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# Earnings Persistence and Stock Prices: Empirical Evidence from an Emerging Market

## 1. Introduction

According to International Accounting Standards Board (IASB) (1989), the basic purpose of financial reporting is to provide capital market participants with accounting information that can be used for informed and efficient investment decision making. The area of study aimed at exploring the relationship between available accounting information and its consequent use in pricing of financial assets is broadly categorized as value relevance research. Ever since the publication of pioneering work of Ball & Brown (1968) and Beaver (1968) who demonstrated that the information content of accounting earnings is reflected in stock returns, relevance of accounting information as an indicator of market value has attracted considerable attention. Value relevance studies attempt to empirically investigate the relationship between disclosed accounting information and stock market values (or changes in value) so as to assess the usefulness of such information for pricing of assets by investors. According to *Holthausen and Watts* (2001), a variable is said to be value relevant if it exhibits the predicted association with a measure of market equity value.

Research on value relevance studies was further embraced in the revolutionary work of Ohlson (1995, 1999) and Feltham & Ohlson (1995, 1996) who devised a structured model of firm value linking it with accounting data. The model introduced the innovations of linear information dynamics (LIM) which postulated the mechanism of time series behavior and linked current information with future abnormal earnings. The work of Ohlson (1995,1999) and Feltham-Ohlson (1995,1996) had a profound effect on value relevance literature post 1990's with modified versions of the model been tested successfully in a number of studies and applied in varied markets with different characteristics in the last two decades. Although different empirical studies have produced varied results regarding the degree of association between accounting variables and firm value, the findings over the years have converged towards the belief that basic fundamental accounting variables (viz. earnings, book value and cash flow) approximate pricing of firm particularly well.

Although the prior literature examining the persistence of earnings and earnings components is immense in developed markets (US, UK, Canada etc.), little is empirically known about the same in emerging markets where accounting and institutional settings are entirely different from those of mature capital markets. Consequently, one would be cautious in generalizing research findings in developed markets to emerging markets given the extensive use of accrual accounting, weak investor protection and low share-ownership

concentration (Pincus *et al.* 2007). India as one of emerging markets presents an interesting case where institutional and accounting structures justifies the need for empirical investigation of earnings persistence and value relevance to determine stock valuation. In the 1990s Indian Government has introduced the economic liberalization to move the economy to free market economy. Privatization program was initiated and in order to enhance the reliability of the market, the Indian government established the Securities and Exchange Board of India (SEBI) in 1992, a regulatory body resembling the Securities and Exchange Commission (SEC) in the United States, to protect the interest of investors and to promote the development of securities market. However, Indian stock exchange is characterized by low trading volumes and the prominence of unsophisticated investors. Financial statements remains the main source of information available to investors in Indian capital market as listed firms do not disclose earnings forecasts. Further the financial analysts industry is still at a developing stage with small presence of foreign fund houses and consequently most transactions in Indian stock markets are made based on accounting data, especially, aggregate earnings. Resultantly, earnings fixation tends to be high with investors failing to attend separately to the cash flow and accrual components of earnings. Till now, only a few empirical studies on value relevance of financial statements exist in India with no published study using the Ohlson model. This study contributes in filling the gap in the literature by examining the persistence ability of accounting variables, namely abnormal earnings, book value, accruals and cash flows over a period of time and their valuation relevance in Indian scenario using a set of Indian listed companies. The study further explore and analyze the links between the forecasting relevance (with respect to next-period abnormal earnings), persistence (stationary first degree Autoregressive (AR1) process) and valuation relevance of earning components (accruals and cash flows).

This study aims to extend and enrich the extant literature on value relevance studies in several ways. The study provides a theoretical valuation framework of Ohlson model, identify its key features in the context of other valuation models and review the numerous empirical studies based on it undertaken in developed markets. Using the emerging market setting of India, the study puts the theoretical model to empirical test so as to determine the relevance and persistence of accounting information using linear information dynamics framework pioneered by Ohlson. The findings of our study generally conclude that in case of India, only abnormal earnings and book value are relevant for explaining the market value of equity with earning components (accruals and cash flows) holding little value relevance for investors. The findings confirm that investors are fixated on earnings in India capital market and fail to attend separately to the cash flow and accrual components of earnings while undertaking their investment decisions. Consequently, this may create

an incentive for managers in Indian-listed firms to engage in earnings management to meet or beat earnings thresholds in order to enjoy positive market performance.

The remainder of the paper is organized in the following way. Section 2 discusses the literature review; Section 3 describes the research design and hypothesis. Section 4 details the empirical result and Section 5 concludes with summary of findings.

## 2. Literature Review

### *Genesis of Value Relevance studies*

Within the realms of accounting discipline research, capital market research has emerged as a significant discipline over past decades and attracted extensive academic research and interest. This area of research started gaining prominence in 1960's from the seminal works of Ball *et al.* (1968) and Beaver (1968) who were forefathers to the theory that accounting information impacts equity prices by providing information and are value relevant to financial investors in their pricing and asset allocation decisions. Ball *et al.* (1968) in their study of US firms over 1946-66 investigated the usefulness of existing accounting numbers by examining their information content and timeliness. The results of the study provide evidence that accounting income of a particular year captures one half or more of all information available about an individual firm. The evidence also suggests that annual accounting numbers is not a useful timely indicator as share prices reflect more prompt information. Beaver (1968) in his seminal research finds that both trading volume and return volatility tend to increase during the earnings announcement week thereby establishing the information content of earnings announcement. According to Beaver (1968), although earnings announcement allays uncertainty and bridges the gap between beliefs, it leads to increase in trading volumes from participants who have assumed position based on their pre-earnings announcement beliefs.

Post 1960's, after the seminal work of Ball *et al.* (1968) and Beaver (1968) which embraced an information view of value relevance, most of the studies during the next three decades were typically conducted and referred to as information content studies. However in 1990's after Ohlson (1995, 1999) came up with his breakthrough work, the interest in value relevance research intensified again with most of the studies distancing themselves from information view and adopting measurement view of value relevance. Unlike information view where return was the only metric, both price and returns were used as metrics under measurement view (Easton, 1999). While price based studies tested the ability of financial statements to

summarize the events affecting the firm upto a specified date, return based studies looked at the ability of accounting information to capture events affecting the firm over the return interval. Most of the studies under measurement view examined the value relevance of earnings, book values or combinations of two. Beyond 1990's the literature indicates a number of value relevance studies using different forms of Ohlson model. The various studies, performed in different markets, although indicates conflicting results as to whether there is an increasing or decreasing trend in the value relevance of accounting data, none of the them disapprove that a relationship exists.

### **Valuation Theories and Models**

Theoretically, the intrinsic value of an asset is a function of expected payoffs that are received over the holding period discounted at an appropriate opportunity cost. When we talk of equity valuation, these expected payoffs take the form of dividends or earnings and/or cash flows and the opportunity cost becomes cost of equity (or cost of capital) for the firm. The genesis of intrinsic approach to valuation was laid down by Williams (1938) which is one of the early texts on investment theory and is reminiscent of the NPV approach commonly used in capital evaluation techniques. In empirical literature we have seen a plethora of financial valuation models which talk about determinants of a firm's market value and helps in investment decision making.

#### *Dividend Discount Model (DDM)*

As discussed earlier, the theoretical value of a firm is the sum total of stream of payouts (in this case dividends) that are expected to be received in future and market value of equity at the end of the forecast horizon. Now if we make an assumption of infinite horizon, the dividend discount model can be theorized as the present value of expected future dividends (PVED) discounted at an appropriate rate of return. Mathematically:

$$V_t = \sum_{i=1}^{\infty} \frac{E_t[DIV_{t+i}]}{(1 + r_{t+i})^i}$$

where  $V_t$  is the firm's intrinsic value of common equity at time  $t$ ,  $E_t(DIV_{t+i})$  is the expected future cash dividend in period  $t+i$  conditional on information available at time  $t$ , and  $r$  is the cost of equity in period  $t+i$ .

Hence, looking at the above mathematical formula, firm value can be defined as a function of expected dividends and applicable discount rates. Now, the problem arises since estimating dividends for infinite periods have practicability issues. To do away with this problem, Gordon (1962) suggested a way wherein he simplified the model by making certain assumptions on dividends and discount rates. Under GGM (Gordon Growth Model), if the cost of equity remains constant through time and dividends grow geometrically at a constant rate  $g$  and  $g < r$  ( $r$  being cost of equity), the DDM equation can be reduced to

$$V_t = \frac{DIV_{t+i}}{r - g}$$

Although the above stated model did away with the practicability issues, it inherently suffered from some drawbacks. This model worked well for companies which were in mature stage or where growth rates were generally stable. For companies which are growing at high growth rates or where firms are in early growth stages and not paying dividends, the model fails to find the right market valuations. Generally the market value of such firms is usually higher than indicated by the above models. Also as shown by Miller & Modigliani (1961), under the assumption of no taxes and transaction cost, value of firm does not get affected by dividend payouts (dividend irrelevance theorem). As a result of these drawbacks, various other models began to emerge which did away with assumptions of dividend models.

#### *Residual income (abnormal earnings) valuation model*

Residual income valuation (RIV) model, which has its genesis in the dividend discount model, combines the dividend discount model with clean surplus relation and expresses the value of a firm as current book value plus the present value of infinite residual (abnormal) earnings. Mathematically:

$$V_t = BV_t + \sum_{i=1}^{\infty} \frac{E_t[x_{t+i}^a]}{(1+r)^i}$$

where  $V_t$  is the intrinsic value of common equity at time  $t$ ,  $BV_t$  is the book value of common equity at time  $t$ ,  $E_t[x_t^a]$  is the expected future residual (abnormal) income in period  $t+i$  conditional on information available at time  $t$ , and  $r$  is the cost of equity, indicated as a constant.

**Residual income** as defined by Ohlson (1995) is the amount of net income (profit) in excess of capital charge on the book value of equity. Mathematically:

$$x_t^a = x_t - (r_t * BV_{t-1})$$

where  $x_t^a$  is the residual income at time  $t$ ,  $x_t$  denotes net income for the period ending at time  $t$ ,  $r$  is the cost of equity, and  $BV$  is the book value of common equity at time  $t-1$ .

A basic assumption of residual income valuation (RIV) model is the clean surplus relation theory. According to clean surplus relation (CSR) theory, income for a period is equal to net dividends plus the change in book value of equity. Under clean surplus accounting, all revenues, expenses, gains and losses pass through the income statement thereby ensuring clean surplus. This basically means that all changes in the book value of equity during a fiscal period are reflected in that period's net income or dividends distributed to common shareholders. Mathematically:

$$BV_t = BV_{t-1} + x_t - D_t$$

Where  $BV_t$  is the book value of common equity at time  $t$ ,  $x_t$  the net income for the period  $t$ , and  $D$  is the cash dividend paid for period  $t$ .

#### *The Ohlson (1995) model*

Ohlson (1995) model, which formalizes the relation between accounting variables and firm value, is basically an extension of residual income valuation (RIV) or abnormal earnings model. The model constitutes a solid theoretical framework for market valuation based on fundamental accounting variables (future earnings, dividends and book value). Using the assumption of the LIM, PVED and CSR, Ohlson (1995) allows the following closed-firm value relation to be stated:

$$P_t = BV_t + \alpha_1 x_t^a + \alpha_2 v_t$$

where:  $P_t$  = equity value of firm at time t

$BV_t$  = book value at time t

$x_t^a$  = abnormal earning at time t

$v$  = 'other information' at time t

$$\alpha_1 = \omega / (R_f - \omega) \geq 0$$

$$\alpha_2 = R_f / (R_f - \omega) (1 + R_f - \gamma) > 0$$

The above equations of Ohlson (1995) thus expresses equity value as a function of three components i) Current Book value ii) capitalized current residual income, and (iii) capitalized value implied by other information. In his work, Ohlson (1995) considers the discount rate as risk neutral or risk free rate. Also one of the assumptions made is that of persistency or autocorrelation of abnormal earnings. Ohlson assumes that abnormal earnings follow a first-degree AR(1) process. The model also assumes that there is another variable  $v_t$  (other information) which impacts forecasting of future abnormal earnings.

#### *The Ohlson (1999) model*

Ohlson (1999) model (extension of Ohlson (1995) model) develops the concept of transitory earnings and contrasts the source of earnings to "core" (or recurring) earnings. According to Ohlson, transitory earnings possesses certain characteristics which distinguishes them from core or recurring earnings. The three major attributes of transitory earnings are : 1) Unpredictability: Transitory earnings are unpredictable in the sense that current transitory earnings are irrelevant with regards to influencing subsequent transitory earnings 2) Forecasting irrelevance: Current transitory earnings are irrelevant while forecasting earnings for next period or subsequent year 3) Value irrelevance: transitory earnings are not incrementally informational while estimating present value of firm's expected dividends.

Using the assumptions of present value of expected dividends, clean surplus relation and linear information dynamics, Ohlson (1999) presents a generalized version comprising following four equations:

$$x_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2t} + \gamma_1 \cdot v_t + \varepsilon_{1t+1} \quad (1)$$

$$x_{2t+1} = \omega_{22}x_{2t} + \gamma_2 \cdot v_t + \varepsilon_{2t+1} \quad (2)$$

$$v_{t+1} = G \cdot v_t + \varepsilon_{3t+1} \quad (3)$$

$$P_t = b_t + \alpha_1 x_t^a + \alpha_2 x_{2t} + \beta \cdot v_t \quad (4)$$

where  $x_t^a$  abnormal earnings is defined as earnings less a normal return on equity book value.  $x_2$  in above model implies transitory earnings (the model applies to any component of earnings).  $P_t$  is market value of equity at time  $t$ .  $\omega_{11}$  implies persistence of abnormal earnings,  $\omega_{12}$  is the incremental effect of accruals or cash flows on abnormal earnings,  $\omega_{22}$  implies persistence of accruals or cash flows;  $\alpha_1$  is the incremental effect of abnormal earnings on market value of equity and  $\alpha_2$  is incremental effect of transitory earnings on market value of equity.  $v_t$  represents vector of  $K$  random variables representing other information;  $\gamma_1$  and  $\gamma_2$  are two  $K$  dimensional vectors of fixed constants, and  $G$  is a square matrix of size  $K \times K$ . In equation (4),  $\beta$  is a  $K$  dimensional factor. Also it can be shown that the parameters  $\gamma_1$  and  $\gamma_2$ ,  $G$  do not effect  $\alpha_1$  and  $\alpha_2$ ; they still are  $\alpha_1 = \omega_{11} / (R_f - \omega_{11})$  and  $\alpha_2 = \omega_{12} R_f / (R_f - \omega_{22}) (R_f - \omega_{11})$ .

## Empirical Evidence of Value Relevance Studies

Beyond 1990's, the literature indicates a number of value relevance studies in both developed and emerging countries using different forms of Ohlson's model examining the relationship between accounting variables and firm value. For instance Hayn (1995) examines the value relevance of accounting earnings in explaining stock returns in US and finds positive association. Similarly Sloan (1996) in his study of a set of industrial firms in US finds that accrual component of earnings is less persistent than cash flow component of earnings in explaining earnings performance. However stock prices act as if investors are fixated on aggregate earnings and fail to distinguish between different levels of persistence of two components of earnings. Dechow *et al.* (1999) in a study involving US firms over a period of 20 years (1976-1995) finds that the linear information model (LIM) proposed by Ohlson (1995) is reasonably empirically descriptive and provides a useful framework highlighting the relationship between current accounting variables and future abnormal earnings. Similar evidence is reported by Frankel and Lee (1998) in their study involving 20

countries including Australia, Japan, South Korea and Thailand. Barth *et al.* (1999) examines the differential ability of accruals and cash flows components of earnings that affect their relation to firm value by using annual data from 1987-1996 using generalized version of Ohlson (1999) model and finds that accruals and cash flows are incrementally informative regarding future earnings and market values. Graham and King (2000) further examines the value relevance of book value per share and current residual income in Indonesia, Malaysia, Philippine, South Korea, Taiwan and Thailand and finds that coefficients of these variables are statistically significant for all the countries. Chen *et al.* (2001) examines the relationship between accounting information, earnings and book value, and stock price in the Chinese stock market from 1991-1998 and finds that accounting information as reflected in the income statement and the balance sheet is value-relevant to domestic investors (A-share market) in the Chinese stock market. Shamy and Kayed (2005) examines the value relevance of earnings and book values under the Kuwaiti accounting system (compliant with IFRS) using Ohlson (1995) framework and show that while earnings and book values jointly and individually are positively and significantly related to stock prices, incremental information content of earnings is greater than that of book values. Subramanyam and Venkatachalan (2007) examines the relative importance of earnings and operating cash flows in equity valuation and finds superiority of earnings in explaining security returns over cash flows. Similar evidence is reported by Habib (2008) who examines the relative information content of earnings and cash flows in New Zealand context. Pirie and Smith (2008) finds that both equity book value and earnings, summarizing the balance sheet and income statement respectively, have significant explanatory power with respect to market prices and managers are justified in using the accounting system as a primary source of information for monitoring financial performance in Malaysia. Vishnani and Shah (2008) examine the value relevance of financial statements of listed companies in India and find that financial statements have negligible value relevance as far as stock market reactions are concerned. Saeedi and Ebrahimi (2010), in contrast to earlier studies, do not find any value relevance for earnings and cash flows in explaining stock returns in Iranian context. Similarly, Akbar *et al.* (2011), in contrast to earlier studies, finds that cash flows have incremental value relevance compared to that of earnings and funds flow in UK. Ganguli (2011) in his study involving Indian companies tests empirical validity of Ohlson (1995) and Feltham and Ohlson (1995) models and finds value relevance of abnormal earnings and book value in explaining market value of equity with cash flows showing no such evidence.

In summary, while empirical studies regarding the relationship between accounting variables and firm value in developed countries provided mixed and contradictory evidence, there are a few studies which empirically examine this relationship in emerging (transition) economies such as India. It is, therefore, necessary to

examine the relationship between accounting variables and firm value in India as an example of emerging economies.

## **The Indian Context**

Post liberalization in 1990's, India financial system has evolved into a well developed and competitive structure with increased levels of financial intermediation, integration of domestic markets and further deepening of financial markets. Resultantly, the presence of multinational firms and foreign institutional investors has increased, as financial liberalization led to free movement of capital across the borders. Financial reporting in India is monitored by the provisions of the Companies Act, 1956, pronouncements of the Institute of Chartered Accountants of India (ICAI) and in some cases stock exchanges listing agreements. The accounting standards in India are formulated by Accounting Standard Board (ASB) constituted by ICAI in 1977. However, ASB is now a recommendatory body only and the ultimate authority of making accounting standards mandatory vests with the Ministry of Corporate Affairs (MCA) in consultation with the National Advisory Committee on Accounting Standards (NACAS). Till date, MCA has notified 35 IFRS converged Indian Accounting Standards (called Ind AS) without notifying the applicability date. For certain categories of companies like electricity companies and insurance companies etc., the accounting process and procedures including format of financial statements are laid down in the governing acts of such companies.

In order to enhance the reliability of the market, the Indian government established the Securities and Exchange Board of India (SEBI) in 1992, a regulatory body resembling the Securities and Exchange Commission in the United States, to protect the interest of investors and to promote the development of the securities market. Indian stock market today is comparable to the international benchmarks in terms of stocks listed, investor base and transaction costs. BSE (Bombay stock exchange), established in 1875, is Asia's first stock exchange and one of India's leading exchange groups. BSE is the world's largest exchange in terms of listed securities (over 6,000 stocks) and commands a total market capitalization of USD 1.32 trillion. According to world federation of exchanges, BSE is also the third largest exchange in terms of index options trading.

Given the increasing degree of globalization and integration of Indian stock market with the rest of the world, value relevance studies assumes significant importance as it can provide an insight into the relevance and reliability of financial statements in India.

### 3. Research Methodology and Hypotheses

#### *Research Design*

To develop the hypotheses for studying the persistence and valuation relevance of abnormal earnings, book values, cash flows and accruals, we utilize a generalized version of Ohlson model which comprises of following four equations. The basic structure of the model is analogous to the “other information” model of Ohlson (1995). One can interpret  $x_2$  as Ohlson’s other information,  $v$ , in those models.

:

$$x_{t+1}^a = \omega_{11}x_t^a + \omega_{12}x_{2t} + \omega_{13}BV_t + \varepsilon_{1t+1} \quad (1)$$

$$x_{2t+1} = \omega_{22}x_{2t} + \omega_{23}BV_t + \varepsilon_{2t+1} \quad (2)$$

$$BV_{t+1} = \omega_{33}BV_t + \varepsilon_{3t+1} \quad (3)$$

$$MV_t = BV_t + \alpha_1x_t^a + \alpha_2x_{2t} + u_t \quad (4)$$

where  $x_t^a$  (abnormal earnings) is defined as earnings less a normal return on equity book value.  $x_2$  in above model implies transitory earnings (the model applies to any component of earnings and can be either accruals or cash flows).  $MV_t$  and  $BV_t$  are market value of equity and book value of equity respectively at time  $t$ .  $\omega_{11}$  implies persistence of abnormal earnings;  $\omega_{12}$  is the incremental effect of accruals or cash flows on abnormal earnings,  $\omega_{13}$  is the incremental effect of lagged book value of equity on abnormal earnings;  $\omega_{22}$  implies persistence of accruals or cash flows,  $\omega_{23}$  is the effect of lagged book value of equity on accruals or cash flows;  $\omega_{33}$  signifies persistence of book value of equity;  $\alpha_1$  is the incremental effect of abnormal earnings on market value of equity and  $\alpha_2$  is incremental effect of accruals or cash flows on market value of equity.

#### *The Hypotheses*

**H1 – Abnormal earnings follow an AR (1) process. Accrual and cash flow components of earnings help in forecasting future abnormal earnings incremental to abnormal earnings and book value:** Equation (1) in above Ohlson generalized model describes the autocorrelation or persistence of abnormal earnings. Abnormal earnings are said to be transitory if  $\omega_{11} = 0$ . If abnormal earnings are not entirely transitory, then

higher the  $\omega_{11}$ , the more shall be the persistence (or predictability) of abnormal earnings. Thus if abnormal earnings are positively autocorrelated,  $\omega_{11} \neq 0$ . Our null hypothesis is therefore  $\omega_{11} = 0$ .

In our model,  $x_2$  is either accrual or cash flow from operations. The coefficient on the earnings component ( $x_2$ ),  $\omega_{12}$ , reflects the incremental effect that the earning component has on the forecast of next period abnormal earnings. Now if any component of earnings (accrual or cash flow) exhibit forecasting irrelevance i.e. it does not aid in forecasting next period abnormal earnings,  $\omega_{12}$  shall equal zero. We therefore further test the null hypothesis that  $\omega_{12} = 0$ .

**H2 – Accrual and Cash flow components of earnings follow an AR (1) process:** Equation (2) in Ohlson generalized model describes the autocorrelation or persistence of that particular earning component (accrual or cash flow). Earning components (accrual or cash flow) are said to be transitory if  $\omega_{22} = 0$ . If earning components are not entirely transitory, then higher the  $\omega_{22}$ , the more is the persistence (or predictability) of the earning component. Thus if earning components (accrual and cash flow) are positively autocorrelated,  $\omega_{22} \neq 0$ , separately, for each component (accrual and cash flow). Our null hypothesis is therefore  $\omega_{22} = 0$ . Equation (1) and (2) further includes book value of equity which allows for the effects of conservatism to manifest themselves (Feltham and Ohlson (1995, 1996)).

**H3 – Book value of equity follow an AR (1) process:** Equation 3 in Ohlson generalized model describes the persistence of book value of equity. Book value of equity is said to be transitory if  $\omega_{33} = 0$ . If book value of equity is not entirely transitory, then higher the  $\omega_{33}$ , the more persistent (or predictable) is the book value. If book value is positively autocorrelated,  $\omega_{33} \neq 0$ . Thus our null hypothesis is  $\omega_{33} = 0$ . Equation (3) preserves the triangular information structure of the generalized version of Ohlson's model.

**H4 – Accrual and Cash flow component of earnings enhances explanatory power for Market value of the equity incremental to Abnormal earnings and Book Value:** Equation (4) is the valuation equation based on the information dynamics in equations (1) through (3).  $\alpha_1$  is the valuation multiple on abnormal earnings. If abnormal earnings have significant explanatory power of market value, then  $\alpha_1 \neq 0$ . We therefore test the null hypothesis that  $\alpha_1 = 0$ . Similarly  $i_1$  is the valuation multiple on book value of equity. If book value of equity shows significant explanatory power of market value, then  $i_1 \neq 0$ . We therefore test the null hypothesis that  $i_1 = 0$ .  $\alpha_2$  is the valuation multiple on  $x_2$ , i.e., earning component in our model (accruals or cash flows). Similar to the interpretation of  $\omega_{12}$  in equation (1),  $\alpha_2$  reflects the incremental effect that the

earning component has on equity valuation. Now if an earning component (accrual or cash flow) does not have any significant explanatory power of market value incremental to abnormal earnings and book value,  $\alpha_2$  shall equal zero; otherwise  $\alpha_2 \neq 0$ . Thus we test the null hypothesis that  $\alpha_2 = 0$ .

### Research Method – Panel Data Regression Estimation

The study uses fixed effect Panel data model which allows for intercept to vary across individual firms keeping the slope constant across. The study introduces two Linear Information Models, LIM 1 (Accrual system) and LIM 2 (Cash Flow system) for each earnings component separately (accruals and cash flows) using seemingly unrelated regression and permitting regression errors to be correlated across equations. The two systems of equations are:

#### LIM1: Accrual system

$$NI_{it}^a = \omega_{10,i} + \omega_{11}NI_{it-1}^a + \omega_{12}ACC_{it-1} + \omega_{13}BV_{it-1} + \varepsilon_{1it} \quad (1a)$$

$$ACC_{it} = \omega_{20,i} + \omega_{22}ACC_{it-1} + \omega_{23}BV_{it-1} + \varepsilon_{2it} \quad (2a)$$

$$BV_{it} = \omega_{30,i} + \omega_{33}BV_{it-1} + \varepsilon_{3it} \quad (3a)$$

$$MV_{it} = i_{0,i} + i_1BV_{it} + \alpha_1NI_{it}^a + \alpha_2ACC_{it} + u_{it} \quad (4a)$$

#### LIM2: Cash flow system

$$NI_{it}^a = \omega_{10,i} + \omega_{11}NI_{it-1}^a + \omega_{12}CFO_{it-1} + \omega_{13}BV_{it-1} + \varepsilon_{1it} \quad (1b)$$

$$CFO_{it} = \omega_{20,i} + \omega_{22}CFO_{it-1} + \omega_{23}BV_{it-1} + \varepsilon_{2it} \quad (2b)$$

$$BV_{it} = \omega_{30,i} + \omega_{33}BV_{it-1} + \varepsilon_{3it} \quad (3b)$$

$$MV_{it} = i_{0,i} + i_1BV_{it} + \alpha_1NI_{it}^a + \alpha_2CFO_{it} + u_{it} \quad (4b)$$

### Variable Measurement and Definition

Abnormal earnings ( $NI^a$ ) equals  $NI_{t-r} - rBV_{t-1}$ , where  $BV_{t-1}$  is equity book value for previous period and  $NI$  is net income before extraordinary items and discontinued operations for the current period. To calculate abnormal

earnings ( $NI^a$ ), we have set  $r$  (risk free rate) as 8%, which is consistent with average ten year treasury yield in India during the period studied. Accruals (ACC) is the difference between net income (NI) and cash flow from operations (CFO) i.e.  $ACC = NI - CFO$ .

## Data and Sample

### *Source of Data*

The underlying index of the empirical study is BSE (Bombay Stock Exchange) 30, which represent approximately 50 percent of the total market capitalization of Indian Equity Market thereby making it a reliable proxy of Indian market. The BSE index is based on free float market capitalization methodology and contains thirty largest stocks in the Indian equity market. To construct the data sample historical data have been taken from capitaline plus database. For our study, we have used the list of companies subsisting on 31 March, 2011 as BSE 30 is not a static index and new companies keep replacing older ones on the basis of market capitalization. The period of study is based on six year sample from fiscal year 2005-06 to 2010-11. A year for the purpose of sample classification starts from April of the year concerned and ends in March of the following year. For example, the fiscal year 2005-06 sample starts from April 1, 2005 and ends at March 31, 2006.

For a firm to qualify for inclusion in the sample, it must have (at the end of the fiscal year) all required data including, but not limited to, book values, prices, earnings and cash flows in the capitaline plus database. Cases with missing data have been eliminated. Further, following prior studies, all the variables of the study have been deflated by the number of outstanding ordinary shares at the end of the financial year. The number of outstanding shares has been obtained from capitaline plus database.

## 4. Empirical Results

### *Descriptive Statistics*

Table I reports the characteristics for each of the variables used in this study. Panel A provides the descriptive statistics for the variables used in the models. Panel A reveals that, on average, market value of equity (MV) exceeds the book value of equity (BV), indicating that equity book value alone is insufficient to explain equity market value in India. The mean value of abnormal earnings ( $NI^a$ ) is 32.32 with standard deviation of 28.60. Similarly cash flows from operations (CFO) have a mean value of 50.85 with a standard deviation of 80.79 and a median of 41.21. Panel A further reveals that, on median/mean basis, accruals

(ACC) are negative and cash flows are positive. This is consistent with depreciation expense being included in accruals but capital expenditures being included in investing cash flows. Also cash flow from operations (CFO) has a larger standard deviation than accruals (ACC).

Panel B shows the correlation matrix for the set of independent variables. Abnormal Earnings (NI<sup>a</sup>) are significantly positively correlated with cash flow from operations (CFO). Cash flow from operations significantly positively correlates with book value per share (BV). On the other hand, accruals (ACC) are significantly negatively correlated with cash flow from operations (CFO).

## Results of Panel Data Estimation

### *Abnormal Earnings Equation*

Table II, Panel A and B, presents regression summary statistics corresponding to the abnormal earnings equations (1a) and (1b) under LIM 1 and LIM 2 for all firms (based on Panel data regression). The coefficient estimates,  $t$  statistics, and adjusted  $R^2$  values are presented in each Panel of Table II.

With regards to our first research hypothesis, the results (Panel A) reveal that coefficient on lagged abnormal earnings,  $\omega_{11}$ , is positive and significant for the dataset (0.53). The regression results implies that abnormal earnings exhibit persistence or stationary AR(1) process, as such abnormal earnings of a particular year is significantly related to previous period abnormal earnings. Thus we reject the null hypothesis that  $\omega_{11} = 0$  in case of LIM 1. Panel A further shows that accruals are not incrementally informative regarding prediction of future abnormal earnings. Thus we reject forecasting relevance of accruals, i.e., we accept the null hypothesis that  $\omega_{12} = 0$  in case of LIM 1.

Panel B reveals inference consistent with those of accruals in Panel A. Panel B reveals that coefficient on lagged abnormal earnings,  $\omega_{11}$ , is positive and significant for the dataset (0.50). We therefore reject the null hypothesis that  $\omega_{11} = 0$  in case of LIM 2. The results also reveal that cash flows are not significantly incremental informative regarding future abnormal earnings. Thus we accept the null hypothesis that  $\omega_{12} = 0$  in case of LIM 2. This implies that inclusion of one year lagged cash flows as a variable does not help in forecasting future abnormal earnings incremental to abnormal earnings and book value thereby rejecting forecasting relevance of cash flows.

Finally the coefficient on lagged book value,  $\omega_{13}$ , is significant both in case of accruals and cash flows thereby suggesting its incremental informative relevance in explaining future period abnormal earnings.

### **Accruals and Cash flows Autoregression results**

Table III, Panel A and B, presents regression summary statistics corresponding to the earnings components (accruals and cash flows) equations (2a) and (2b) for all firms.

With regards to our second research hypothesis, the results in Table III (Panel A) reveals that for accruals,  $\omega_{22}$ , AR(1) process is not stationary for the empirical dataset. The regression results imply that the accruals do not exhibit persistence; as such accrual of a particular year is not related to previous period accrual in a statistically significant manner. The estimated coefficient on lagged accrual,  $\omega_{22}$ , is negative (-0.13) and insignificant (-0.38). Thus we accept the null hypothesis that  $\omega_{22} = 0$  in case of LIM1.

Panel B reveals inference consistent with those of accruals in Panel A. Panel B reveals that for cash flows,  $\omega_{22}$ , AR(1) process is not stationary for the empirical dataset; as such cash flow of a particular year is not related to previous period cash flow in a statistically significant manner. We therefore accept the null hypothesis that  $\omega_{22} = 0$  in case of LIM 2 also.

### **Book value Equation**

Table IV presents regression summary statistics corresponding to the book value of equity equations (3a) and (3b) for all firms. With regards to our third research hypothesis, the results reveal that for book value,  $\omega_{33}$ , AR(1) process is stationary for the empirical dataset. The regression results imply that the book value of equity follows AR(1) process or exhibit persistence; as such book value of equity of a particular year is related to previous period book value in a statistically significant manner. Thus we reject the null hypothesis that  $\omega_{33} = 0$  in case of LIM 1 and LIM 2.

## Market Value Equations

Table V, Panel A and B, presents regression summary statistics corresponding to the valuation equations (4a) and (4b) for all firms. We address our fourth hypothesis by estimating the relation between equity market value and book value, abnormal earnings, and the earnings components (accruals and cash flows).

Regarding the fourth hypothesis, Table V, Panel A, reveals that coefficient on abnormal earnings, ( $\alpha_1$ ) and book value ( $i_1$ ) is positive and significant i.e. they have significant explanatory power of market value in case of LIM 1. We therefore reject the null hypothesis that  $\alpha_1 = 0$  and  $i_1 = 0$  in case of LIM 1. Panel A further reveals that  $\alpha_2$ , the coefficient on accruals, is not significantly different from zero for all firms. We therefore accept the null hypothesis that  $\alpha_2 = 0$  in case of LIM 1. This implies that the accrual component of earnings do not enhance the explanatory power for market value of the equity incremental to abnormal earnings and book value in case of Indian dataset examined.

Panel B reveals inference consistent with those in Panel A. Panel B reveals that for LIM 2, coefficient on abnormal earnings and book value is positive and statistically significant. We therefore reject the null hypothesis that  $\alpha_1 = 0$  and  $i_1 = 0$  in case of LIM 2. The results further reveal that  $\alpha_2$ , the coefficient on cash flows, is not significantly different from zero for all firms. This indicates that the cash flow component of earnings is incrementally valuation irrelevant. We therefore accept the null hypothesis that  $\alpha_2 = 0$  in case of LIM 2. This implies that cash flow component of earnings do not enhances explanatory power for market value of the equity incremental to abnormal earnings and book value.

Overall the empirical findings provide us with evidence that in case of Indian markets, aggregate (or abnormal) earnings are the relevant earnings construct for valuation and the second earnings component (accrual and cash flow) is irrelevant. We further demonstrate that besides earnings, book value plays an important role in setting investment expectations of investors. Consistent with Sloan (1996), these results suggest that stock prices in Indian stock market act as if investors fixate on aggregate earnings, failing to distinguish fully between the different properties of the accrual and cash flow components of earnings. Consequently, firms with relatively higher (lower) levels of accruals can experience higher (lower) levels of stock returns.

## 5. Summary and Concluding Remarks

One of the main research areas in accounting and finance is so-called value relevance research that aims to determine empirically the relationship between disclosed accounting information and stock market values. Although prior literature examining the persistence of earnings and earnings components is immense in developed markets (US, UK, Canada etc.), little is empirically known about the same in emerging markets where accounting and institutional settings are entirely different from those of mature capital markets. This study contributes in filling the gap in the literature by examining the persistence of earnings (and earning components) and their valuation relevance in Indian scenario for a period of six years. Based on a sample of Indian listed firms, the findings provide evidence on the construct of persistence and value relevance of earnings and book value of equity in Indian context. This evidence is consistent with prior empirical findings on persistence and value relevance of earnings and book value reported in developed and emerging markets to date (Barth *et al.*, 1999; Dechow *et al.*, 1999; Ganguli, 2011). With regards to the forecasting relevance (with respect to next-period abnormal earnings), persistence and valuation relevance of earning components (accruals and cash flows), the evidence suggest that the earning components (accruals and cash flows) do not add to any value relevance over and above abnormal earnings and book value in explaining market value of equity. Further, both earnings components (accruals and cash flows) fail to show persistence and forecasting ability (or relevance) in explaining next period abnormal earnings in case of Indian dataset examined.

Overall, the findings confirm that investors are fixated on earnings in India capital market and fail to attend separately to the cash flow and accrual components of earnings while undertaking their investment decisions. Therefore, Indian investors who neglect this distinction are overly optimistic about the future prospects of firms with high accruals, and overly pessimistic about the future prospect of firms with low accruals. The results provide consistent evidence that accounting information, especially earnings, is value-relevant in the Indian capital market. These findings might indicate that competing information sources such as earnings forecasts, firm research by financial analysts, management conference calls, etc. are far less prevalent in India as compared to developed markets. The significant role of aggregate earnings in Indian capital market may create an incentive for managers in Indian-listed firms to engage in earnings management to meet or beat earnings thresholds in order to enjoy positive market performance. Accordingly a potential policy implication of above analysis is that stock markets in India needs complementary information sources other than published accounting reports to become more informationally efficient.

Avenues for further research could include analysis of various components of accruals (discretionary and non discretionary) and their association with cash flows and market values over historical period. Furthermore, the sub samples can be analyzed with respect to association of various individual components of accruals and market value. Also persistence of various accounting variables can be tested using more than 1 year lags.

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**Table I: DESCRIPTIVE STATISTICS  
(SAMPLE OF 805 OBSERVATIONS, FY 2005-06 to 2010-11)**

**Panel A: Descriptive Statistics**

Description	Variable	Mean	Median	Std dev
Market value	MV	871.77	671.1	753.52
Book Value	BV	232.80	192.35	180.17
Cash Flow from Operations	CFO	50.85	41.21	80.79
Abnormal earnings	NI <sup>a</sup>	32.32	26.21	28.60
Accruals	ACC	-2.04	-2.31	71.44

**Panel B: Correlation Matrices Between Variables**

<i>VARIABLES</i>	<i>Price</i>	<i>BV</i>	<i>CFO</i>	<i>NI<sup>a</sup></i>	<i>ACC</i>
<i>Price</i>	1.00				
<i>BV</i>	0.52	1.00			
<i>CFO</i>	0.28	0.33	1.00		
<i>NI<sup>a</sup></i>	0.69	0.54	0.45	1.00	
<i>ACC</i>	0.05	0.01	-0.89	-0.03	1.00

**Table II: Summary Statistics from Panel Data Regressions of Abnormal Earnings on Lagged Abnormal Earnings and Earnings components (Accruals and Cash flows).**

**Panel A:** Accruals:  $NI_{it}^a = \omega_{10,i} + \omega_{11}NI_{it-1}^a + \omega_{12}ACC_{it-1} + \omega_{13}BV_{it-1} + \varepsilon_{lit}$   
 Dependent Variable:  $NI_{it}^a$

Method: Fixed Effect Panel Regression  
 White heteroskedasticity-consistent standard errors & covariance

R-square: 74%

<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$NI_{it-1}^a$	0.5321	4.042**	0.0001
$ACC_{it-1}$	-0.0126	-0.4866	0.6276
$BV_{it-1}$	0.0695	5.866**	0.0000

\*\* Significant at 5% level

**Panel B:** Cash Flows:  $NI_{it}^a = \omega_{10,i} + \omega_{11}NI_{it-1}^a + \omega_{12}CFO_{it-1} + \omega_{13}BV_{it-1} + \varepsilon_{lit}$   
 Dependent Variable:  $NI_{it}^a$

Method: Fixed Effect Panel Regression  
 White heteroskedasticity-consistent standard errors & covariance

R-square: 74%

<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$NI_{it-1}^a$	0.5052	4.037**	0.0001
$CFO_{it-1}$	0.0261	0.9238	0.3578
$BV_{it-1}$	0.0683	6.955**	0.0000

\*\* Significant at 5% level

**Table III: Summary statistics from Panel Data Regression of Earning Components (Accruals and Cash Flows)**

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**Panel A:**  $ACC_{it} = \omega_{20,i} + \omega_{22}ACC_{it-1} + \omega_{23}BV_{it-1} + \varepsilon_{2it}$   
 Dependent Variable:  $ACC_{it}$

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Method: Fixed Effect Panel Regression  
 White heteroskedasticity-consistent standard errors & covariance

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R-squared: 17%

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<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$ACC_{it-1}$	-0.1327	-0.3831	0.7022
$BV_{it-1}$	0.0731	2.503**	0.0136

\*\* Significant at 5% level

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**Panel B:**  $CFO_{it} = \omega_{20,i} + \omega_{22}CFO_{it-1} + \omega_{23}BV_{it-1} + \varepsilon_{2it}$   
 Dependent Variable:  $CFO_{it}$

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Method: Fixed Effect Panel Regression  
 White heteroskedasticity-consistent standard errors & covariance

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R-squared: 17%

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<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$CFO_{it-1}$	0.0152	0.0452	0.9640
$BV_{it-1}$	0.0850	1.5988	0.1123

**Table IV: Summary statistics from Panel Data Regression of Book value of Equity**

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$$BV_{it} = \omega_{30,i} + \omega_{33}BV_{it-1} + \varepsilon_{3it}$$

Dependent Variable:  $BV_{it}$

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Method: Fixed Effect Panel Regression

White heteroskedasticity-consistent standard errors & covariance

R-squared: 72%

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<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$BV_{it-1}$	0.7874	16.93**	0.0000

\*\* Significant at 5% level

**Table V: Summary Statistics from Panel Data Regressions of Market Value of Equity on Book Value, Abnormal Earnings and Earning Components (Accruals and Cash flows)**

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**Panel A:**  $MV_{it} = i_{0,i} + i_1BV_{it} + \alpha_1NI_{it}^a + \alpha_2ACC_{it} + u_{it}$

Dependent Variable:  $MV_{it}$

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Method: Fixed Effect Panel Regression

White heteroskedasticity-consistent standard errors & covariance

R-squared: 66%

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<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$BV_{it}$	1.3068	3.133**	0.0022
$NI_{it}^a$	12.714	4.596**	0.0000
$ACC_{it}$	0.7432	1.7288	0.0868

\*\* Significant at 5% level

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**Panel B:**  $MV_{it} = i_{0,i} + i_1BV_{it} + \alpha_1NI_{it}^a + \alpha_2CFO_{it} + u_{it}$

Dependent Variable:  $MV_{it}$

---

Method: Fixed Effect Panel Regression

White heteroskedasticity-consistent standard errors & covariance

R-squared: 66%

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<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
$BV_{it}$	1.3574	4.662**	0.0000
$NI_{it}^a$	13.300	4.512**	0.0000
$CFO_{it}$	-0.6501	-1.4998	0.1367

\*\* Significant at 5% level