Corporate Life Cycle and the Relative Value - Relevance of Cash Flow versus Accrual Financial Information

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Abstract

We study the value relevance of the entire set of the cash flow summary information measures reported in the Statement of Cash Flows *relative* to their corresponding three summary accrual accounting measures, separately for each of three firm life-cycle stages (LCSs). The analysis indicates that when the sample as a whole is considered, the power of the cash flow information set to explain concurrent return on the firm's equity is not significantly different from that of the accrual accounting set. When the observations are clustered into three separate LCSs, the explanatory power of each information set exceeds that of the sample as a whole. The cash flow information set's explanatory power for the growth period is significantly higher from that of its accrual counterpart and the opposite holds for the maturity and decline LCS sets. Also, while the explanatory power's magnitude for the cash flow set is stable across the three LCSs, the explanatory power of the accrual accounting set in the growth LCS is significantly lower than that for the maturity and decline LCSs. These results may have important implications for both contacts design and the formation of expectations with respect to the association of accounting numbers and the firm's market performance measures.

JEL Codes: G14, M4, M14

Keywords: Cash Flow, Accrual Accounting, Value Relevance, Corporate Life Cycle

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1. Introduction

We study the value relevance of the entire set of the cash flow summary information measures that are reported in the Statement of Cash Flows (FASB 1987), *relative* to three corresponding accrual accounting measures. In contrast to prior studies in this area that focus on the *incremental* informative value of Cash Flow measures–versus accrual net income,[1] we examine the cash flow/accrual relations separately for each of three firm life-cycle stages (LCSs).

The extent to which an accounting information item conveys value relevant information is commonly assessed by the extent to which such information is impounded in market measures such as return on equity investment or share prices. These measures are affected by investors' perceptions and expectations. Rational investors or analysts would consider all publicly available information in forming their perceptions. In the context of our study this includes the firm's financial statements. Thus, while most prior studies concentrate on the contribution of Cash Flow from Operation (CFO) and earnings to market value measures we prefer, like Livnat and Zarowin (1990) and Black (1998), to incorporate all three summary measures in our analysis. Further, while accrual accounting earnings figures are said

[1] See for example, Wilson (1986, 1987), Rayburn (1986), Bowen, Burgstaheler and Daley (1987), and Bernard and Stober (1989) who examine the incremental value relevance of cash flow from operation over earnings and Livnat and Zarowin (1990) and Black (1998) who examined the incremental value relevance of all cash flow information items. While Livnat and Zarowin include only the accrual component of earnings in their analysis, Black measures the incremental value relevance of his cash flow items over accrual earnings and owners equity figures.

to be most informative[2] we prefer to include in our comparative analysis other accrual summary measures such as the accrual corresponding counterparts of the Cash flow from investment activities and Cash flow from financing activities summary measures.[3]

Business contracts such as managerial compensation or loan contracts and bond indentures frequently include clauses or provisions that are contingent on firms' economic performance measures composed of market or accounting based figures, or combination of both. Examples for the former are the firm's share price, market return on equity investment, earnings to owner's equity book value, debt to total assets, or the dividend pay out ratio. Examples for combined market and accounting measures are variations of the Tobin q, such as the firm's market value over total assets. Short term loan contracts might include provisions that are contingent to cash flow based performance measures such as CFO. Most contracts, however, utilize either accounting accrual based *or* cash flow based figures but not measures that mingle both. As noted by Dechow (1994) "it is rare to observe the use of both earnings and cash flows in contracts"(p. 6).

Prior studies regress the return on investment in the firm's equity or its market value on a combination of accrual and cash flow information variables. The results of such analysis are affected by the degree of mutual interaction among the independent variables and are designed to form inferences about the *incremental* value relevance of the respective variables. Indeed, Dechow (1994) proposes that these studies yield results that "are generally consistent with both cash flows and earnings providing

[2] See for example Bernard's (1989) who asserts that: "the bottom-line historical cost earnings is not only 'hard to beat' but it is difficult to demonstrate convincingly that other data convey any information beyond that reflected in earnings" (p. 32).

[3] The differences between cash flow and net income, i.e. working capital accruals and depreciation, have been studied intensively by prior researchers (e.g., Thomas and Zhang, 2002; Hribar 2000), while the difference between investing and financing cash flows and their accruals counterparts have not received sufficient attention.

incremental information vis-à-vis one another," but she also adds that these tests "do not directly address the question of which measure is a relatively superior *summary* measure of firm performance given the choice of one." Thus, the results of those prior studies may be of limited value in designing accounting performance based contracts.

To test whether accrual accounting based measures provide higher value relevance level than cash flow based measures or vise versa, one must design a test that avoids the contamination of its results by mutual interaction effect between the two sets of accounting measures. Such a test must capture the full informative value attributable to cash flow and the full informative value ascribable to accrual items. Therefore, we employ two separate regression models in our examination: one model regresses the annual return on the equity investment in the firm on the changes in cash flow from: (a) operations (b) investment activities and (c) financing activities. The other model regresses the annual return on the changes in (a) net income (b) investment in non-current assets and (c) capital financing transactions.

Economic literature divides a firm's life cycle into four periods: the so called start-up, growth, maturity and decline or stagnation period. These periods are distinguished by firm-specific characteristics such as the degree of uncertainty that faces the firm, its assets in place and its investment opportunities.[4] Black (1998), shows that the extent of the *incremental* value relevance of operating, investing and financing cash flow information over net income varies with the firm's life cycle's period. Black, however, does not control for the sign of net earnings. Prior research (e.g. Hayn, 1995; Givoly and Hayn 2000) shows that losses have different information content than profits.[5] Thus, we control our analysis for the firm's profitability. We develop theoretically based expectations about the *relative*

[4] See for useful review: Mueller (1972), Myers (1977) and Anthony and Ramesh (1992). .
[5] See also Melendrez, Schwartz, and Trombley (2005) for investors' differential attitude towards losses and profits.

information relevancy of cash flow items versus accrual accounting items in each life cycle period. In order to validate our expectations empirically we conduct our regression analyses separately for each firm's life cycle status. We then compare the results of the cash flow life cycle period regression with that of the accrual accounting life cycle period regression to infer about the their relative value relevance level.

We sample all non-financial firms listed on the NYSE, AMEX or NASDAQ during 1988 – 2004, for which all necessary data are available on the merged Compustat and CRSP data bases. After eliminating non-useable observation, 20,095 firm-year observations entered the analysis. These observations are clustered into three equal-size firm-year sub-groups according to three corresponding firm LCSs: growth, maturity and decline. The two regression models are applied to each of the three LCS clusters and to the undivided sample as a whole.

We expect and find that: (1) both the cash flow and the accrual accounting sets depict similar association patterns with the firm's market returns that are consistent among the three LCSs; (2) The R^2, our proxy for the extent of value relevance are generally quite low for of the two sets of information variables. When the sample as a whole is considered, the R^2 of the cash flow information set is not significantly different from that of the accrual accounting set. In contrast, when the observations are clustered into three separate LCSs, the R^2 of each cash flow or accrual accounting LCS sets is higher than that for the undivided sample as a whole. The cash flow information set's explanatory power for the growth period is significantly higher than that for its accrual counterpart and the opposite holds for the maturity and decline LCS sets. Also, while the explanatory power's magnitude for the cash flow sets is stable across the three LCSs, the explanatory power of the

accrual accounting set in the growth LCS is significantly lower than that for the maturity and decline LCSs.

The findings have important implication for both managerial contacts design and the formation of expectations with respect to the association of accounting numbers and the firm's market performance measure.

The remainder of the paper is organized as follows. In the immediate following section we present the regression models that are employed in our analysis. Section 3 discusses the sample selection criteria and Section 4 explains the clustering process of our firm-year observations into three life cycle status (LCS) categories. The expected relationship between the information items and the return on the investment in the firm at each LCS is the topic of Section 5. Section 6 provides summary statistics of the variables used in our regression models. The results of our analysis are presented in Section 7 and in Section 8 we elaborate on the implications of the results. Concluding remarks are offered at the end of the paper.

2. The Models

The following cross sectional pooled regression models are applied to assess the value relevance of the cash flow and accrual accounting information sets. Model (1) pertains to the cash flow information items set and model (2) pertains to the accrual information items set.

$$\mathbf{R}_{i,t} = \alpha_0 + \alpha_1 \mathbf{\Delta CFO}_{i,t} + \alpha_2 \mathbf{\Delta CFI}_{i,t} + \alpha_3 \mathbf{\Delta CFF}_{i,t} + \alpha_4 \mathbf{PLF}_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$\mathbf{R}_{i,t} = \beta_0 + \beta_1 \mathbf{\Delta NI}_{i,t} + \beta_2 \mathbf{\Delta\,\Delta ABI}_{i,t} + \beta_3 \mathbf{\Delta ABF}_{i,t} + \beta_4 \mathbf{FLF}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where: for each sample firm i, all explanatory variables (except for PLF) are deflated by the closing price per share as of 90th day after the end of firm's fiscal year t-1, and

$\mathbf{R}_{i,t}$ = Buy and hold stock return calculated over the 12 months beginning with the 90^{th} day after the end of fiscal year t-1,

$\Delta CFO_{i,t}$	=	change in cash flow from operating activities between year t and t-1,
$\Delta CFI_{i,t}$	=	change in cash flow from Investing activities between year t and t-1,
$\Delta CFF_{i,t}$	=	change in cash flow from financing activities between year t and t-1,
$\Delta NI_{i,t}$	=	change in net income between year t and t-1,
$\Delta ABI_{i,t}$	=	change in accrual based investing activities between year t and t-1,
$\Delta ABF_{i,t}$	=	change in accrual based financing activities between year t and t-1,
$PLF_{i,t}$	=	dummy variable that assumes the value of 1 if NI≤0 and zero otherwise,
$\varepsilon_{i,t}$	=	an error term satisfying the OLS regression requirements.

The dependent variable, $R_{i,t,}$ is calculated by subtracting the share price 90 days after beginning of the firm's fiscal year from the share price 12 months later, 90 days after the firm's fiscal year end, and adding the dividend that has been paid during that period. We assume that firms issue their financial statements by the 90st day after their fiscal year end; the date by which they are legally required to do so. Each explanatory variable is calculated as the difference between the book value of the respective item reported for the beginning and the end of the firm's fiscal year. Detailed calculations of the above variables are provided in the Appendix. We use the first differences in the explanatory variables to minimize interperiod dependency between the annual accounting observations. Further, first differences are likely to be more useful in the formation of expectations concerning the firm's future performance. This is consistent with Collins and Kothari (1989) and Easton and Zmijewski (1989) who suggest that current earnings may not necessarily reveal growth opportunities. Rather, it is the change from previous period that may indicate growth or decline in economic activity.

It is the future investment that is assumed to earn above normal rates of returns. The first differences in investments activities, ΔCFI and ΔABI, reflect investment in new projects, or decline in the production base, and their coefficients represent the related market valuation. The sign of the coefficients is indicative of

whether or not their estimated net present value is positive. According to Miller and Modigliani (1961), ΔCFF and ΔABF are irrelevant to firm's valuation as firm's value is unaffected by its capital structure or dividend policy. Similarly, Feltham and Ohlson (1995) imply that the net present value of financial transactions equals zero and, therefore, would not affect the firm's value. Notwithstanding Miller and Modigliani (1961) and Feltham and Ohlson (1995) assertions, Livnat and Zarowin (1990) and Easton (1985) show that ΔCFF and ΔABF signal future cash flows and future growth opportunities. Therefore, we study the association of stock returns with all three components of the cash flow statement including investing and financing activities and their accrual counterparts

In a recent paper Melendrez, Schwartz, and Trombley (2005) report that unexpected cash flows have greater persistent than unexpected accruals and that this difference is primarily driven by firms that report losses. They also find that mispricing of accruals and cash flows is concentrated in loss firms and that investors react more strongly to unexpected cash flows than they do to unexpected accruals.[6] Under such circumstances it is advisable to analyze separately profitable and losing firms (Basu, 1997). By including a dummy variable one achieves the same objective (Collins et al., 1999). Thus, in order to control for potential differential reaction to losses versus profits we add a dummy variable, PLF, to the analysis.

3. The Sample

All non-financial firms listed on the NYSE, AMEX or NASDAQ during 1988 – 2004 for which all necessary data for the calculation of the variables in our

[6] This is also consistent with the well-known semi-variance concept that suggests that investors risk aversion function is not linear and that investors' attitude toward negative returns is not symmetric with that towards positive returns.

models are available on the 2004 merged Compustat and CRSP data bases have been selected. Observations are deleted if contemporaneous returns are missing from the CRSP file or current market value is smaller than 5 million[7]. This procedure yielded a total of 36,208 firm-year observations. After deletion of outliers (the highest one percentile of the observations) and firms with insufficient data for the ranking of the firm–year observations by LCS, the sample size totaled 33,491 firm-year observations.

4. Life Cycle Status Classification

Anthony and Ramesh (1992)and Black, (1998) classify their firms into LCSs by a measure that combines four variables: (a) sales growth (b) change in capital expenditure (c) annual dividend payout ratio and (d) firm's age. With one exception of the annual dividend payout ratio, we utilized these variables in our combined measure. Dividends constitutes only one way a firm may choose to make payments to their shareholders. Another way may be repurchasing of outstanding shares. Some firms do not pay dividends and retain all earnings to reinvest in their operation. Similarly, firms may issue or resale shares to raise money from shareholders.[8] Thus, we use a measure that combines all three forms of the capital transactions with shareholders (cf. Ohlosn 1995) instead of dividends pay-out ratio.

We implement the following steps in clustering our sample firm-year observations into the three LCSs. First we calculate the following four variables for each firm's –year observation:

[7] We restrict the market value to avoid the problem of small deflators.
[8] This is a form of negative dividends.

(a) Annualized Sales Growth, defined as sales growth rate over the last two years,

$$\text{Sales}_{t} / \text{Sales}_{t-2}$$

In the year of the acquisitions, sales might increase as a result of purchase accounting and not because of increase in customer base; thus, we remove the firm-year observations that are affected by purchase accounting[9].

(b) Capital Expenditure, defined as annual capital expenditure and R&D expense as a proportion of total assets,

$$(\text{Capital Expenditure} + \text{R\&D Expense})_{t} / \text{Total Assets}_{t}$$

We add the R&D expenditure to the capital expenditure as a proxy for investment in intangible assets.

(c) Annual Net Capital Transaction as a proportion of total assets, defined as:

$$(\text{Sale of common and preferred stock} - \text{Purchase of common and preferred stock} - \text{Cash dividend})_{t} / \text{Total Assets}_{t}$$

(d) Firm's age assessed by the number of years since the first year firm's data is available on CRSP data base.[10]

Next, we standardize each of the above four variable by subtracting its sample mean and dividing by its standard deviation. Third, we add up the four standardized variables to form the combined clustering measure. Finally, we rank our firm-year observations by the combined clustering measure in an ascending order and split the ranked observations into five quintiles. As in Anthony and Ramesh (1992), a firm-year in the highest, first, quintile is classified as a growth stage observation; a firm-year in the middle, third quintile is classified as a mature stage observation and a firm

[9] Firm-year observations coded on the COMPUSTAT annual footnote 1: AA, AB, AR, AS, FA, FB, FC, FD, FE, FF, FW.

[10] We had no access to a source that includes the firm's establishing date. The use of the firm's IPO date was severely limited due to a large number of missing observations. We ranked the cases for which IPO dates were available by both the first year of availability of data in CRSP data base and by IPO dates and found the two rankings to be very similar.

year in the lowest, fifth quintile is classified as a decline or stagnant stage observation.

The above procedure omits 40% of the sample from our analysis. Although this is a significant reduction in sample size, it increases the differences and the detectable effects between LCS groups and as such reduces the probability of misclassification. This procedure yielded a total of 20,095 firm-year observations that have been equally divided among the three LCS groups with 6,698 observations each[11].

5. Expected Life Cycle Status Effect

Economic literature divides the firm's life cycle period into four main sub-periods according to the degree of uncertainty that faces the entity, its assets in place and investment opportunities.[12] Black (1998) develops expectations and provides some evidence on the incremental value relevance of accrual earnings and the three cash flow transaction categories in each Life Cycle Stage (LCS). We develop a theoretically based framework about the possible information relevance superiority of either the cash flow or accrual publicly available information sets. This framework is discussed below.

At the start up stage the firm's production focuses on a new product or products. At this stage, it has few assets in place, low collateral value, and experiences high business risk and high borrowing and equity cost. As the scale of investment in assets (ABI, CFI) and collateral value increases the cost of capital is gradually declining.

When a firm survives the start-up stage and continues to grow, earnings and cash flows from operation become gradually positive. Expected profits from investment

[11] The average number of firms per year ranges from 337 in 2004 to 2,686 in 1997.
[12] See for useful review: Mueller (1972), Myers (1977) and Anthony and Ramesh (1992). .

opportunities increase and so do investment in production assets and funding needs to finance the growth. While uncertainty is gradually decreasing, cost of borrowing is still high and shareholders would prefer to reinvest earnings, rather than dividends distribution, to take advantage of the more easily apparent profit opportunities. One would, therefore, expect investors to attach higher relevance to growth in the three Cash Flow categories - CFO, CFI, and CFF - than to the relevance of their accrual based counterparts. Thus, we expected the coefficient estimates of the cash flow information items to be equal or higher than those for their accrual accounting information items and the results for model (1) to dominate those for model (2).

At the maturity stage, production assets are more fully utilized and both NI and CFO increase to a higher level when compared to that at the growth LCS. Depreciation may suffice to finance asset replacements and maintenance. Profitable investment opportunities, however, decline as competition develops and the market for the firm's products gradually saturates. Consequently, the firm is expected to demonstrate no or minimal growth in ABI or CFI, and lower growth in ABF and CFF. Because of the increase in the level of assets in place and their utilization, uncertainty declines further and so does the cost of borrowing. Thus, at the maturity LCS, it would not be in shareholders' interest to have all profits reinvested. Instead, they would prefer managers to begin paying dividends. It has been shown, however, that there is a high correlation between the size of a firm and the level of managerial compensation (Bebchuk and Grinstein 2005). Thus, at the maturity stage, managers may increase their welfare, at the expense of stockholders, by investing profits and costly borrowed funds in acquisitions and extensions. Mueller (1972, 1975) provides evidence for such behavior even when such investments yield lower return than the market offers on equity investments. Investors have, therefore, an incentive to closely

monitor accrual earnings and growth in accrual capital investments. This is so because NI sets the limits for dividend payments, and ABI serves as indicator of current and future financial obligations. Thus, we would expect the relevancy of the accrual information items (model 2) to dominate those of the cash flow information items (model 1).[13]

In the decline stage, market potential of products declines due to intense competition and changes in taste or technology. This LCS is normally characterized by falling sales, declining earnings and increase in unutilized production capacity. Thus, one would expect the growth in NI, ABI, and ABF to be smaller in the decline LSC than in the maturity LCS. Similarly, one would expect the growth of CFO, CFI, and CFF in the decline LCS to be smaller than in the maturity LCS.

For the decline LCS, shareholders' welfare maximization theory would suggest the distribution to stockholders of funds due to earnings and assets liquidation. In such circumstances, cash flow information would be more relevant than accrual information. However, in case of liquidation managers would eventually lose their jobs and, therefore, may have an incentive to mitigate the declining effect by investing in, and concentrate on, innovation of new products. Such strategy involves investment in new and risky growth opportunities. Risky growth must be financed by either equity or borrowed funds or both. Unlike the case in the growth LCS, in the declining stage the firm has more assets in place that may serve as collateral, and still generates income. The funds invested bear less risk and the cost of capital may not be as high as in the growth LCS. Further, managers have an incentive to invest in assets that yield higher return than that offers by the market.

13 Lev, Bharath and Sougiannis (2005) suggest , however, that mandated accounting practices, such as the immediate expensing of research and development expenditure, are reported to overestimate firms' accrual based performance measures in some life cycles and underestimate such measures in other life cycles. If such practices affect the growth rate of our accrual variables then depending on the LCS, cash flow figures might be viewed a more informative or vise versa.

The decline LCS is also more prone to litigation by disappointed investors. Such litigations are normally based on publicly available accrual accounting performance numbers (Francis et al 1994). Further, management's investment strategy, as discussed above, may have long lasting implications, which are best signaled by the accrual figures. Thus, one would expect the accrual numbers in the decline LCS to be more value relevant than their cash flow counterparts.

6. **Descriptive Statistics**

Table 1 presents summary statistics for the variables in models (1) and (2). These statistics are provided for the entire sample of 20,095 firm-year observations and separately for each LSC.[14]

Table 1 about here

As depicted in Panel A of the Table, the growth LCS is associated with the highest mean return (0.299), which is declining, but still relatively high, during the maturity period (0.202) and materially declining further in the decline period (0.133). This pattern is consistent with the discussion in section 5.[15] The high return in the growth LCS is likely due, at least in part, to investors' expectations for growth opportunities to yield future benefits rather than to current realized earnings.[16] The lower returns at maturity may be the result of diminishing investments and growth

[14] Negative summary figures for cash flow from investment (CFI) represent net cash outflow for the acquisition of production assets. For the purpose of our analysis and in order to facilitate meaningful comparison with the accrual based investment (ABI) we reversed the sign for ΔCFI in Table 1 and subsequent analysis.

[15] Some caution must be exercised in interpreting the above pattern. The return distributions are not normally distributed and, therefore, the mean may not be a central tendency representative measure. Indeed, the pattern of the median return figures does not fully correspond to that of the mean return pattern. We focus on the mean return as this is the corresponding returns of portfolios constructed based on the life cycle stage.

16 See also Lakonishok, Shleifer and Vishny (1994), among others, who documented investors' over optimism, at the growth stage, about future earnings.

opportunities (Nissim and Penman, 2001). The decline period is signified by declining return on current employed production assets due to declining revenues and search cost for new investment opportunities.

As can also be seen from Panel A of Table 1, the median values of the matched LCS cash flow explanatory variables demonstrate similar patterns to those of their accrual accounting counterparts. These patterns are summarized below.[17]

Medians of Explanatory Variables*

Variable	Growth		Maturity		Decline
Δ CFO	0.0003	≤	0.009	≥	0.005
Δ NI	-0.001	≤	0.008	≥	0.005
Δ CFI	0.011	≥	0.000	≥	0.0003
Δ ABI	0.012	≥	0.002	≥	0.001
Δ CFF	0.014	≥	0.001	≥	0.003
Δ ABF	0.023	≥	0.0005	≥	0.002

* Source: Table 1, Panel A.

These patterns, which are compatible with our discussion in section 5, are consistent with our assertion that the growth LCS is characterized by relatively large increase in both investing and financing activities while in the maturity LCS there is low or no increase in these activities and during the decline LCS both investing and financing activities tend to decrease. The patterns of these statistics are consistent with the LCS grouping of the sample observations and, therefore, provide indirect validation to the outcome of our LCS classification process.

Further support for this conclusion is provided by the descriptive statistics in Panel B of Table 1. For each of the first three components used to construct our LCS

[17] The explanatory variables' mean values demonstrate quite similar patterns.

classification measure (sales growth, capital expenditure and net capital transactions) we observe a monotonic decline in the median (mean) values moving from the growth LCS to the decline LSC while the opposite direction is observed for the fourth component, firm age. For example, the median (mean) capital expenditure (deflated by the closing price per share as of 90th day after the end of firm's fiscal year t-1) is 0.269 (0.323) for the growth LCS, 0.066 (0.079) for the maturity LCS and 0.051 (0.060) for the decline LCS, while the median (mean) firm age increases from 11.5 (12.4) in the growth LCS to 41.4 (45.4) in the decline LCS.

7. Analysis and Results

Univariate Analysis

Table 2 depicts the correlation coefficients among the explanatory variables and between these variables and the annual return. These correlation coefficients are calculated for the sample as a whole and for each of the three LCSs,

Table 2 about here

The magnitude of the association between Return and ΔNI is highest at growth and the lowest at decline while the correlation with ΔCFO is highest at decline and the lowest at growth. ΔABI, ΔCFI, ΔABF, ΔCFF exhibit the lowest correlation with return at growth and highest at decline. Within each LCS and for the sample as a whole, the association between the cash flow variables and the return is lower than that between the accrual accounting variable and Return.

Table 2 also reveals a systematic pattern of the association's strength between the three paired variables: ΔNI and ΔCFO, ΔABI and ΔCFI , and ΔABF and ΔCFF. The correlation between ΔNI and ΔCFO is highest at decline and lowest at growth

LCS. At growth LCS the difference between net income and cash flow from operations is the highest and hence the low correlation. ΔABF/ΔCFF and ΔABI/ΔCFI also demonstrate the highest correlation at decline.

As can also be seen from table 2, in each LCS, the correlation coefficients between variables within the cash flow (accrual accounting) set are much higher than the correlation coefficients between the cash flow variables and accrual accounting variables. This suggests that the variables in each set have more in common than with the variables of the corresponding set.[18]

These findings strongly suggest that the strength of the association between cash flow or accrual information variables and the return on the investment in the firm's equity, and the strength of the association between the corresponding cash flow and accrual accounting variables varies with the status of the firm's life cycle.

Multivariate Analysis

Model (1) and model (2) are applied to the undivided sample as a whole and to each of the three paired LCS regressions: growth, maturity and decline. The results of each cash flow regression are then compared, via its adjusted R^2, to the results of its paired accrual accounting regressions, to assess the extent of its relative value relevance. To test whether the paired R squared are significantly different from each other we calculate for each paired regressions, the ratio $R^2_{cash\ flow}$ to $R^2_{accrual}$ and apply the Vuong (1989) likelihood ratio test. The use of the Vuong's statistics for comparing the results of the paired regressions is appropriate because each of the paired regressions relates to the same sample firms, has the same dependent variable, employs the same number of observations and pertains to the same time periods.

[18] In light of the relatively high correlations among the explanatory variables we calculated the Variance Inflation Factors (VIF) and found them to be quite small (Neter, Wasserman & Kunter, 1983)..

Table 3 summarizes the results for the cash flow (model 1) and accrual accounting (model 2) analyses for the sample as a whole and for each of the three LCSs.

Table 3 about here

With one exception, in *each* of the four paired regressions, *each* of the coefficient estimates that relates to *each* of the three cash flow information variables exhibits a greater absolute value than that of its accrual counterpart. The one exception relates to the comparison of the coefficient estimates for ΔCFO and ΔNI in the decline LCS for which the magnitude of the difference accounts for about eight percent.

Regression Coefficient Estimates*

(absolute values)

Variable	Entire sample	Growth	Maturity	Decline
ΔNI	0.26	0.20	0.24	0.24
ΔCFO	0.66	1.33	0.27	0.22
ΔABI	0.02	0.20	0.00	0.02
ΔCFI	0.27	0.60	0.01	0.07
ΔABF	0.19	0.65	0.09	0.03
ΔCFF	0.58	1.12	0.13	0.13

* Source: Table 3.

While the above matrix exhibits a strong regularity suggesting higher value relevance of cash flow figures than accounting accruals, the pattern of the collective

explanatory power of sets of variables depicts a somewhat different but strong pattern.

As can be seen from Table 3, the explanatory power (adjusted R^2) of the *changes* in the cash and accrual based information items is quite low. Considering the relatively small magnitude of these *standardized* changes (see Table 1) this is not surprising. The small R^2 values notwithstanding, the results strongly suggest that the LCS classification increases the value relevance of both the cash flow and accrual information sets. The R^2 for the undivided whole sample regressions is considerably lower than those for the corresponding LCS cash flow and accrual regressions. Note that the difference between the R^2s for the entire sample's cash flow and accrual paired regressions is insignificant (i.e., the ratio of $R^2_{cash\ flow}$ to $R^2_{accrual}$ is 1.06) whereas the two R^2 s for each of the three paired LCS regressions differ significantly from each other.

Further, the ratio of $R^2_{cash\ flow}$ to $R^2_{accrual}$ is declining from 1.12 at the growth LCS to 0.86 at both maturity and decline LCSs. The direction of the differences in the paired R^2 values is consistent with those expected (see section 5). That is, for the growth LCS, $R^2_{cash\ flow}$ dominates $R^2_{accrual}$; for the maturity and Decline LCSs, $R^2_{accrual}$ dominates $R^2_{cash\ flow..}$ These results are also in line with Dechow (1994) who claims that the difference between the value relevance of cash flow based information items relative to accrual based information items is the smallest at growth periods because of timing and matching differences.

Note that the R^2 values of the three LSC cash flow regressions (7.2% - 7.3%) suggest similar or stable level of value relevance across the three LCSs. In contrast, the R^2 values of the three LCS accrual regressions vary materially across life cycle periods. It is possible that this difference in R^2 persistence is due to lower reliability

of the accrual numbers when compared to cash flow figures (cf Richardson et al 2005).

Finally, the coefficient estimates for the PLF, dummy variable, are negative and highly significant in each of the three LCSs paired regression models. It is worth noting that its magnitude is considerably smaller (in absolute terms) in the decline LCS compared with those in the other two LCSs. This suggests that accounting losses are inversely associated with the firm's periodic return and have a strong and negative affect on the firm's market performance.

8.-Implications

The findings have implications for both managerial contacts design and the formation of expectations with the respect to the association of accounting numbers and the firm's market performance measures.

Managerial contracts often use accounting numbers such as accrual accounting earnings or cash flow from operation as target performance measures. When actual performance exceeds the target, bonus payments are due. We show that periodic differences in accounting performance indicators vary between and within the firm's life cycle status periods. While the periodic changes in the accrual accounting and in the cash flow figures depict similar patterns, the magnitude of the changes differs between the two accounting information sets. Thus, depending on the purpose of the contracting parties, it may be important to link accounting performance benchmarks to the attributes of expected changes in either cash flow or accrual accounting measures. If shareholders' welfare maximization is an objective and the contract duration is limited to one life cycle period then accrual accounting measures may be preferred during the maturity and decline periods and cash flow

measures may be preferred during the growth period. For multiple life cycle period contracts, cash flow measures may be preferred because of their stability across life cycles, and hence better predictability of their relation with the firm's market valuation.

Loan or bond contracts often include covenants that restrict financial capital transactions such as additional net borrowing, repurchasing of stock or dividend payments, to a certain accounting benchmark measure. Because the magnitude of cash flow measures differ from the accrual measures and that difference vary with the life cycle period, the choice of the benchmark may depend on whether the duration of the contract is beyond one life cycle period and the period in question.

Some incentive contracts, such as share option agreements, are conditional on the share market performance. Both the determination of the exercise price and the expected exercise period are normally affected by expected changes in the firm's share price. In this respect, the association between accounting figures and market based performance measures may be helpful. It may be beneficial to predetermine the beginning of the exercise period at the particular life cycle at which the association between the accounting benchmark and market value is the highest.

The results may also have implications for analysts' prediction of market performance measures such as expected return or value. In particular, analysts may be motivated to make an effort to pre-identify the life-cycle status of the firm under examination and only then make a choice between accrual-based and cash-based accounting information set for performance prediction purposes. Depending on the duration of the period for which financial analysts make their hold/buy/sell recommendations and whether that period falls in a specific life cycle, they may find

the pattern of the association between the various accounting variables and the return on investment in the firm's equity useful.

9. Concluding Remarks

Our study contributes to the value relevance of accruals versus cash flow literature. Prior studies in this area focus on the *incremental* informative value of cash flow measures over accrual net income. In contrast, we study the value relevance of the three cash flow summary information measures reported in the Statement of Cash Flows *relative* to their three accrual accounting counterparts. Our examination is conducted separately for each of three firm's life-cycle stages (LCSs). Such testing design captures the full informative value attributable to cash flow and the full informative value attributable to accrual items.

Our study covers the 17 year period 1988 – 2004, employing 20,095 firm-year observations clustered into three equal-size firm-year sub-groups according to three corresponding firm LCSs: growth, maturity and decline.

The main findings indicate that when the undivided sample as a whole is considered, the explanatory power of the cash flow information set is not significantly different from that of the accrual accounting set. However, when the observations are clustered into three separate LCSs the explanatory power of the information sets in each LCS increases when compared to that of the whole sample analysis. Also, the two information sets depict explanatory power that differs significantly from each other. As expected, in the growth period the explanatory power of the cash flow set exceeds that of the accrual accounting set and the opposite dominance relations prevails for both the maturity and decline LCS.

We also find that the extent of association between the cash flow information set and the firm's market value is quite stable across the three life cycle periods. In contrast, the association between the accrual accounting set and the firm's market value varies materially across the life cycle periods.

These findings have implications for the design of managerial, loan, bonds and performance based contracts. They may also be useful to financial analysts that make buy/hold/sell recommendations.

A note of caution is appropriate. Like the case with most empirical studies, it is possible that our findings may be time dependent. In recent years we experienced material changes in accounting practice. The enactment of the Sarbanes-Oxley Act, the establishment of the Public Company Accounting Oversight Board, the related changes in corporate governance of listed firms and the restructure of auditor–client relations, may enhance the information content of accounting figures and have a positive effect on investors' attitude towards accounting reporting. The data analyzed in this study pertain to the 17-year period ending with the year 2004. Future research may determine whether our findings can be generalized to periods beyond 2004.

This concern notwithstanding, this study enhances our understanding of the nature of the relative value relevance of cash flows versus accrual accounting information items.

Appendix A: Cash Flow and Accrual based information variables and LCS Classification Measures

We construct, based on the changes in the relevant balance sheet accounts, accrual corresponding counterparts of the Cash flow from investment activities and Cash flow from financing activities – Accrual Based Investing measure (ABI) and Accrual Based Financing measure (ABF). The difference between NI and CFO represents operating accruals. The main components of these accruals are working capital adjustments and depreciation. The main difference between ABI and CFI and ABF and CFF reflects non-cash transactions.

Cash Flow Based Information Variables

CFO $_t$ = Cash Flow from Operating Activities in Year t (308) [a]

CFI $_t$ = Cash Flow from Investing Activities in Year t (311)

CFF $_t$ = Cash Flow from Financing Activities in Year t (313)

Accrual Based Information Variables

NI $_t$ = Net Income in Year t (172)

ABI $_t$ = Accrual Based Investing Activities in Year t = (**NCA $_t$ – NCA $_{t-1}$**) **=** Annual Change in non-Current Assets [where NCA (Non-Current Assets) = short term investments (193) + Property Plant and Equipment (7) + Equity investments (31) + other investments (32) + intangibles (33) + other assets (69)]

ABF $_t$ = Accrual Based Financing Activities in Year t = (**TDE $_t$ – TDE $_{t-1}$**) = Annual Change in Total Debt and Equity [where TDE (Total Debt and Equity) = common equity (60) + preferred stock (130) + total long term debt (9) + other liabilities (75)]

LCS Classification Measures

FASG $_t$ = (**Sales $_t$ / Sales $_{t-2}$**) = Firm's two-year sales growth [$(12_t / 12_{t-2})$]

FACE $_t$ = **[CE + R&D] $_t$ / TA $_t$** = Firm's Annual Capital Expenditure + R&D expenditure deflated by total assets [$(128 + 46)_t / 6_t$]

FANCT $_t$ = NCT $_t$ / TA $_t$ = Firm's Annual Net capital Transactions (sale of common and preferred stock – purchase of common and preferred stock -cash dividend) deflated by total assets [$(108 - 115 – 127)_t / 6_t$]

FAGE $_t$ = Firm's Age = Number of years since the first year firm's data is available on CRSP

[a] COMPUSTAT item numbers in parentheses.

References

Anthony, J. and K. Ramesh, 1992, "Association between Accounting Performance Measures and Stock Prices: A Test of the Life Cycle Hypothesis", *Journal of Accounting & Economics* 15, 203-227.

Basu, S., 1997, "The Conservatism Principle and the Asymmetric Timeliness of Earnings", *Journal of Accounting and Economics* 24, 3-37.

Bebchuk, L., and Y. Grinstein, 2005, "Firm Expansion and CEO Pay", Working Paper, Cornell University and Harvard University.

Bernard, V. L., 1989, "Capital Market research in Accounting during the 1980's: A Critical Review", Paper presented at the University of Illinois Accountancy Ph.D. Program Golden Jubilee Symposium and Working Paper, University of Michigan.

Bernard, V. L., and T. Stober, 1989, "The Nature and Amount of Information in Cash Flows and Accruals", *The Accounting Review* 64, 624-652.

Black L. E., 1998, "Life-Cycle Impacts on the Incremental Value-Relevance of Earnings and Cash Flow Measures", *The journal of Financial Statement Analysis* 4, 40-56.

Bowen, R., D. Burgstahler and L. Daley, 1987, "The Incremental Information Content of Accrual versus Cash Flows", *The Accounting Review* 62, 723-747.

Collins, D., and S. P. Kothari, 1989, "An Analysis of the Intertemporal and Cross-Sectional Determinants of the Earnings Response Coefficients", *Journal of Accounting and Economics* 11, 143–181.

Collins, D., M. Pincus and H. Xie, 1999, "Equity Valuation and Negative Earnings: The role of Book Value of Equity", *The Accounting Review* 74, 29-62.

Dechow, P. M., 1994, "Accounting Earnings and Cash Flows as Measures of Firm Performance: The Role of Accounting Accruals", *Journal of Accounting & Economics* 18, 3-42.

Easton, P., 1985, "Accounting Earnings and Security Valuation: Empirical Evidence of the Fundamental Links", *Journal of Accounting Research* (Supplement) 23, 54-72.

Easton, P., and M. Zmijewski, 1989, "Cross-Sectional Variation in the Stock Market Response to the Announcement of Accounting Earnings", *Journal of Accounting and Economics* 11, 117–141.

Feltham, G.A., and J.A. Ohlson, 1995, "Valuation And Clean Surplus Accounting For Operating And Financial Activities", *Contemporary Accounting Research*, 11, 689-731.

Financial Accounting Standards Board, 1987, 'Statement of Cash Flows', *Statement of Financial Accounting Standards No. 95* (Stamford, Conn.: FASB).

Francis, J. D. Philbrick and K. Schipper, 1994, "Shareholder Litigation and Corporate Disclosure," J*ournal of Accounting Research* 32:2, 132-164

Givoly, D., and C. Hayn, 2000, "The Changing Time-Series Properties of Earnings, Cash Flows and Accruals: Has Financial Reporting become more Conservative?", *Journal of Accounting & Economics* 29:3. 287-301.

Hayn, C., 1995, "The Information Content of Losses". *Journal of Accounting and Economics* 20, 125–153.

Hribar, P., 2000, "The Market Pricing of Components of Accruals", working paper, Cornell University.

Lakonishok, J., A. Shleifer, and R.W.Vishny, 1994, "Contrarian investments, Extrapolation, and Risk", *Journal of Finance*, 49, 1541-1578.

Lev, B.,B. Bharath and T. Sougiannis, 2005, "R&D Reporting Biases and their Consequences," *Contemporary Accounting research*, 21, 977-1026.

Livnat, J. and P. Zarowin, 1990, "The Incremental Information Content of Cash-Flow Components", *Journal of Accounting & Economics* 13, 25-46.

Melendrez, K.D., W.C. Schwartz and M.A. Trombley, 2005, "How Does the Market Value Accrual and Cash Flow Surprises?", Working paper, University of Arizona.

Mueller, D. C., 1972, "A Life Cycle Theory of the Firm", *Journal of Industrial Economics* 20:3, 199-219.

Mueller, D. C., 1975, "Life Cycle Effects on Corporate Returns on Retentions", The *Review of Economics and Statistics*, 57:4, 400-409.

Myers, S.C., 1977, "Determinants of Corporate Borrowing" *Journal of Financial Economics* 5, 147-175.

Miller, M.H., and F. Modigliani, 1961, "Dividend Policy, Growth, and The Valuation of Shares", *The Journal of Business*, 34:4, 411 -434.

Neter J., Wasserman, W. & Kunter, M. (1983). *Applied Regression Models*, Homewood, IL: Richard D. Irwin.

Nissim, D. and S. Penman, 2001, "Financial Statement Analysis of Leverage and How It Informs about Profitability and Price-to-Book Ratios", Working paper, Columbia University.

Ohlson, J. A., 1995, "Earnings, Book Values and Dividends in Equity Valuation", *Contemporary Accounting Research* 11: 661-87.

Rayburn, J., 1986, "The Association of Operating Cash Flow and Accruals with Security Returns", *Journal of Accounting Research* (Supplement) 24, 112-133.

Richardson, S. A., R.G. Sloan, M.T. Soliman and I. Tuna, 2005, "Accrual Reliability, Earnings Persistence and Stock Prices", *Journal of Accounting and Economics* 39, 437-485.

Thomas, J., and H. Zhang, 2002, "Inventory Changes and Future Returns, *Review of Accounting Studies* 7, 163-187.

Vuong, Q. 1989, "Likelihood Ratio Test for Model Selection and Non-Nested Hypothesis", *Econometrica* 57, 307-333.

White, H., 1980, "A Heteroskedasticity-Consistent Covariance Matrix Estimator and A Direct Test for Heteroskedasticity", *Econometrica* 48, 817-838

Wilson, P., 1986, "The Relative Information Content of Accruals and Cash Flows: Combined Evidence at the Earnings Announcement and Annual Report Release Date", *Journal of Accounting Research* 24 (Supplement), 165-200.

Wilson, P., 1987, "The Incremental Information Content of the Accrual and Funds Components of Earnings after Controlling for Earnings", *The Accounting Review*

Table 1: Comparative summary statistics of Returns, Cash Flow and Accrual Accounting Variables [a]

Panel A: Accrual and cash flow variables used in the regression analysis [a]

LCS		Return	ΔCFO	ΔNI	ΔCFI	Δ ABI	ΔCFF	Δ ABF
All	Median	0.038	0.004	0.004	0.003	0.005	0.001	0.005
	Mean	0.211	0.016	0.012	0.0001	0.010	-0.006	0.013
	Std	1.094	0.241	0.300	0.287	0.430	0.350	0.605
Growth	Median	-0.080	0.0003	-0.001	0.011	0.012	0.014	0.023
	Mean	0.299	0.012	0.006	0.026	0.024	0.031	0.039
	Std	1.628	0.189	0.275	0.292	0.377	0.361	0.513
Maturity	Median	0.032	0.009	0.008	0.000	0.002	0.001	0.0005
	Mean	0.202	0.024	0.018	0.014	0.001	0.029	0.003
	Std	0.850	0.280	0.351	0.299	0.477	0.377	0.712
Decline	Median	0.091	0.005	0.005	0.0003	0.001	0.003	0.002
	Mean	0.133	0.012	0.012	0.011	0.005	0.019	0.003
	Std	0.450	0.245	0.265	0.268	0.430	0.307	0.572

[a] Where: for each sample firm all explanatory variables are deflated by the closing price per share as of 90th day after the end of firm's fiscal year t-1, and

Return = Buy and hold stock return calculated over the 12 months beginning with the 90th day after the end of fiscal year t-1,
ΔCFO = change in cash flow from operating activities between year t and t-1,
ΔCFI = change in cash flow from Investing activities between year t and t-1,
ΔCFF = change in cash flow from financing activities between year t and t-1,
ΔNI = change in net income between year t and t-1,
ΔABI = change in accrual based investing activities between year t and t-1,
Δ ABF = change in accrual based financing activities between year t and t-1,

Panel B: Components of LCS Classification Measure

LCS		Sales Growth	Capital Expenditure	Net Capital Transactions	Firm Age
All	Median	1.063	0.088	0.000	18.266
	Mean	1.246	0.154	0.073	24.913
	Std	1.825	0.197	0.274	18.009
Growth	Median	1.199	0.269	0.089	11.512
	Mean	1.606	0.323	0.269	12.385
	Std	3.104	0.259	0.388	5.381
Maturity	Median	1.065	0.066	0.000	16.764
	Mean	1.104	0.079	-0.005	16.920
	Std	0.383	0.058	0.042	5.905
Decline	Median	1.032	0.051	-0.022	41.367
	Mean	1.028	0.060	-0.047	45.435
	Std	0.145	0.049	0.118	16.344

Sales growth is the annualized sales growth rate over the last two years, excluding acquisitions. **Capital expenditure** is R&D expense as a proportion of total assets. **Net capital transactions** is sale of common and preferred stock minus purchase of common and preferred stock minus cash dividend, as a proportion of total assets. Firm age is the number of years since the first year firm's data is available on CRSP data base.

Table 2: Pearson and Spearman Correlations for the Accrual and Cash Flow variables [a]

Entire Sample

	Return	ΔNI	ΔCFO	ΔABI	ΔCFI	ΔABF	ΔCFF
Return		0.17	0.10	0.07	0.06	0.16	0.10
ΔNI	0.33		0.21	0.19	0.02	0.41	-0.06
ΔCFO	0.15	0.30		0.04	0.11	0.00	-0.36
ΔABI	0.10	0.20	0.07		0.51	0.50	0.33
ΔCFI	0.07	0.06	0.11	0.64		0.26	0.58
ΔABF	0.22	0.41	0.04	0.48	0.32		0.42
ΔCFF	0.06	-0.04	-0.31	0.35	0.48	0.51	

Growth Stage

	Return	ΔNI	ΔCFO	ΔABI	ΔCFI	ΔABF	ΔCFF
Return		0.24	0.10	0.04	0.02	0.11	0.01
ΔNI	0.32		0.08	0.16	0.12	0.35	-0.12
ΔCFO	0.11	0.14		0.01	0.12	-0.05	0.42
ΔABI	0.03	0.18	0.02		0.40	0.47	0.27
ΔCFI	0.02	0.00	0.07	0.52		0.16	0.60
ΔABF	0.13	0.34	-0.04	0.45	0.22		0.26
ΔCFF	0.03	-0.09	0.40	0.30	0.49	0.35	

Maturity Stage

	Return	ΔNI	ΔCFO	ΔABI	ΔCFI	ΔABF	ΔCFF
Return		0.22	0.10	0.04	0.04	0.15	0.01
ΔNI	0.37		0.18	0.24	0.00	0.43	-0.07
ΔCFO	0.14	0.24		0.01	0.07	-0.04	-0.48
ΔABI	0.11	0.24	0.03		0.43	0.50	0.26
ΔCFI	0.09	0.08	0.09	0.59		0.18	0.55
ΔABF	0.24	0.47	-0.01	0.46	0.27		0.30
ΔCFF	0.04	-0.05	-0.42	0.29	0.44	0.40	

Decline Stage

	Return	ΔNI	ΔCFO	ΔABI	ΔCFI	ΔABF	ΔCFF
Return		0.19	0.14	0.12	0.08	0.24	0.17
ΔNI	0.29		0.42	0.16	0.04	0.45	-0.01
ΔCFO	0.20	0.52		0.16	0.18	0.15	-0.15
ΔABI	0.16	0.19	0.16		0.77	0.56	0.51
ΔCFI	0.13	0.11	0.19	0.80		0.45	0.61
ΔABF	0.29	0.42	0.17	0.53	0.43		0.71
ΔCFF	0.18	0.02	-0.12	0.46	0.52	0.73	

[a] Where: for each sample firm all explanatory variables are deflated by the closing price per share as of 90th day after the end of firm's fiscal year t-1, and

Return	=	Buy and hold stock return calculated over the 12 months beginning with the 90th day after the end of fiscal year t-1,
ΔCFO	=	change in cash flow from operating activities between year t and t-1,
ΔCFI	=	change in cash flow from Investing activities between year t and t-1,
ΔCFF	=	change in cash flow from financing activities between year t and t-1,
ΔNI	=	change in net income between year t and t-1,
ΔABI	=	change in accrual based investing activities between year t and t-1,
Δ ABF	=	change in accrual based financing activities between year t and t-1,

Upper (Lower) triangle reports the Pearson (Spearman) correlation coefficients. All correlations are significant at the 5% level or lower (two tailed test).

Table 3: The Value Relevance of Cash Flows from Operating, Investing and Financing Activities Relative to their Accrual Counterparts by Life Cycle Stage [a]

Model (1): Cash Flow: $R_t = \alpha_0 + \alpha_1 \Delta CFO + \alpha_2 \Delta CFI + \alpha_3 \Delta CFF + \alpha_4 PLF + \varepsilon_i$

Model (2): Accrual: $R_t = \beta_0 + \beta_1 \Delta NI + \beta_2 \Delta ABI + \beta_3 \Delta ABF + \beta_4 PLF + \varepsilon_i$

	Model (1): Cash Regressions					Model (2): Accrual Regressions			
	All	Growth	Maturity	Decline		All	Growth	Maturity	Decline
ΔCFO	0.66	1.33	0.27	0.22	**ΔNI**	0.26	0.20	0.24	0.24
	(8.64)	(6.05)	(3.96)	(4.48)		(5.51)	(1.42)	(4.29)	(5.38)
ΔCFI	0.27	0.60	0.01	0.07	**ΔABI**	0.02	0.20	0.00	0.02
	(4.48)	(4.38)	(0.08)	(1.77)		(0.75)	(2.41)	(0.09)	(0.87)
ΔCFF	0.58	1.12	0.13	0.13	**ΔABF**	0.19	0.65	0.09	0.03
	(7.74)	(7.03)	(2.32)	(2.91)		(8.13)	(6.32)	(4.37)	(1.76)
PLF	-0.36	-0.42	-0.42	-0.22	**PLF**	-0.28	-0.36	-0.33	-0.17
	(27.95)	(12.14)	(23.47)	(23.16)		(19.23)	(9.48)	(16.32)	(15.94)
Constant	0.37	0.48	0.38	0.23	Constant	0.33	0.46	0.34	0.20
	(35.53)	(17.30)	(26.52)	(31.35)		(32.16)	(16.33)	(25.18)	(28.70)
Observations	20,095	6,698	6,699	6,698	Observations	20,095	6,698	6,699	6,698
Adjusted R^2	5.5%	7.2%	7.3%	7.2%	Adjusted R^2	5.2%	6.4%	8.5%	8.4%

Relative Value Relevance Test

Ratio	All	Growth	Maturity	Decline
R^2_{cfo} / R^2_{acc}	1.06	1.12	0.86	0.86
Vuong's *Z*-statistic	(0.78)	(1.38)*	(-2.14)**	(-2.26)**

[a] Reported t-statistics in parentheses for the regression results are based on White (1980) standard errors.

All variables are defined in table 1.

**$p < 0.05$; * $p < 0.10$ significance levels (two tailed tests).