant cross-component variation in the return reactions associated with the unexpected changes in six components. Wilson and O'Brien (1986) show that the cash and total accruals components of earnings have incremental information content beyond earnings themselves and the total accrual components have information beyond the cash component. However non-current accruals do not provide incremental information beyond working capital from operations.

Ou (1990) provides empirical evidence on the predictive ability and information content of non-earnings annual report numbers beyond that provided by earnings alone. Results suggest that a non-earnings number in the annual report contain information about the direction of firm's next year's earnings change, that is not reflected in the current earning numbers. The author establishes a valuation link between stock returns and annual reports based predictions. This is consistent with the notion that investors revise their expectations of future earnings based on the disclosure of non-earnings number in the annual report and thus bid up (down) the stock prices based upon the favorable (unfavorable) predictors.

Penman (1989) shows, in contrast to previous research, that earnings persistence indicated by financial statements is not a fixed attribute. Earnings persistence refers to earnings over a longer horizon. Penman shows that earnings persistence changes over time and reverts to mean of all firms. Correspondingly, earnings change multipliers are also mean reverting.

The current body of research work is a strong indication that financial statements capture the information that can explain the stock prices over a period of time. The literature also indicates explanatory power for earnings for excess returns. However the implications of lack of timeliness hypothesis and fundamental financial analysis have been compared neither for return-earnings relation nor for the returns and assets relation for the same set of data. Few elements of both current and non-current assets have been considered in previous research, but they have not been considered as two distinctive groups in context of the two hypotheses (Lack of Timeliness and Fundamental Financial Statement Analysis). Also the impact of current and non-current assets on stock returns in their totality has not been studied before specifically in the context of the two hypotheses. This paper compares the impact of two competing hypotheses on the stock returns. The paper also extends the work of identifying value-adding variable from the fundamental financial statements that can help in explaining the annual returns on stocks given there is a time lag in reporting and incorporating the impact of reported information into the stock prices.

Sample and Descriptive Statistics

Annual financial statement information is obtained from the annual Compustat files. Firms were selected based on the data availability from the Compustat annual files. To be included in the analysis the data should meet the following criteria:

1. All the data items sought are available in the Compustat annual files for ten years beginning 1988.
2. The company's financial year should end in December.
3. Stock prices are adjusted for stock splits.

Required data items included earning per share (primary) – including extraordinary items, Price-Close, Dividends per share by ex-date, Total assets, Total current assets, and common shares used to calculate earnings per share. A total of 778 firms met the criteria. The entire data set for 778 companies for 10 years was pooled over time and firms into one data set. This brings more information to the estimates of parameters. The pooling also resulted in missing values in first two years and last year. These missing values were due to the design of the model itself, which requires data with two years of lag and one year of lead (ahead) for every company. The total number of observations left was 5446. Three years of data with any missing values was

deleted so that the test could be performed on the same data set. Furthermore, any company having an annualized return of more than 500% for any year was deleted from the data set. This was done so that some extreme values do not affect the results seriously. The criterion of annualized return of more than 500% or AR greater than 5 is arbitrary and similar to the criterion used by Collins. The actual analysis was done on the data for seven years only. There were total of 5173 observations relating to 739 companies in the final sample. This sample was considered large enough to perform the analysis and is presumed to be a good representative of all firms.

Annualized earnings were used because they contain fewer accounting estimates and the need to control for seasonality is eliminated. Seven years of data was viewed as a reasonable compromise between having enough observations to provide precise parameter estimate and not demanding so many observations that underlying relationships would change, or missing data would reduce sample size considerably. Stock price at the beginning of the period has been used based upon the articles by Penman (1992), Ball, Kothari and Watts (1993), Kormendi & Lipe (1984), and others. Many authors have used changes in earnings per share as an independent variable. We did not feel it was necessary to use the change in earnings per share, because of insignificant correlation among the earnings numbers. Descriptive statistics of the variables and their correlation are presented in Tables 1, 1A, and 1B below:

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max	N
$AR_{i,t}$	0.11	.47	-0.87	4.68	5173
$EPS_{i,t}$	0.03	.54	-5.08	33.16	5173
$EPS_{i,t-1}$	0.01	.38	-10.88	3.17	5173
$EPS_{i,t+1}$	0.04	.28	-5.77	12.06	5173
$\Delta CA_{i,t}$	-0.01	.51	-17.49	12.41	5173
$\Delta NCA_{i,t}$	-0.03	.84	-24.61	12.47	5173
$\Delta NCA_{I,t-1}$	-0.06	.65	-13.31	11.27	5173
$\Delta NCA_{i,t+1}$	-0.01	.82	-29.53	22.19	5173

Table 1A: Correlation matrix- N=5173

Variable	$EPS_{i,t}$	$EPS_{i,t-1}$	$EPS_{i,t+1}$	$EPS_{i,t-1} + EPS_{i,t+1}$
$EPS_{i,t}$	1.0000	-0.106	0.109	-0.019
$EPS_{i,t-1}$	-0.1060	1.000	0.163	0.840
$EPS_{i,t+1}$	0.1096	0.163	1.000	0.672
$EPS_{i,t-1} + EPS_{i,t+1}$	-0.0190	0.840	0.672	1.000

Table 1B: Correlation Matrix N= 5173

Variable	$\Delta CA_{i,t}$	$\Delta NCA_{I,t}$	$\Delta NCA_{i,t-1}$	$\Delta NCA_{i,t+1}$	$\Delta NCA_{i,t-1}$ $DNCA_{i,t+1}$
$\Delta CA_{i,t}$	1.000	0.504	0.013	-0.140	-0.1300
$\Delta NCA_{i,t}$	0.500	1.000	0.088	-0.090	-0.0200
$\Delta NCA_{I,t-1}$	0.013	0.088	1.000	0.009	0.6260
$\Delta NCA_{i,t+1}$	-0.140	-0.090	0.009	1.000	0.7851
$\Delta NCA_{I,t-1} + DNCA_{i,t+1}$	-0.103	-0.020	0.626	0.785	1.0000

Where $AR_{i,t}$ = Annual Return on ith security adjusted for dividends and AR = $\{Div_t. + (P_{k,t} - P_{k,t-1})\}/ P_{i,t-1}$

$EPS_{i,t}$ = Earnings per share before extraordinary item for time t divided by $P_{i,t-1}$

$EPS_{i,t-1}$ = Earnings per share before extraordinary item for t-1, divided by $P_{i,t-1}$

$EPS_{i,t+1}$ = Earnings per share before extraordinary item for t+1, divided by $P_{i,t-1}$

i = represents ith company from 1 to 739

t = 1 to 7 where 1 represents the year starting from 1988

Δ = represents Change,

CA = Current Assets per share computed as Total Current Assets divided by CEPS,

CEPS = common shares used to compute earnings per share,

NCA = Non-Current assets per share divided by CEPS where NCA = total assets less current assets.

Hypothesis Development

Hypothesis 1

There is ample support in the literature for existence of relation between returns and earnings. Fundamental analysis has shown that there is a relationship between current period stock returns and previous period earnings. Literature also shows that there exists a lack of timeliness in recognition of earnings. The first hypothesis compares the explanatory power of one concept over the other.

Hypothesis 2

Non-earnings numbers have information content beyond the earnings number. Incremental non-earnings information in the annual reports is instrumental in prediction of future earnings and thus stock valuation. We are testing whether change in assets, current and non-current, have information content beyond earnings in relation to the concept of fundamental analysis and lack of timeliness.

Research Design

To test the above two hypothesis following regression model is used:

$$AR_{i,t} = \mu_1 + Ø_1 EPS_{i,t} + Ø_2 EPS_{i,t-1} + \varepsilon_1 \quad \text{..... (1)}$$

$$AR_{i,t} = \mu_2 + \gamma_1 EPS_{i,t} + \gamma_2 EPS_{i,t+1} + \varepsilon_2 \quad \text{..... (2)}$$

$$AR_{i,t} = \mu_3 + ß_1 \Delta CA_{i,t} + \beta_2 DNCA_{i,t} + \beta_3 \Delta NCA_{i,t-1} + \varepsilon_3 \quad \text{..... (3)}$$

$$ARi,t = \mu_4 + œ_1 \Delta CA_{i,t} + œ_2 DNCA_{i,t} + œ_3 \Delta NCA_{i,t+1} + \varepsilon_4 \quad \text{..... (4)}$$

Where $AR_{i,t}$ = Annual Return on ith security adjusted for dividends and AR = $\{Div_t. + (P_{k,t} - P_{k,t-1})\}/ P_{i,t-1}$

μ = Intercept

$EPS_{i,t}$ = Earnings per share before extraordinary item for time t divided by $P_{i,t-1}$

$EPS_{i,t-1}$ = Earnings per share before extraordinary item for t-1, divided by $P_{i,t-1}$

$EPS_{i,t+1}$ = Earnings per share before extraordinary item for t+1, divided by $P_{i,t-1}$

Div. = Dividend per share for period t

$P_{i,t}$ = Closing price for the current period for ith security in time t

$P_{i,t-1}$ = Closing price for the previous period for ith security in time t-1

i = represents ith company from 1 to 739

t = 1 to 7 where 1 represents the year starting from 1990

$$\Delta CA = \{CA_t - CA_{t-1}\}/ P_{i,t-1}$$

$$\Delta NCA_t = \{NCA_t - NCA_{t-1}\}/ P_{i,t-1}$$

$$\Delta NCA_{t-1} = \{NCA_{t-1} - NCA_{t-2}\}/ P_{i,t-1}$$

$$\Delta NCA_{t+1} = \{NCA_{t+1} - NCA_t\}/ P_{i,t-1}$$

Where, Δ = represents Change,

CA = Current Assets per share computed as Total Current Assets divided by CEPS,

CEPS = common shares used to compute earnings per share,

P = Closing Price for the year for period t,

EPS = Earnings per share for period t,

NCA = Non-Current assets per share divided by CEPS where NCA = total assets less current assets,

For hypothesis 1, it is expected that if concept of fundamental analysis is superior to the theory of lack of timeliness then we expect $Ø_2$ to be greater than g_2. We will also need to show that overall equation 1 is a better fit than equation 2. In case the concept of lack of timeliness is superior to the theory of fundamental analysis then we expect $Ø_2$ to be less than γ_2.

In testing hypothesis 2, it is expected that if the fundamental analysis has more explanatory power than the lack of timeliness then b_3 will be greater than $œ_3$. However if the lack of timeliness has more explanatory power than the theory of lack of timeliness then b_3 will be less than $œ_3$.

Following section provides the results of analyses.

Results

Results from the regression equations 1 & 2 are summarized below in Table 2.

$$AR_{i,t} = \mu_1 + Ø1EPS_{i,t} + Ø2EPS_{i,t-1} + \varepsilon_1 \quad \text{..... (1)}$$

$$AR_{i,t} = \mu_2 + \gamma_1 EPS_{i,t} + \gamma_2 EPS_{i,t+1} + \varepsilon_2 \quad \text{..... (2)}$$

Table 2

Co-efficient	Value	t-value
μ_1	0.109806	17.094*
$Ø_1$	0.07384	5.335*
$Ø_2$	-0.11419	-8.251*
μ_2	0.10497	16.133*
γ_1	0.079989	5.748*
γ_2	0.054336	3.905**

* *significant at 1% level*

** *significant at 5% level*

Adjusted R^2 is 0.019 and 0.009 for equations 1 and 2 respectively. The Durbin Watson (DW) test rejects the hypothesis of positive autocorrelation. The DW value for the equation 1 is 2.1363 and for equation 2 DW = 2.14408. Pearson's correlation test indicates insignificant correlation between the independent variables. F-value for both the equations is significant at 1%. Both variables of interest are significant, implying both concepts have validity.

The results from running regression on equations 3 and 4 are summarized below in Table 3.

Table 3 $AR_{i,t} = \mu_3 + ß_1 \Delta CA_{i,t} + \beta_2 \Delta NCA_{i,t} + \beta_3 \Delta NCA_{i,t-1} + e_3$ ..... (3)

$AR_{i,t} = \mu_4 + œ_1 \Delta CA_{i,t} + œ_2 \Delta NCA_{i,t} + œ_3 \Delta NCA_{i,t+1} + e_4$ ..... (4)

Co-efficient	Value	t-value
μ_3	0.110	17.23*
$ß_1$	0.202	12.775*
β_2	-0.617	-3.885*
β_3	-0.040	-2.938*
μ_4	0.111	17.515*
$œ_1$	0.200	12.565*
$œ_2$	-0.067	-4.242*
$œ_3$	-0.031	-2.215 **

* *significant at 1% level*

** *significant at 5% level*

Adjusted R^2 is 0.033 and 0. 032 for equations 3 and 4 respectively. The Durbin Watson (DW) test rejects the hypothesis of positive autocorrelation. The DW value for the equation 3 is 2.1412 and for equation 4 is 2.145. Pearson's correlation test indicates no significant correlation between the independent variables. F value for both the equations is significant at 1% .

In the literature (Penman, 1992) it has been shown that the earnings co-efficient does not remain constant over time and earnings change coefficients are mean reverting. The reason for the negative co-efficient can be traced to the fact that earnings coefficient changes over time even for the same company. For this particular sample the average of changes for the earnings co-efficient turned out to be negative. We are, however, interested in the magnitude of the co-efficient and its significance to see the impact of contemporaneous returns earnings relation as compared to the earnings-returns relation in the fundamental analysis. In our analysis $Ø_2$ is significant which shows that the fundamental analysis relation of returns and earnings is superior to the contemporaneous relationship. Moreover the adjusted R-square for the equation representing fundamental analysis is higher than that of the lack of timeliness theory. This represents that the overall fit of the fundamental analysis is relatively better.

To test whether the co-efficients $Ø_2$ and g_2 are significantly different than each other or not , the following set of full and reduced model was used. We tested the following hypothesis:

H0 : $Ø_5 = Ø_6 = g_5$

Full Model

$AR_{i,t} = \mu_5 + Ø_4 EPS_{i,t} + Ø_5 EPS_{i,t-1} + Ø_6 EPS_{i,t+1} e_5$ ..... (5)

Reduced Model

$AR_{i,t} = \mu_5 + Ø_4 EPS_{i,t} + g_5 (EPS_{i,t-1} + EPS_{i,t+1}) + e_5$ ..... (6)

The results from running these two models are summarized in table 4.

F=	82.35333			

Significant at 1% level

F = {[SSE(R)- SSE(F)]/df(R)-df(F)}/[SSE(F)/df(F)]

F = 82.3533

Co-efficient	Value	t-value
$\mu_{5(Full)}$	0.105403	16.327*
$Ø_{4(Full)}$	0.063960	4.595*
$Ø_{5(Full)}$	-0.127800	-9.115*
$Ø_{6(Full)}$	0.076977	5.487*
$\mu_{5(Reduced)}$	0.110603	17.067*
$Ø_{4(Reduced)}$	0.084875	6.135*
$\gamma_{5(Reduced)}$	-0.055270	17.067*

** significant at 1% level*

*** significant at 5% level*

F value is statistically significant at 1% level, indicating that both coefficients are statistically different and does have additional explanatory power. This would indicate that both theories have significant explanatory power, however it is inconclusive as to which is relatively better. This is because the coefficients for t-1 and t+1 obtained from running regression equations 1 and 2 have opposite signs and cannot be compared as numerical numbers. The other method for comparison is to compare the adjusted R-square for equations 1 and 2. The adjusted R-square for equation 1 is marginally better that that for equation 2. This provides weak support for the explanatory of fundamental analysis.

Adjusted R^2 is 0.0253 and 0.1006 for equations 5 and 6 respectively. The Durbin watson (DW) test rejects the hypothesis of positive autocorrelation. The DW value for the equation 5 is 2.14 and for equation 6 is 2 .137. Pearson's correlation test indicates no significant correlation between the independent variables. F value for both the equations is significant at 1%.

Full Model

$$AR_{i,t} = \mu_7 + ß_4 \Delta CA_{i,t} + b_5 \Delta NCA_{i,t} + \beta_6 \Delta NCA_{i,t-1} + \beta_7 \Delta NCA_{i,t+1} + \varepsilon_7 \quad \text{..... (7)}$$

Reduced Model

$$ARi,t = \mu_7 + ß_4 DCA_{i,t} + b_5 \Delta NCA_{i,t} + œ_6 (\Delta NCA_{i,t-1} + \Delta NCA_{i,t+1}) + \varepsilon_8 \quad \text{..... (8)}$$

H0: $\beta_6 = \beta_7 = œ_6$

The results from running these two models are summarized in table 5 below:

Co-efficient	Value	t-value
$\mu_{7(Full)}$	0.1099	17.190*
$ß_{4(Full)}$	0. 198534	12.466*
$ß_{5(Full)}$	-0.0627	-3.949*
$ß_{6(Full)}$	-0.03992	-2.909*
$ß_{7(Full)}$	-0.0342	-2.592**
$\mu_{7(Reduced)}$	0.1102	17.273*
$ß_{4(Reduced)}$	-0.064	-4.050*
$\beta_{5(Reduced)}$	-0.0486	-3.543*
$Œ_{6(Reduced)}$	-0.027689	-2.089**

** significant at 1% level*

*** significant at 5% level*

F=	0.783408			

F = {[SSE(R)- SSE(F)]/df(R)-df(F)}/[SSE(F)/df(F)]

F =0.7834

F -value is not significant even at 10% level. Thus, the hypothesis of equal coefficients cannot be rejected. This implies that the change in non-current assets from one period to another does not contain any additional information, though both of them are significant. The comparison in absolute co-efficient value for equations 3 and 4 is rendered infeasible because the null hypothesis in equations 7 and 8 is not rejected. The only information available is that both coefficients are significant and similar. Adjusted R^2 is 0.034 and 0.034 for equations 7 and 8 respectively. The Durbin Watson (DW) test rejects the hypothesis of positive autocorrelation. The DW value for the equation 7 is 2.1414 and for equation 8 is 2 .142.

Results

Results were inconclusive as to which concept has more explanatory power. At best, there was a weak support for the fundamental analysis although both concepts have explanatory power. Also, changes in current and non-current assets from one period to another do not contain any additional information, though both of them are significant.

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