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"THE IMPLICATIONS OF RETAINED AND DISTRIBUTED EARNINGS FOR FUTURE PROFITABILITY AND MARKET MISPRICING"

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The Implications of Retained and Distributed Earnings for Future Profitability and Market Mispricing*

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Abstract: In this paper, we investigate the informational content of retained and distributed earnings for future profitability and market mispricing. We find that investors act as if the components of retained earnings (current operating accruals, non current operating accruals and retained cash flows) have similar implications for future profitability, leading to an overvaluation of their differential persistence. They also do not distinguish between the distinct properties of distributed earnings, correctly anticipate the persistence of net cash distributions to debt holders (net debt repayment) and underestimate the persistence of net cash distributions to equity holders (dividends minus net stock issues). Our evidence suggests that the accrual anomaly documented in the accounting literature and the anomaly on net stock issues documented in the finance literature could be a subset of a larger anomaly on retained earnings. Overall, our findings on the sources of this anomaly, indicate that it is primary attributable to investor's limited attention or limited cognitive power on understanding managerial empire building tendencies and managerial violation of accounting principles.

Keywords: retained earnings, distributed earnings, accruals, net stock issues, earnings management.

JEL classification: M4

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1. *Introduction*

In a seminal paper, Sloan (1996) shows that the accrual component of earnings exhibits lower persistence than the cash flow component of earnings. He also shows that investors fail to fully understand the differential persistence of accruals and cash flows. Investors tend to overweight (underweight) accruals (cash flow) when forming earnings expectations only to be systematically surprised when accruals turn out to be less persistent than cash flows, especially around future earning announcement time. As a result, low-accruals firms earn higher abnormal returns than high-accrual firms.

Subsequent research decomposes accruals into different components or considers broader definitions of accruals and tries to provide some explanations on the accrual anomaly. Using Jones (1991) model, Xie (2001) shows that discretionary accruals predict returns, but the nondiscretionary component does not. Thomas and Zhang (2002) report that the abnormal returns to the accruals trading strategy are largely generated by extreme changes in the inventory. Fairfield, Whisenant and Yohn (2003a) argue that the accruals anomaly is a subset of a broader anomaly related to investors' inability to impound information about growth.[1]

This paper extends the existing literature in three aspects. First, instead of concentrating on the accrual component of earnings as in Sloan (1996), we study the persistence and pricing of every component of earnings. Our analysis begins with an extended decomposition of earnings into current operating accruals, non-current operating accruals, retained cash flows, earnings (cash flows) that are distributed to debt holders, and earnings (cash flows) that are distributed to equity holders. We then group the first three components of earnings into retained earnings and the last two components of earnings into distributed earnings because we find that investors price the first three components similarly and the last two components similarly.[2] In particular, investors tend to overweight (underweight) retained earnings (distributed earnings) when forming earnings expectations only to be systematically surprised when retained earnings turn out to be less persistent than distributed earnings.

Second, given our decomposition of earnings into five components, we examine the relation among those components. In particular, we pay close attention to the low persistence of accrual and retained earnings and the high persistence of distributed earnings to equity holders. Distributed earnings to equity holders are defined as dividends plus stock repurchases

[1] Some other studies on accruals include Beneish and Vargus, 2002; Dechow and Dichev, 2002; Zach, 2005; Ng, 2005; Khan, 2006; Richardson, Sloan, Soliman and Tuna, 2005, and 2006.

[2] Dechow, Richardson and Sloan (2006) examine the persistence and pricing of free cash flows by decomposing them into three components. While they use a sample period from 1950 to 2003, we use a sample period from 1962 to 2003 because the Compustat data prior to 1962 suffers from survivorship bias (see Fama and French 1992 and Sloan 1996).

minus stock issues (or net stock issues). The finance literature on net stock issues suggests that returns after stock repurchase are high (Ikenberry, Lakonishiok, and Vermaelen 1995), and returns after stock issues are low (Loughran and Ritter 1995). Daniel and Titman (2005) and Pontiff and Woodgate (2006) show that there is a negative relation between net stock issues and equity returns.[3] With our decomposition of earnings, we are able to examine whether the accruals anomaly is directly linked with the net issues anomaly. To our knowledge, this is the first paper in examining the relationship between the accrual (retained earnings) anomaly and the net stock issues anomaly in a unified framework.

Third, we consider the source of the above-mentioned results on retained earnings. For this purpose we decompose retained earnings into their discretionary and non discretionary portions, using the model of Chan, Chan, Jegadeesh and Lakonishok (2006, "CCJL 06" hereafter) that is based on sales growth. The discretionary portion captures the impact of managerial manipulation while the non discretionary portion captures the impact of business conditions. An increase in sales can potentially be coupled with an increase in inventories, accounts receivable, cash and fixed assets raising the nondiscretionary component of retained earnings. Therefore the results from this decomposition should shed lights on the growing literature on earnings quality.

Our results suggest that that there are systematic differences in the persistence among the distinct components of retained earnings and between the distinct components of distributed earnings. Accruals have lower persistence and investors overweight them, consistent with previous findings. Even though retained cash flows have higher persistence than accruals, investors overestimate it as well. In particular, investors act as if the components of retained earnings have similar implications for future profitability, leading to an overvaluation of their differential persistence. For distributed earnings, investors do not distinguish between each component of distributed earnings, correctly anticipating the lower persistence of cash distributions to debt holders but underestimating the higher persistence of cash distributions to equity holders. Thus, investors overestimate the overall lower persistence of retained earnings and underestimate the overall higher persistence of distributed earnings. The former is consistent with that of the findings in the accrual anomaly. The latter is consistent with the "net stock issues" anomaly in the finance literature if we interpret that the anomaly on the cash distribution to equity holders (defined as dividends minus net stock issues) can capture the anomaly on "net stock issues".

A hedge strategy taking a long (short) position in firms that report low (high) retained earnings generates positive abnormal returns. In particular, the return to the strategy is equal to 15.6% and positive in 36 of 40 years examined. In addition, the return to a hedge strategy

[3] Fama and French (2006) have an examination of the net issues anomaly.

taking a long (short) position in firms that report high (low) cash distributions to equity holders is equal to 9.2% and positive in 32 of 40 years examined. However, our results on the relation of the two anomalies suggest that the anomaly on retained earnings largely subsumes the anomaly on distributions to equity holders, casting doubts on the independence of the net stock issuances anomaly found in the finance literature if the anomaly on the cash distribution to equity holders can capture the anomaly on "net stock issues". Additional tests also show that in the presence of retained earnings, total accruals lose their ability to indicate the degree to which investors overestimate the sustainability of current earnings performance.

We find that abnormal returns are earned only from a hedge portfolio strategy taking a long (short) position on low (high) discretionary retained earnings. On the other hand, a hedge portfolio strategy on non discretionary retained earnings does not generate significant abnormal returns. This result supports the earnings quality explanation on the accrual anomaly. However, at the same time we find a potentially important role in some cases for the interaction between the two hypotheses in the generation of abnormal returns. Thus, our results do not completely rule out the role of managerial earnings management.

Our findings have several implications for the existing literature. First, they give a distinct role to retained earnings. This has not been emphasized in previous research, where earnings are typically decomposed into accruals and free cash flows. Our results suggest that the level of retained earnings is a more comprehensive measure of investor overestimation about the sustainability of current earnings performance than the level of total accruals. Second, we provide empirical support to the hypothesis that cash distributions to equity holders are possibly responsible for the, previous documented, underestimation of the persistence of the cash component of earnings. In summary, the results in this paper show that the anomaly on distributed earnings to equity holders (net stock issues) documented in the finance literature may be a manifestation of a larger anomaly on retained earnings. With all the above taken together one can argue that to the extent that the two anomalies are closely related, they are more likely to arise from investor's limited attention or limited understanding on discretionary decisions made by managers.[4]

The reminder of the paper is organized as follows. The next section briefly reviews the literature on the persistence and pricing of the accrual and free cash flow components of earnings. Section 3 provides a detailed description of our research design concerning the implications of retained and distributed earnings for future profitability and market mispricing. In section 4 we present data, sample formation, variables measurement while in section 5 we provide our empirical results. Section 6 summarizes and concludes.

[4] Hirshleifer and Teoh (2003) has a discussion about the effect of investors' limited attention and limited processing power.

2. *Literature Review*

Numerous studies have provided a variety of interpretations of Sloan (1996) work on the accrual anomaly. The anomaly has two parts: why accruals have lower persistence than the free cash flow component of earnings, and why investors are unable to recognize that fact. Studies in the existing literature can be divided in two broad categories on the basis of the approach they adopt. The first set of studies, builds on Sloan's (1996) subjectivity conjecture. In particular, Xie (2001), De Fond and Park (2001) and Kothari (2001) interpret Sloan (1996) results as evidence of manipulation of accruals in earning process, with the implicit assumption that managers exploit discretionary (abnormal) accruals to manipulate earnings. Thomas and Zhang (2002) find that it is driven by inventory accruals while Beneish and Vargus (2002) report that it is driven by income-increasing or positive accruals. Moreover, Dechow and Dichev (2002) conclude that the lower persistence of accruals is attributable to their transitory estimation error. In addition, Richardson, Sloan, Soliman and Tuna (2005, "RSTT 05" hereafter) draw a link between Sloan's (1996) notion of subjectivity and the well-known concept of reliability. Specifically, they provide a comprehensive definition and categorization of accounting accruals in which each accrual category is rated according to its reliability and they document that less reliable accruals leads to lower earnings persistence and that investors do not fully anticipate this earnings persistence, leading to significant security mispricing.

The second set of studies adopts the viewpoint that the differential persistence and mispricing of accruals is applied more broadly to firm's business conditions (growth or correlated economic characteristics with firm growth). Specifically, Fairfield, Whisenant and Yohn (2003a, "FWY 03a" hereafter) find that the lower persistence of the accrual component of earnings is a special case from a more general negative relation between future earnings performance and growth in net operating assets. They suggest that this relation arises from conservative bias in accounting or from the lower rate of economic profits associated with diminishing marginal returns to new investment opportunities, or both. Moreover, they find that market appears to equivalently overprice accruals and growth in non current operating assets and conclude that the accrual anomaly documented in Sloan (1996) is a subset of a larger growth (in net operating assets) anomaly. In follow-up research, Fairfield, Whisenant and Yohn (2003b, "FWY 03b" hereafter) argue that the lower persistence relative to cash flows is driven by growth in investment base that is not matched by growth in income. Variants of this economic explanation are embraced in Cooper, Gulen and Schill (2005) to interpret the negative relation of growth in total assets with future stock return and in Titman,

Wei and Xie (2004) and Anderson, Garcia-Feijoo (2006) studies to interpret the negative association of capital expenditures and future stock returns. In addition, recent research by Zach (2005), Ng (2005), Khan (2005) focuses on economic variables associated with firm growth to interpret Sloan's (1996) results.[5] In particular, Zach (2005) argues that the mispricing of accruals is attributable to various corporate events such as mergers and divestitures, Ng (2005) that it is a compensation for default risk and Khan (2006) that it is subsumed by a four factor model motivated from ICAPM.

In follow up research, Richardson, Sloan, Soliman and Tuna (2006, "RSTT 06" hereafter) decompose accruals into a "growth" and an "efficiency" component and find that both components contribute to the lower persistence of accruals, with the efficiency component having the strongest relation. Their main conclusion is that temporary accounting distortions provide the most compelling explanation for the lower persistence of the accruals. However, "RSTT 06" document that they can rule out a supplementary role for explanations related to firm's business conditions, such as diminishing marginal returns to new investment. Finally, "CCJL 06", consistent with "TZ 02", finds that Sloan's (1996) results are related to inventory accruals. They also decompose working capital accruals into their discretionary and non discretionary portions based on their relation with sales and find that the associated mispricing is primary attributable to earnings management. However, consistent with the explanation related to firm's business conditions, "CCJL 06" also find positive abnormal stock returns for portfolio strategies on accounts payable accruals.

Previous research has focused more on analyzing the informational content of accruals for future profitability and market mispricing than that of free cash flows. Dechow, Richardson and Sloan (2006, "DRS 06" hereafter) conducts a detailed investigations of the persistence and pricing of the free cash flow component of earnings by decomposing them into three distinct categories: retained cash flows (applied to the firm's cash balance), cash flows distributed to debt holders (applied for debt financing) and cash flows distributed to equity holders (applied for equity financing). "DRS 06" demonstrates that the higher persistence of cash component of earnings is due to cash applied for equity financing. They find that stock prices act as if investors correctly anticipate the implications of cash distributions to capital providers (cash that is applied for debt and equity financing) for future profitability and overestimate the persistence of cash that is applied to the firm's cash balance.

While most studies treated accruals and free cash flows as relatively homogenous component of earnings, this paper examines the idea that the well-documented accrual anomaly is consistent with a general market mispricing of retained earnings.

[5] Zach (2005), Ng (2005) and Khan (2005) have considered in their analysis only current operating accruals following Halley (1985) and Sloan (1996) definition of accruals.

3. Research Design

Halley (1985) defined accruals as growth in working capital less depreciation expense.[6] This definition is narrow since it focuses on working capital accruals relating to current net operating assets and ignores accruals relating to non-current net operating assets. FWY 03a" and "FWY 03b" incorporate in their analysis accruals relating to non-current operating assets, but label them as a generic form of growth. Subsequent research by "RSST 05", "DRS 06" and "RSST 06" point out that accruals relating to non-current operating assets are also accounting accruals and developed a more comprehensive definition of accounting accruals. In our analysis, current operating accruals $CACC_t$ are defined as growth in net current operating assets (net working capital) $\Delta NWCA_t$, non current operating accruals $NCACC_t$ [7] as growth in net non current operating assets $\Delta NNCOA_t$ and total accruals $TACC_t$ as growth in net operating assets ΔNOA_t :

To understand better the above measures of accruals, it is useful to distinguish total equity TE_t into net operating assets NOA_t and net financial assets NFA_t :

$$TE_t = NOA_t + NFA_t \tag{1}$$

The most common financial asset is cash holdings (cash and short investments) C_t and the most common financial liability is total debt, which is defined as the sum of short-term debt STD_t and long-term debt LTD_t . Therefore, net financial assets NFA_t are equal to:

$$NFA_t = C_t - STD_t - LTD_t \tag{2}$$

Change in financial assets is defined as change in cash holdings and change in financial liabilities is defined as net financial expense (interest expense minus interest income) NFE_t minus cash flows distributed to debt holders (reduction in short and long term debt) $DIST\_D_t$. Therefore, growth in net financial assets NFA_t is equal to:

$$\Delta NFA_t = \Delta C_t - (\mathrm{NFE}_t - DIST\_D_t) \tag{3}$$

We also distinguish growth in net operating assets into growth in net working capital assets and net non current operating assets and get the following expression for growth in total equity:

$$\Delta TE_t = \Delta \mathrm{NWCA}_t + \Delta \mathrm{NNCOA}_t + \Delta C_t - NFE_t + DIST\_D_t \tag{4}$$

Recall also the standard clean surplus equation:

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[6] This definition is closely related with the definition of operating accruals used in the FASB's Statement of Financial Accounting Standard Number 95 "Statement of Cash Flows'

[7] This definition of accruals differs slightly from the accrual definition used in "RSTT 05" and "RSTT 06" studies in that it considers investments and cash advances.

$$\Delta TE_t = NI_t - DIST\_E_t \quad (5)$$

where:

- NI_t : Net Income at time t.
- $DIST\_E_t$: Cash flows distributed to equity holders at time t.

Substituting equation (4) to the clean surplus equation and assuming that net financial expense is paid in cash we get:

$$\begin{aligned} & NI_t = \Delta \text{NWCA}_t + \Delta NNCOA_t + \Delta C_t + DIST\_D_t + DIST\_E_t \Leftrightarrow \\ & \Leftrightarrow NI_t = CACC_t + NCACC_t + \Delta C_t + DIST\_D_t + DIST\_E_t \end{aligned} \quad (6)$$

With the above-extended decomposition of net income we begin our empirical analysis regarding the persistence and valuation of the components of retained and distributed earnings. Net income will be also decomposed into total retained earnings by aggregating current operating accruals, non current operating accruals and retained cash flows and into total distributed earnings by aggregating cash flows distributed to debt holders and equity holders:.

$$NI_t = RE_t + DIST_t \quad (7)$$

To the best of our knowledge, this is the first paper in the existing literature that uses the above two decompositions as basis for empirical analysis. Prior research focused on the decomposition of net income into total accruals and into total free cash flows:

$$NI_t = TACC_t + FCF_t \quad (8)$$

We organize our hypothesis tests into four groups. First, we compare the persistence of each component of the net income. Second, for the pricing tests, we examine whether information about the persistence of these components is reflected in stocks prices using the Mishkin framework (1983). Thirdly, we investigate whether retained earnings reflects more information than total accruals about the degree to which the sustainability of current earnings performance provokes excessive investor optimism. Finally, we examine the source of the anomaly on retained earnings by decomposing them into their discretionary and non discretionary portions using the model of "CCJL 06"

Let us develop our hypotheses carefully. Starting, with the components of retained earnings, we predict that high current and non current operating accruals indicate low sustainability of current earnings performance since they are often derived from earnings management. Earnings management can arise from the violation of accounting rules with respect to the nature, timing and magnitude of revenues and expenses recognition or from empire building incentives. In the first case, high current and non current operating accruals may arise as managers violate accounting principles to shift reported income from the future to the present and vice versa while in the second case as they over-invest. However, even if

managers do not manage earnings, high current and non current operating accruals contain adverse information about firm's business conditions such as diminishing marginal returns to increased investment.

For retained cash flows, their impact for future profitability is ambiguous. On the one hand, high retained cash flows may have low persistence if they are derived by earnings management (accounts receivables securitizations, transfers in and out of trading securities, delay of payments to suppliers). High retained cash flows may also have a negative impact on future profitability since they could be associated with future overinvestment (Jensen, 1986; Blanchard, Rhee and Summers, 1993; Richardson, 2006)[8]. On the other hand, according to capital rationing theory high cash holdings enable managers to make optimal investment with less cost and obtain better future profitability (Myers and Majluf, 1984).[9] Thus, the implications of retained cash flows for future profitability are not clear. However, we predict that they have higher persistence relative to current and non current operating accruals due to their higher reliability and their lower measurement error.

For distributed earnings, earnings (cash flows) distributed to debt holders are net debt (principal) repayments and earnings (cash flows) distributed to equity holders typically are dividends minus net stock issues. Cash flows distributed to debt holders are subject to firms' financing need and debt financing are typically drawn before firms do equity finance. Even though managers could increase or reduce dividends and decide on share repurchases to signal higher future earnings performance (Bartov, 1991; Fenn and Liang, 2001), firms seldom lower dividends due to the negative signal to the market. Thus, we expect a higher persistence for cash distributions to equity holders relative to cash distributions to debt holders.

We now turn, to our hypothesis regarding the valuation by the market of the differential persistence of the components of earnings. Most of past research is in agreement that investors overestimate the persistence of accruals, however there is no discussion about how investors perceive retained cash. Therefore, we conjecture that, if investors with limited attention to earnings management or business conditions do not distinguish among the components of retained earnings, they could overestimate their differential persistence, thus not only the persistence of accruals but also the persistence of retained cash. In a similar fashion we formulate a hypothesis about the market valuation of distributed earnings. Our conjecture now is that investors with limited attention would treat homogeneously the

[8] Jensen (1986) documents that high cash holdings enable managers to act opportunistically and indulge in "value-destroying activities" and to "over-invest and misuse the funds". Blanchard, Rhee and Summers (1993) and Richardson (2006) suggest that managers of firms with high cash holdings tend to waste them in negative NPV projects.

[9] Myers and Majluf (1984) argue that high cash holdings can benefit a firm by reducing the cost of asymmetry that places a wedge between the costs of internal and external capital.

components of distributed earnings, underestimating the persistence of cash distributions to equity holders (dividends minus net stock issues) since its persistence is higher than that of cash distribution to bond holders.

The predicted negative association of retained earnings with future abnormal stock returns could be consistent with investor's inability to understand earnings management or firm's business conditions. In order to provide additional evidence on the role of these two competing hypotheses in explaining the anomaly on retained earnings, we decompose them into their non discretionary and discretionary portions. For this purpose, we use the model of "CCJL 06" that is based on sales growth. An increase in sales for example, give rise to current operating assets, non current operating assets, cash and cash equivalents, thereby raising the non discretionary component of retained earnings. Thus, if the anomaly is driven from investor's limited attention on adverse information about firm's business conditions, then abnormal returns should be earned only on the non discretionary portion of retained earnings that is related to sales growth. On the other hand, if the anomaly is driven from investor's limited attention on earnings management, then only the discretionary portion that is unrelated to sales growth should generate abnormal returns. However, we examine also the contribution of an interaction term between the two portions in the prediction of abnormal returns, since we recognize that the two hypotheses might not be mutually exclusive and probably co-exist.

4. Data, Sample Formation and Variable Measurement.

Our empirical tests are conducted using data financial statement data from the Compustat annual database and monthly stock return data from CRSP monthly files. The CRSP file provides data on NYSE and AMEX firms from 1926, while the Compustat database provides data on a similar population from 1950. However, we eliminate pre-1962 observations since the Compustat data prior 1962 suffers from survivorship bias (Fama and French, 1992; Sloan, 1996) and therefore, our sample covers all firm-year with available data on Compustat and CRSP for the period 1962-2003. Moreover, we exclude all firm year observations with SIC codes in the range 6000-6999 (financial companies) because the discrimination between operating and financing activities is not clear for these firms. Furthermore, we require as in Vuolteenaho (2002) all firms to have a December fiscal year end, in order to align accounting variables across firms and obtain tradable investment strategies for our subsequent portfolio assignments. Finally, we eliminate firm year observations with insufficient data on Compustat to compute the primary financial statement variables used in our tests. These criteria yield final sample sizes of 150.896 firm year observations with non missing financial statement and stock return data.

Earnings are defined as one-year ahead annual net income (Compustat data item 18). Moreover, we use the indirect method (balance sheet) method to measure the primary financial statement variables as follows:

$CACC_t = \Delta$ [(item 4 – item 1) – (item 5 – item 34)]

$NCACC_t = \Delta$ [(item 6 – item 4) – (item 181 – item 5 – item 9)]

$TACC_t = CACC_t + NCACC_t$

$\Delta C_t = \Delta$(item 1)

$DIST\_D_t = -\Delta$ (item 34 + item 9)

$DIST\_E_t =$ item 18 - Δ(item 6 – item 181)

$FCF_t = \Delta C_t + DIST\_D_t + DIST\_E_t$

$RE_t = CACC_t + NCACC_t + \Delta C_t$

$DIST_t = DIST\_D_t + DIST\_E_t$

Consistent with previous research, earnings are deflated by contemporaneous average total assets, converting them into return on assets (an income measure to a profitability measure). Moreover, each component of earnings is deflated by contemporaneous average total assets and then is winsorized at +1 and –1 in order to eliminate the influence of extreme outliers. In particular, we conduct the winsorization on $CACC_t$, $NCACC_t$, ΔC_t , $DIST\_D_t$, $DIST\_E_t$ and then aggregate them to construct $TACC_t$, FCF_t , $DIST_t$, RE_t , NI_t .[10]

The annual one-year ahead raw stock returns RET_{t+1} are measured using compounded 12-month buy-hold returns inclusive of dividends and other distributions from the CRSP monthly files. We require at least a four-month gap between the portfolio formation month and the fiscal year end (e.g. December – May) to ensure that investors have financial statement data prior to forming portfolios.[11] Then, size-adjusted returns $ARET_{t+1}$ are calculated by deducting the value weighted average return for all firms in the same size-matched decile, where size is measured as the market capitalization at the beginning of the return cumulation period. The size portfolios are formed by CRSP and are based on size deciles of NYSE and AMEX firms. If a firm is delisted during our future return window, then the CRSP's delisting return is considered for the calculation of the one-year ahead raw stock

[10] The results are qualitatively similar without winsorization. However, the winsorized results have lower standard errors.

[11] Alford , Jones and Zmijewski (1994) argue that four months after the fiscal year end, all firm's financial statement data are publicly available.

return, and any remaining proceeds are re-invested in the CRSP value-weighted market index. This mitigates concerns with potential survivorship biases. If a firm is delisted during our future return window as a result of poor performance (delisting codes 500 and 520-584) and the delisting return is coded as missing by CRSP, then a delisting return of -100% is assumed.[12]

5. Results

5.1 Descriptive Statistics

Table 1 reports univariate statistics for key variables that are organized around the decompositions of earnings. The mean of current operating accruals, non-current operating accruals, total accruals, retained cash flows and retained earnings are (0.013), (0.045), (0.058), (0.004) and (0.061) respectively. The median values are (0.008), (0.025), (0.044), (0.001) and (0.049) respectively. These positive mean and median values indicate that the firms have been growing their asset bases by retaining earnings during the sample period. However, the mean values of cash flows that are distributed to debt-holders, cash flows that are distributed to equity holders and distributed earnings are (-0.027), (-0.022), and (-0.049) respectively. The median values of those variables are (-0.002) and (-0.006) respectively. These negative mean and median values indicate that the firms have been growing their asset bases by raising new capital during the sample period. Overall, firms have been growing by retaining earnings and raising new capital. The standard deviations of retained earnings and distributed earnings are (0.233) and (0.195) respectively. For the standard deviation of the components of retained earnings, non-current operating accruals have the highest standard deviation (0.158), followed by retained cash flows (0.127) and current operating accruals (0.105). Hence, the total variation in retained earnings is not dominated by one of its components. Furthermore, the standard deviation of earnings that are distributed to debt-holders and equity holders are (0.134) and (0.141) respectively, indicating that total variation of distributed earnings is not dominated by one of its components. In summary, we can argue that each component of earnings represents an economically significant source of variation in total earnings.

Table 2 presents pair-wise (Pearson) correlations for earnings and its components. There is a negative correlation between retained and distributed earnings (-0.652). Focusing on the components of retained earnings, the negative correlation of non-current operating accruals with distributed earnings (-0.59) is much stronger than that of current operating

[12] Note that we replicate all results by eliminating these firms from the sample or following Shumway (1997) and assuming delisting return of -30% or assuming a zero delisting return. Our results remain qualitatively similar with respect to these three alternative procedures.

accruals (-0.264) and retained cash flows (-0.18). This finding implies that the strong negative correlation between retained and distributed earnings is mainly due to non-current operating accruals. Moreover, the correlation of cash flows distributed to debt-holders with retained earnings (-0.538) is stronger than that of cash flows distributed to equity holders (-0.352). In addition, retained earnings are more highly correlated with non-current operating accruals (0.716) and retained cash flows (0.522), than with current operating accruals (0.461). These correlations indicate that current operating accruals, non-current operating accruals and retained cash flows represent significant sources of variation in retained earnings.

Table 3 reports descriptive statistics of selected financial characteristics of decile portfolios formed by sorting firms on the magnitude of retained earnings. Firms are ranked annually and assigned in equal numbers to portfolios (deciles). Numbers in Table 3 are time series averages of yearly mean and median values. Panel A of table 3 reports the portfolio mean (median) values for total earnings, retained earnings, distributed earnings, total accruals, and free cash flows. It shows that earnings performance is positively related to retained earnings since the mean (median) value of total earnings is -0.145 (-0.112) for the lowest portfolio and 0.057 (0.060) for the highest portfolio. Retained earnings vary from about a mean (median) of -0.231 (-0.182) in the lowest decile to 0.442 (0.393) in the highest decile. Distributed earnings, vary from about a mean (median) of 0.086 (0.073) in the lowest portfolio to -0.340 (-0.307) in the highest portfolio. There is also an increasing trend in total accruals and a decreasing trend in free cash flows across deciles.

Panel B and C of table 3 report results on the components of retained earnings and distributed earnings. From panel B, it is shown that current operating accruals, non-current operating accruals and retained cash flows increase monotonically across deciles. In particular, current operating accruals increase from about a mean (median) of -0.065 (-0.043) in the lowest portfolio to 0.099 (0.075) in the highest portfolio. Non-current operating accruals increase from about a mean (median) of -0.088 (-0.057) in the lowest portfolio to 0.259 (0.237). Moreover, the lowest decile has a mean (median) value of retained cash flows equal to -0.078 (-0.042), while the highest decile has a mean (median) value of retained cash flows equal to 0.083 (0.037). In contrast, the components of distributed earnings decrease across deciles. Specifically, cash flows distributed to debt-holders decrease from about a mean (median) of 0.077 (0.043) in the lowest portfolio to -0.212 (-0.195) in the highest portfolio. Finally, the mean (median) value of cash flows distributed to equity holders decrease from 0.009 (0.005) for the lowest decile to -0.173 (-0.121) for the highest decile.

5.2 Persistence Results

Table 4 presents the results on the persistence coefficients of earnings and its

components. We use the seemingly unrelated regression (SUR) method to control for possible cross sectional correlation and variance heterogeneity across firms.[13]

The first column of table 4 presents results from a simple autoregression on earnings performance. Consistent with prior research, profitability is slow mean reverting with a coefficient a_1 equal to 0.714. The respective t-statistic strongly rejects the null hypothesis that profitability is purely transitory. Column 2 of table 4 shows results based on the decomposition of net income into total accruals and free cash flows. The persistence coefficient on total accruals (a_1 = 0.655) is less than the persistence coefficient on free cash flows (a_2 = 0.749), confirming the well-known findings that the accrual component of earnings is less persistent than the free cash flow component of earnings. A test on the equality of the coefficients suggests a significant difference between accruals and free cash flows in their implications for future earnings performance.

Column 3 of table 4 presents results based on the extended decomposition of earnings. Consistent with "RSTT 05", the persistence coefficient of current operating accruals (a_1 = 0.613) is less than that of non-current operating accruals (a_2 = 0.633). A test on the equality of the coefficients suggests a significant difference between current operating accruals and non current operating accruals in their implications for future earnings performance (F = 11.22). This finding casts doubt on "FWY 03a" and "FWY 03b" conclusion that there are no significant differences between the persistence of current and non-current operating accruals. The persistence coefficient of non-current operating accruals (a_2 = 0.633) is also less than that of retained cash flows (a_3 = 0.745) with an F-test rejecting the null hypothesis that the two coefficients are equal. In addition, the persistence coefficient of earnings that are distributed to debt holders (a_4 = 0.669) is less than that of earnings that are distributed to equity holders (a_5 = 0.789) with an F-test rejecting the null hypothesis that the two coefficients are equal. Note that all the tabulated F-tests in column 3 of table 4 indicate the significance of differential persistence among all components of earnings based on our extended decomposition. Thus, these findings suggest that there are systematic differences in the persistence among the components of retained earnings and between the components of distributed earnings.

In column 4 of table 4, profitability is disaggregated into retained and distributed earnings. The results imply that the persistence coefficient of retained earnings (a_1 = 0.684) is less than that of distributed earnings (a_2 = 0.761). The null hypothesis of equality between

[13] In supplemental tests we perform analysis using the Fama-Mc Beth (1973) procedure, by estimating annual regressions and obtaining t-values based on the mean and standard deviations of coefficient estimates. The results remain similar with respect to these procedures.

the two persistence coefficients is strongly rejected. These findings indicate that total retained earnings are less persistent than total distributed earnings.

5.3 Pricing Results

In this section we present pricing tests to investigate the degree to which the information about the persistence of the component of earnings is reflected in stock prices. The test is developed by Mishkin (1983)[14] and is based on the basic implications of market efficiency that abnormal returns are zero in expectation:

$$E\left(ARET_{t+1}\middle|F_t\right)=0 \tag{9}$$

And a model that satisfies the efficient market condition in (9):

$$\left(ARET_{t+1}\middle|F_t\right)=\beta\left(\mathrm{X}_{\tau+1}-\mathrm{X}^{*}_{\tau+1}\right)+\varepsilon_{t+1} \tag{10}$$

where $ARET_{t+1}$ is the abnormal return from time t to time t+1. F_t is the information set (publicly available) at the end of period t. X_{t+1} is a variable relevant for the valuation of the stock at time t. X^{*}_{t+1} is the rational forecast of X_{t+1} at time t. ε is the disturbance with the property $E\left(\varepsilon_{t+1}\middle|F_t\right)=0$ and β is the valuation response coefficient.

The implication of market efficiency highlighted by this model is that only unanticipated changes in X_{t+1} can be correlated with $\left(ARET_{t+1}\middle|F_t\right)$. In the model, the relevant variable X is earnings and β is the earnings response coefficient. Therefore, one can estimate a system by combining the specification of each forecasting equation (decomposition of earnings) in table 4 and the rational pricing model in equation (10).

This framework allows us to simultaneously estimate the actual persistence parameters (forecasting coefficients) of the component of earnings with the corresponding persistence parameters (valuation coefficients). The two equations of each system are first jointly estimated by imposing no constraints on the forecasting and valuation coefficients. To test whether the forecasting are significantly different from the valuation coefficients obtained before, the two equations of each system are jointly estimated by imposing the rational pricing constraints. The following likelihood ratio statistic is distributed asymptotically as $x^2(q)$, under the null hypothesis of market efficiency:

$$2n\log\left(SSR^{C}/SSR^{U}\right)$$

[14] For further details on this framework, see Mishkin (1983), and Abel and Mishkin (1983). This framework has been implemented in Sloan (1996), "FWY 03a" and "DRS 06" studies.

where q is the number of rational pricing constraints, n is the number of observations. SSR^C and SSR^u are the sum of squared residuals from the constrained and the unconstrained systems.

Table 5 reports the estimation results of the four systems from the combination of each decomposition of earnings and the rational pricing model in equation (10)[15]. Note that all persistence parameters are identical in magnitude to those in table 4.

Panel A of table 5 presents the results from a simple autoregression on earnings performance. The valuation coefficient of earnings (a_1^* = 0.798) is higher than the forecasting coefficient (a_1 = 0.714). Market efficiency implies that the valuation coefficient should be equal to the forecasting coefficient ($a_1^* = a_1$). The likelihood test for market efficiency is 27.30 rejecting the null hypothesis of market efficiency. This finding indicates that the post announcement drift is unique to quarterly earnings changes. It is also in contrary with Sloan (1996) finding, that investors correctly anticipate the average persistence of current earnings performance, instead suggesting that they overestimate it.

Panel B of Table 5 provides the results based on the decomposition of earnings into total accruals and free cash flows. The implied persistence parameter on total accruals (a_1^* = 0.887), exceeds its actual persistence parameter (a_1 = 0.655). This suggests that investors overestimate total accruals relative to its ability to predict future profitability that is consistent with the findings in Sloan (1996). Statistically, the apparent overestimation of total accruals is significant with likelihood ratio statistic being 148.07. The valuation coefficient of free cash flows, however, is similar to the forecasting coefficient. The null hypothesis of rational pricing of free cash flows cannot be rejected. Moreover, a test of overall market efficiency ($a_1^* = a_1$, $a_2^* = a_2$) suggests that we are able to reject the null hypothesis that investors rationally price total accruals and free cash flows. In addition, a test of difference in valuation of total accruals and free cash flows indicates that investors distinguish between their different implications for future profitability. Thus, the findings in panels A and B appear to be in contrary with Sloan (1996) findings that investors fixate on earnings, failing to distinguish between the different properties of the accrual and free cash flow component of earnings. Instead, investors overestimate the persistence coefficient of total accruals not only higher than its true coefficient but also higher than that of the free cash flow.

Panel C provides our main results based on the extended decomposition of earnings. For the components of retained earnings, the persistence coefficients of current operating

[15] In supplemental tests we perform analysis using the Fama-Mc Beth (1973) procedure, by estimating annual regressions, obtaining t-values based on the mean and standard deviations of the coefficient estimates and taking the time series of differences between the coefficients estimates from the forecasting and valuation equations. The results remain similar with respect to these procedures.

accruals, non-current operating accruals and retained cash holding are 0.613, 0.633 and 0.745 respectively. Investors significantly overestimate the persistence of current operating accruals, non-current operating accruals and retained cash holding, with valuation coefficients at 0.856, 0.842 and 0.875. To test for differential severity in the implied persistence parameters of current operating accruals, non current operating accruals and retained cash holdings we impose also the rational pricing constraint ($a_1^* = a_2^* = a_3^*$) and find with likelihood ratio statistic of 1.52 that investors act as if all components of retained earnings have similar implications for future profitability.

For the components of distributed earnings, however, stock prices behave as if investors correctly anticipate the persistence of cash flows distributed to debt-holders with a pricing coefficient of 0.664 versus the actual persistence coefficient of 0.669 and significantly underestimate the persistence of cash flows distributed to equity holders with a pricing coefficient of 0.713 versus the actual persistence coefficient of 0.789. To test for equality in the valuation coefficients of cash distributions to debt holders and equity holders we impose also the rational pricing constraint ($a_4^* = a_5^*$) and find with likelihood ratio statistic of 3.54 that investors act as if both components of distributed earnings have similar levels of persistence. A test on overall market efficiency ($a_1^* = a_1$, $a_2^* = a_2$, $a_3^* = a_3, a_4^* = a_4, a_5^* = a_5$) rejects the null hypothesis that the market rationally prices all the components of earnings performance.

In summary, the above results suggest the market overestimates the persistence of current operating accruals, non-current operating accruals and retained cash flows. They also cast doubt on prior research treatment of accruals and free cash flows as completely homogenous components of earnings. In contrast, the findings suggest that investors overestimate the sustainability of current earnings performance due to the fact that they do not distinguish and similarly price the differential persistence of the distinct components of retained earnings. This result is consistent with investor's limited attention or limited processing power on earnings management or firm's business conditions. Our findings also suggest that investors behave as if both components of distributed earnings have similar levels of persistence, leading to a correct anticipation of the lower persistence of cash distributions to debt holders and an underestimation of the higher persistence cash distributions to equity holders.

Panel D presents results for the new decomposition into retained and distributed earnings. The implied persistence coefficient on retained earnings at 0.865 is statistically higher than its corresponding actual persistence coefficient at 0.684. Moreover, the valuation

coefficient of distributed earnings is statistically significantly lower than its corresponding persistence coefficient. These findings confirm the results in Panel C.

5.4 Stock Return Results

The results from our pricing tests suggest that abnormal returns could be generated by exploiting investors' inability to correctly anticipate the persistence of retained earnings and the persistence of cash distributions to equity holders. In particular, a trading strategy taking a long (short) position in firms that report low (high) retained earnings could generate positive abnormal returns. Moreover, a trading strategy taking a long (short) position in firms that report high (low) distributed earnings to equity holders could generate positive abnormal returns. Therefore, the economic significance of the above anomalies can be assessed by investigating the returns of trading strategies based on the magnitude of retained earnings and cash distributions to equity holders. For this purpose we rank firms annually on retained earnings and distributed earnings to equity holders, and then allocate them into ten equal-sized portfolios (deciles) based on these ranks. Then, we compute future abnormal (size-adjusted) returns for each portfolio for each of the 40 years in our sample. Finally, we compute the hedge portfolio returns for the trading strategies based on the magnitude of retained earnings and cash distributions to equity holders.

Table 6 presents the average of the 40 annual abnormal returns for each portfolio based on the magnitude of retained earnings and cash distributions to equity holders, along with their associated t-statistics. From the first column of table 6 consistent with previous results, we find that there is a negative relation across deciles based on the magnitude of retained earnings and abnormal returns. The abnormal returns range from 8.4 % (t=2.926) for the lowest portfolio based to -7.2% (t=-4.81) for the highest portfolio. The return to a hedge portfolio consisting of a long position in the lowest decile and a short position in the highest decile is equal to 15.6 % (t=4.822). From the second column of table 6 consistent with previous results, we find that there is a positive relation across deciles based on the magnitude of distributed earnings to equity holders and abnormal returns. Although the relationship is not linear, still the abnormal returns range from -5% (t=-2.131) for the lowest portfolio to 4.2% (t=4.722) for the highest portfolio. The return to a hedge portfolio consisting of a long position in the highest decile and a short position in the lowest decile is equal to 9.2% (t=3.375). Therefore, the average profit from a portfolio strategy based on the magnitude of retained earnings is 71.1% higher than that based on the magnitude of distributed earnings to

equity holders. However, in unreported tests we find that the difference between the abnormal returns generated from the two strategies (6.4 %) is not statistically significant (t=1.313)[16].

Figures 1 and 2 provide evidence on the stability of the abnormal returns to the trading strategies. Figure 1 plots the annual hedge portfolio abnormal returns generated from the trading strategy based on the magnitude of retained earnings. The hedge portfolio return is positive in 36 of the 40 years examined, illustrating that the relation is fairly stable over time. Figure 2 plots the annual hedge portfolio abnormal returns generated from the trading strategy based on the magnitude of distributed earnings to equity holders, broken down by year. The strategy is profitable in the great majority of years (32 out of 40).

5.5 Retained Earnings vs. Total Accruals

In this section, we investigate whether retained earnings reflect more information than total accruals about the degree to which the sustainability of current earnings performance provokes excessive investor optimism. Table 7 provides results from a test conducted with the Mishkin approach on whether the market efficiently valuates the implications of retained earnings and distributed earnings for future profitability, after controlling for total accruals[17]. It is shown that the valuation coefficient of retained earnings is 0.875, statistically significantly higher than its persistence coefficient at 0.744.[18] The valuation coefficient of distributed earnings at 0.700 is statistically lower than its corresponding persistence coefficient at 0.751. In addition, the implied persistence parameter on total accruals is -0.014, insignificant and lower than its corresponding actual persistence parameter at -0.088. However, we impose the rational pricing constraint $\left(a_1^* = a_3^*\right)$ and find with a likelihood ratio statistic of 450.65 no similarities between the implied persistence coefficients of total accruals and retained earnings. Furthermore, we find with a likelihood ratio statistic of 114.46 that the overestimation of the persistence of retained earnings ($a_1^* - a_1$ = 0.131) is significantly higher than the overestimation of the persistence of total accruals ($a_3^* - a_3$ = 0.074). These findings indicate that when total accruals are included as control variable, investors distinguish between the implications of retained earnings and total accruals for future profitability and overestimate the persistence of retained earnings significantly higher than they overestimate

[16] The results are available from the authors on request.

[17] A similar test has been conducted in Hirshleifer, Hou, Teoh and Zhang (2004) to investigate whether the market efficiently valuates the implications of accruals and cash flows for future profitability, after controlling for the level of net operating assets.

[18] In supplemental tests we perform analysis using the Fama-Mc Beth (1973) procedure, by estimating annual regressions, obtaining t-values based on the mean and standard deviations of the coefficient estimates and taking the time series of differences between the coefficients estimates from the forecasting and valuation equations. The results remain similar with respect to these procedures.

the persistence of total accruals. In other words, investors view retained earnings much too positively than total accruals in forecasting future profitability. Therefore, our evidence indicates that retained earnings is a more comprehensive measure of investor overestimation about the sustainability of current earnings performance that captures information beyond that contained in total accruals.

5.6 Retained Earnings vs. Distributed Earnings to Equity Holders

So far, the anomalies on retained earnings and distributed earnings to equity holders have been examined independently from each other. In the accounting literature, more attention has been paid to the accruals anomaly while in the finance literature, recent studies suggest returns after stock repurchase are high, and returns after stock issues are low.[19] In order to investigate the extent to which these two anomalies overlap with or differ from each other we consider control hedge, non-overlap hedge and joint hedge strategies.[20] To implement these two-dimensional strategies, we sort stocks into three groups, the bottom 20 percent (Group 1), middle 60 percent (Group 2), and top 20 percent (Group 3) for both retained earnings and distributed earnings to equity holders. Thus, firms are assigned into three final quintiles based on retained earnings ($RE_t(1)$, $RE_t(2)$, $RE_t(3)$) and cash distributions to equityholders ($DIST\_E_t(1)$, $DIST\_E_t(2)$, $DIST\_E_t(3)$)[21].

Panel A of Table 8 presents the average of the 40 annual abnormal (size-adjusted) returns for each quintile, along with their associated t-statistics. Consistent with prior findings, the unconditional hedge return for retained earnings is equal to 11.2% and statistically significant (t=4.974). For distributed earnings to equity holders, it is equal to 6.4% and statistically significant (t=2.83). In unreported tests, however, the difference between the two generated hedge returns (4.8 %) is not statistically significant (t=1.345)[22].

Panel B of Table 8 reports the abnormal returns for each combination derived from the intersection of these quintiles, along with their associated t-statistics. Note that the reported abnormal returns are generally statistically significant except for the extreme ($RE_t(1)$, $DIST\_E_t(1)$ and ($RE_t(3)$, $DIST\_E_t(3)$ intersections.

Under the control hedge strategies, we assess whether the effect of retained earnings survives after holding the effect of distributed earnings to equity holders constant and vice-

[19] Ritter (2003) has an excellent survey on this topic.
[20] Collins and Hribar (2002) and Desai, Rajcopal and Venkatachalam (2004) have used this approach to address different questions.
[21] Using quintile analysis leads to lower standard errors in t-statistics for hedge returns across two-dimensional strategies than decile analysis. This approach has been also used by other studies in the accounting and the finance literature. However, the results are qualitatively similar with decile analysis.
[22] The results are available from the authors on request.

versa. . The abnormal returns to the control hedge strategies are reported in panel C of table 8. The generated abnormal returns from the strategy on retained earnings are 7.7% (t=2.239), 9.9% (t=3.545) and 8.8% (t=4.046) across $DIST\_E_t(1)$, $DIST\_E_t(2)$ and $DIST\_E_t(3)$ quintiles, respectively. Thus, the strategy on retained earnings is profitable, after controlling for distributed earnings to equityholders. On the other hand the strategy on cash distributions to equity holders does not generate significant abnormal returns across $RE_t(1)$ and $RE_t(2)$ quintiles. Note also, that the control hedge return of the strategy for firms with high retained earnings ($RE_t(3)$) quintile is positive (4.6%) and statistically significant (t=1.904) only at the 10% level. Thus, cash distributions to equity holders are not significantly related with future returns, after controlling for retained earnings.

Under the non-overlap hedge strategy, we assess whether the effect of retained earnings survives over the effect of distributed earnings to equity holders and vice-versa, after eliminating firms in convergent extreme intersections where the two anomalies have the same prediction. Thus, for retained earnings we form a non-overlap hedge strategy for retained earnings without considering firms in the ($RE_t(1), DIST\_E_t(3)$) intersection as well as firms in the ($RE_t(3), DIST\_E_t(1)$) intersection. Similarly, we form a non-overlap hedge strategy for cash distributions on equity holders after eliminating firms in the ($DIST\_E_t(3)$, $RE_t(1)$) intersection as well as firms in the ($DIST\_E_t(1)$ $RE_t(3)$) intersection. The abnormal returns to the non-overlap hedge strategies are reported in panel D of Table 8. We see that the abnormal return earned from the non-overlap hedge strategy on retained earnings is positive (8.6%) and statistically significant (t=2.956). However, the generated abnormal return from the non-overlap hedge strategy on cash distributions to equity holders is not statistically significant. Thus, cash distributions to equity holders do not have predictive power for future returns, after eliminating firms in convergent extreme intersections where the two anomalies have the same prediction.

Under the joint hedge strategy, we assess whether the combination of the two effects, reveals a more extreme form of market mispricing, than of each effect alone. Panel E of table 8 reports a joint hedge strategy on retained earnings and distributed earnings to equity holders. The hedge return of joint strategy taking a long position in the ($RE_t(1)$, $DIST\_E_t(3)$) intersection and a short position in the intersection ($RE_t(3), DIST\_E_t(1)$) is positive (13.5%) and statistically significant (t=6.435). Note, that the difference between the generated hedge returns from the joint strategy and the strategy on retained earnings only is 2.3% and not statistically significant (t=1.001), while the difference between the generated hedge returns from the joint strategy and the strategy on cash

distributions to equity holders only is 7.1% and statistically significant (t=3.748). Thus, a joint strategy that exploits both anomalies generates larger abnormal returns than those associated only with cash distributions to equity holders.

In summary, our evidence indicates that the anomaly on distributed earnings to equity holders found in the finance literature is subsumed by the anomaly on retained earnings. Note that while we have not yet assess the sources of this mispricing, our findings suggest a simplified representation of the accrual anomaly documented in the accounting literature and the anomaly on distributed capital (dividends minus net stock issues) documented in the finance literature as a manifestation of a general market mispricing on retained earnings.

5.7 Decomposition of Retained Earnings

The anomaly on retained earnings could be consistent with investor's limited attention or limited processing power on earnings management or on adverse information about firm's business conditions. In order to distinguish between these two competing hypotheses, we decompose retained earnings into their discretionary and non discretionary portions and examine their hedge portfolio returns.[23] The discretionary portion captures the impact of managerial manipulation while the non discretionary portion captures the impact of business conditions. Thus, if the anomaly is consistent with investor's limited attention or limited processing power on earnings management, we should find positive abnormal returns only on a hedge portfolio strategy taking a long (short) position on low (high) discretionary retained earnings. If the anomaly is driven from investor inability to understand firm's business conditions, then positive hedge abnormal returns should be earned only from a strategy taking a long (short) position on low (high) non discretionary retained earnings. However, we investigate also the contribution of an interaction term between the discretionary and non discretionary portion of retained earnings in the generation of hedge portfolio abnormal returns, since we recognize that the two hypotheses might not be mutually exclusive and probably co-exist.

For the decomposition, we use the model of "CCJL 06"[24] that is based on the idea that the expected levels of net operating assets and financial assets (cash and cash equivalents) of a firm are closely related to the level of current sales S_t as follows[25]:

[23] The method of decomposing earnings into their discretionary and non discretionary portions is often used in the accounting literature to detect earnings management (see Jones, 1991). However, it is a controversial issue since any misspecification in the decomposition introduces measurement errors in each estimated portion (see, Dechow, Sloan and Sweeney, 1995, Guay, Kothari and Watts, 1996 and Kothari, 2005).

[24] Xie (2001) uses the Jones (1991) model to decompose accruals into their discretionary and non discretionary components and find results similar to ours. In the Jones (1991) model, non discretionary

$$E_t(NOA_t) = \frac{\sum_{k=1}^{5}(NOA)_{t-k}}{\sum_{k=1}^{5} S_{t-k}} S_t \quad (16)$$

$$E_t(C_t) = \frac{\sum_{k=1}^{5}(C)_{t-k}}{\sum_{k=1}^{5} S_{t-k}} S_t \quad (17)$$

In the above equations, the levels of net operating assets and financial assets are assumed to be stable proportions of firm sales. To smooth out transitory fluctuations in these relations we estimate these proportions as the ratios of a moving average of the past five years of the actual levels of net operating assets and financial assets to a moving average of the past five years of sales. Then, the non discretionary portion of retained earnings that reflects firm's business conditions is defined as the difference between the expected levels of net operating assets and financial assets and their most recent actual levels:

$$NDRE_t = E_t(NOA_t) - NOA_{t-1} + E_t(C_t) - C_{t-1} \quad (18)$$

The discretionary portion of retained earnings that captures earnings management is then defined as the difference between the current actual levels of net operating assets and financial assets and their expected levels:

$$DRE_t = NOA_t - E_t(NOA_t) + C_t - E_t(C_t) \quad (19)$$

In Table 9 we report the average of the 36 annual abnormal returns for each portfolio based on the magnitude of the discretionary portion of retained earnings, non discretionary portion of retained earnings and the interaction term between the two portions[26]. The first column on table 9 reports that there is a negative relation across deciles based on the magnitude of discretionary retained earnings and abnormal returns. The abnormal returns range from 5.5% (t=3.132) for the lowest portfolio based to -4.8% (t=-3.453) for the highest portfolio. The return to a hedge portfolio consisting of a long position in the lowest decile and a short position in the highest decile is equal to 10.3% (t=5.516). Moreover, Figure 3 indicates that this negative relation is fairly stable over time since the hedge portfolio return is positive in 31 of the 36 years examined. However, the results on the second column of Table 9 show that the hedge portfolio return based on non discretionary retained earnings is negative (-2.7%) and statistically insignificant (t=-1.455). Finally, from the results on the third column

(discretionary) accruals are modeled as the fitted values (residuals) regressions of accruals on variables that capture firm's business conditions such as sales growth. However, in our work we follow the approach of "CCJL 06", since we recognize that few firms have sufficiently long time series to ensure a reliable estimation of a regression model to extract the discretionary and non discretionary portion of each component of retained earnings.

[25] Sales S_t are measured with Compustat data item 12

[26] The sample for these tests consists of firms for a 36-year period from 1967 to 2003 due to the data requirements for the estimation of the two portions.

of Table 9 we observe that the hedge portfolio return on the interaction term is positive (3.5%) and statistically significant (t=1.893) only at the 10% level.

In summary, the above results are consistent with the earnings management hypothesis but in contrast with the hypothesis associated with adverse information about firm's business conditions. This suggests that the anomaly on retained earnings arises from investor's limited attention managerial violation of accounting rules and managerial empire building tendencies and limited cognitive power to assess separately the the different implications of the components of retained earnings for future profitability. The results from the interaction term indicate in some cases the two hypotheses might not be mutually exclusive and probably co-exist. However, the evidence is not particularly strong.

6. Conclusion

Sloan (1996) in his seminal paper shows that investors overestimate (underestimate) the lower (higher) persistence of the accruals (cash flows). Kothari (2001) documents that a central puzzle in capital market based accounting research, is to understand this conflicting market's reaction to the accrual and cash flow component of earnings. In order to assess this issue, we focus on retained and distributed earnings. The results indicate that there are systematic differences in the persistence among the components of retained earnings and between the components of distributed earnings. The overall sustainability of retained earnings is less than that of distributed earnings. However, investors act as if the components of retained earnings have similar implications for future profitability, leading to an overvaluation of their differential persistence. Moreover, the paper shows that investors anticipate correctly the lower persistence of cash distributions to debt holders and underestimate only the higher persistence of cash distributions to equity holders. Both of these results are consistent with the accounting literature on accruals as well as the finance literature on the net stock issuances anomaly.

The economic significance of the two anomalies is evaluated with the positive abnormal returns earned from hedge portfolio strategies based on the magnitude of retained earnings and cash distributions to equity holders. However, our results on the association of the two anomalies suggest that the anomaly on retained earnings largely subsumes the anomaly on cash distributions to equity holders. Additional tests also show that retained earnings reflect more information than total accruals about the degree to which the sustainability of current earnings performance provokes excessive investor optimism. Thus, our evidence suggests that the accrual anomaly documented in the accounting literature and the anomaly on cash distributions to equity holders (or net stock issues) shown in the finance

literature are a special case of a larger anomaly on retained earnings.

Our results on the source of the anomaly on retained earnings suggest that it is primary attributable to investor's limited attention on managerial empire building tendencies and managerial violation of accounting rules. To the extent that the anomaly on retained earnings captures the same market inefficiency with the anomaly on distributed earnings to equity holders, they are more likely to result from investors with limited cognitive ability in understanding the implications of managerial decisions. It would be more interesting for future research to examine in detail how investors misunderstand the different persistence of the components of earnings.

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Table 1: Univariate Statistics

Parameter	Mean	Median	St. Dev.	Skewness	Kurtosis
NI_t	0.003	0.042	0.177	-3.314	20.110
$CACC_t$	0.013	0.008	0.105	-0.249	15.328
$NCACC_t$	0.045	0.025	0.158	0.726	11.453
$TACC_t$	0.058	0.044	0.199	0.208	8.939
FCF_t	-0.049	-0.008	0.210	-1.780	11.156
ΔC_t	0.004	0.001	0.127	0.277	18.362
$DIST\_D_t$	-0.027	-0.002	0.134	-1.071	14.277
$DIST\_E_t$	-0.022	0.003	0.141	-2.986	18.450
RE_t	0.061	0.049	0.233	0.223	8.885
$DIST_t$	-0.049	-0.006	0.195	-2.007	12.139
$EXRET_t$	0.006	-0.049	0.647	5.911	99.788

Table 2: Correlation Matrix (Pearson)[*]

Parameter	NI_t	$CACC_t$	$NCACC_t$	$TACC_t$	FCF_t	ΔC_t	$DIST\_D_t$	$DIST\_E_t$	RE_t	$DIST_t$	$ARET_t$
NI_t	**1**	**0.265**	**0.223**	**0.316**	**0.534**	**0.387**	**0.044**	**0.406**	**0.499**	**0.332**	**0.019**
$CACC_t$	**0.265**	**1**	**0.107**	**0.61**	**-0.315**	**-0.101**	**-0.279**	**-0.091**	**0.461**	**-0.264**	**-0.016**
$NCACC_t$	**0.223**	**0.107**	**1**	**0.854**	**-0.578**	**-0.024**	**-0.562**	**-0.266**	**0.716**	**-0.59**	**-0.05**
$TACC_t$	**0.316**	**0.61**	**0.854**	**1**	**-0.634**	**-0.072**	**-0.602**	**-0.263**	**0.813**	**-0.616**	**-0.048**
FCF_t	**0.534**	**-0.315**	**-0.578**	**-0.634**	**1**	**0.393**	**0.621**	**0.571**	**-0.328**	**0.833**	**0.057**
ΔC_t	**0.387**	**-0.101**	**-0.024**	**-0.072**	**0.393**	**1**	**-0.039**	**-0.203**	**0.522**	**-0.18**	**-0.02**
$DIST\_D_t$	**0.044**	**-0.279**	**-0.562**	**-0.602**	**0.621**	**-0.039**	**1**	**0.02**	**-0.538**	**0.694**	**0.042**
$DIST\_E_t$	**0.406**	**-0.091**	**-0.266**	**-0.263**	**0.571**	**-0.203**	**0.02**	**1**	**-0.352**	**0.733**	**0.053**
RE_t	**0.499**	**0.461**	**0.716**	**0.813**	**-0.328**	**0.522**	**-0.538**	**-0.352**	**1**	**-0.652**	**-0.053**
$DIST_t$	**0.332**	**-0.264**	**-0.59**	**-0.616**	**0.833**	**-0.18**	**0.694**	**0.733**	**-0.652**	**1**	**0.068**
$ARET_t$	**0.019**	**-0.016**	**-0.05**	**-0.048**	**0.057**	**-0.02**	**0.042**	**0.053**	**-0.053**	**0.068**	**1**

[*] Notes: Bold numbers indicate significance at less than 5% level.

Table 3: Mean (*Median*) Values of Selected Characteristics for Deciles Portfolios Sorted by Retained Earnings*

Decile Portfolios Sorted by Retained Earnings RE_t										
Parameter	**Lowest**	**2nd Decile**	**3rdDecile**	**4th Decile**	**5th Decile**	**6th Decile**	**7th Decile**	**8th Decile**	**9th Decile**	**Highest**
Panel A : Components of Earnings NI_t										
NI_t	**-0.145** ***-0.112***	-0.016 *-0.005*	**0.023** ***0.030***	**0.042** ***0.045***	**0.051** ***0.053***	**0.058** ***0.060***	**0.065** ***0.066***	**0.069** ***0.069***	**0.066** ***0.069***	**0.057** ***0.060***
RE_t	**-0.231** ***-0.182***	**-0.058** ***-0.055***	-0.010 *-0.009*	**0.018** ***0.018***	**0.041** ***0.041***	**0.064** ***0.064***	**0.093** ***0.092***	**0.134** ***0.133***	**0.207** ***0.203***	**0.442** ***0.393***
$DIST_t$	**0.086** ***0.073***	**0.035** ***0.046***	**0.022** ***0.034***	**0.014** ***0.023***	0.0002 ***0.010***	**-0.013** *-0.004*	**-0.036** ***-0.025***	**-0.069** ***-0.058***	**-0.129** ***-0.119***	**-0.340** ***-0.307***
$TACC_t$	**-0.153** ***-0.129***	**-0.038** ***-0.044***	-0.001 *-0.006*	**0.020** ***0.018***	**0.038** ***0.039***	**0.060** ***0.061***	**0.084** ***0.087***	**0.119** ***0.124***	**0.181** ***0.189***	**0.359** ***0.338***
FCF_t	**0.123** ***0.124***	**0.053** ***0.073***	**0.034** ***0.050***	**0.022** ***0.031***	0.005 ***0.012***	**-0.014** ***-0.007***	**-0.040** ***-0.033***	**-0.078** ***-0.070***	**-0.145** ***-0.134***	**-0.361** ***-0.317***
Panel B : Components of Retained Earnings RE_t										
$CACC_t$	**-0.065** ***-0.043***	**-0.019** ***-0.016***	-0.002 *-0.001*	**0.006** ***0.006***	**0.013** ***0.012***	**0.021** ***0.019***	**0.030** ***0.026***	**0.042** ***0.036***	**0.059** ***0.051***	**0.099** ***0.075***
$NCACC_t$	**-0.088** ***-0.057***	**-0.019** ***-0.018***	0.0007 *-0.003*	**0.014** ***0.011***	**0.025** ***0.023***	**0.040** ***0.038***	**0.054** ***0.050***	**0.077** ***0.074***	**0.122** ***0.118***	**0.259** ***0.237***
ΔC_t	**-0.078** ***-0.042***	**-0.020** ***-0.008***	**-0.009** ***-0.002***	**-0.003** *6.79E-05*	**0.003** ***0.001***	**0.004** ***0.002***	**0.009** ***0.004***	**0.014** ***0.005***	**0.027** ***0.009***	**0.083** ***0.037***
Panel C : Components of Distributed Earnings $DIST_t$										
$DIST\_D_t$	**0.077** ***0.043***	**0.032** ***0.023***	**0.016** ***0.013***	**0.004** ***0.004***	**-0.005** ***-0.004***	**-0.018** ***-0.015***	**-0.031** ***-0.028***	**-0.054** ***-0.054***	**-0.094** ***-0.096***	**-0.212** ***-0.195***
$DIST\_E_t$	**0.009** ***0.005***	**0.009** ***0.010***	**0.016** ***0.016***	**0.019** ***0.019***	**0.015** ***0.017***	**0.012** ***0.015***	0.004 ***0.011***	**-0.010** *0.004*	**-0.048** ***-0.015***	**-0.173** ***-0.121***

* Notes: Bold numbers indicate significance at less than 5% level.

Table 4: Main Persistence Results [*]

$$NI_{t+1} = a_0 + a_1 NI_t + u_{t+1} \quad (1)$$

$$NI_{t+1} = a_0 + a_1 TACC_t + a_2 FCF + u_{t+1} \quad (2)$$

$$NI_{t+1} = a_0 + a_1 CACC_t + a_2 NCACC_t + a_3 \Delta C_t + a_4 DIST\_D_t + a_5 DIST\_E_t + u_{t+1} \quad (3)$$

$$NI_{t+1} = a_0 + a_1 RE_t + a_2 DIST_t + u_{t+1} \quad (4)$$

Parameters	1	2	3	4
Intercept	-0.0002 (-0.45)	**0.005 (10.70)**	**0.005 (11.23)**	**0.004 (8.47)**
NI_t	**0.714 (223.52)**			
$TACC_t$		**0.655 (184.47)**		
FCF_t		**0.749 (227.04)**		
$CACC_t$			**0.613 (115.23)**	
$NCACC_t$			**0.633 (143.00)**	
ΔC_t			**0.745 (166.73)**	
$DIST\_D_t$			**0.669 (133.27)**	
$DIST\_E_t$			**0.789 (204.82)**	
RE_t				**0.684 (206.56)**
$DIST_t$				**0.761 (216.92)**
F-Tests				
$a_1 = a_2$		**F=1368.32**	**F=11.22**	**F=979.28**
$a_1 = a_3$			**F=503.04**	
$a_1 = a_4$			**F=100.15**	
$a_1 = a_5$			**F=989.91**	
$a_2 = a_3$			**F=459.03**	
$a_2 = a_4$			**F=86.48**	
$a_2 = a_5$			**F=1340.87**	
$a_3 = a_4$			**F=183.97**	
$a_3 = a_5$			**F=92.07**	
$a_4 = a_5$			**F=568.60**	
Adjusted R^2	**0.436**	**0.448**	**0.453**	**0.445**

[*] Notes: Associated t-statistics are reported in parenthesis and bold numbers indicate significance at less than 5% level.

Table 5: Main Pricing Tests*

Panel A

$$NI_{t+1} = a_0 + a_1 NI_t + u_{t+1}$$

$$ARET_{t+1} = \beta\left(NI_{t+1} - a_0 - a_1^* NI_t\right) + \varepsilon_{t+1}$$

	Persistence Coefficients			Valuation Coefficients			
Parameters	**Estimate**	**St. Error**	**T-Statistics**	**Parameters**	**Estimate**	**St. Error**	**T-Statistics**
NI_t	**0.714**	0.003	**223.52**	NI_t	**0.798**	0.016	**50.51**
Null Hypotheses		**Likelihood Ratio Statistic**			**Marginal Significance Level**		
$a_1 = a_1^*$		**27.30**			**0.000**		

Panel B

$$NI_{t+1} = a_0 + a_1 TACC_t + a_2 FCF_t + u_{t+1}$$

$$ARET_{t+1} = \beta\left(NI_{t+1} - a_0 - a_1^* TACC_t - a_2^* FCF_t\right) + \varepsilon_{t+1}$$

	Persistence Coefficients			Valuation Coefficients			
Parameters	**Estimate**	**St. Error**	**T-Statistics**	**Parameters**	**Estimate**	**St. Error**	**T-Statistics**
$TACC_t$	**0.655**	0.003	**184.47**	$TACC_t$	**0.887**	0.019	**47.27**
FCF_t	**0.749**	0.003	**227.04**	FCF_t	**0.752**	0.017	**44.58**
Null Hypotheses		**Likelihood Ratio Statistic**			**Marginal Significance Level**		
$a_1 = a_1^*$		**148.07**			**0.000**		
$a_2 = a_2^*$		0.026			0.871		
$a_1 = a_1^*$ and $a_2 = a_2^*$		**287.64**			**0.000**		
$a_1^* = a_2^*$		**95.23**			**0.000**		

Notes: Bold numbers indicate significance at less than 5% level.

Panel C*

$$NI_{t+1} = a_0 + a_1 CACC + a_2 NCACC_t + a_3 \Delta C_t + a_4 DIST\_D_t + a_5 DIST\_E_t + u_{t+1}$$
$$ARET_{t+1} = \beta\left(NI_{t+1} - a_0 - a_1^* CACC - a_2^* NCACC_t - a_3^* \Delta C_t - a_4^* DIST\_D_t - a_5^* DIST\_E_t\right) + \varepsilon_{t+1}$$

	Persistence Coefficients			**Valuation Coefficients**			
Parameters	**Estimate**	**St. Error**	**T-Statistics**	**Parameters**	**Estimate**	**St. Error**	**T-Statistics**
$CACC_t$	**0.613**	0.005	**115.23**	$CACC_t$	**0.856**	0.028	**30.69**
$NCACC_t$	**0.633**	0.004	**143.00**	$NCACC_t$	**0.842**	0.023	**36.43**
ΔC_t	**0.745**	0.004	**166.73**	ΔC_t	**0.875**	0.023	**38.13**
$DIST\_D_t$	**0.669**	0.005	**133.27**	$DIST\_D_t$	**0.664**	0.026	**25.64**
$DIST\_E_t$	**0.789**	0.004	**204.82**	$DIST\_E_t$	**0.713**	0.020	**36.12**

Null Hypotheses	**Likelihood Ratio Statistic**	**Marginal Significance Level**
$a_1 = a_1^*$	**73.33**	**0.000**
$a_2 = a_2^*$	**79.01**	**0.000**
$a_3 = a_3^*$	**30.91**	**0.000**
$a_4 = a_4^*$	0.025	0.873
$a_5 = a_5^*$	**14.07**	**0.000**
$a_1 = a_1^*,\ a_2 = a_2^*, a_3 = a_3^*,$ $a_4 = a_4^*$ and $a_5 = a_5^*$	**344.95**	**0.000**
$a_1^* = a_2^*$	0.20	0.652
$a_1^* = a_3^*$	0.39	0.531
$a_2^* = a_3^*$	1.51	0.219
$a_4^* = a_5^*$	3.54	0.060
$a_1^* = a_2^* = a_3^*$	1.52	0.467
$a_3^* = a_4^* = a_5^*$	**65.38**	**0.000**
$a_1^* = a_2^* = a_3^* = a_4^* = a_5^*$	**153.18**	**0.000**

* Notes: Bold numbers indicate significance at less than 5% level.

Panel D*

$$NI_{t+1} = a_0 + a_1 RE_t + a_2 DIST_t + u_{t+1}$$
$$ARET_{t+1} = \beta\left(NI_{t+1} - a_0 - a_1^* RE_t - a_2^* DIST_t\right) + \varepsilon_{t+1}$$

	Persistence Coefficients			**Valuation Coefficients**			
Parameters	**Estimate**	**St. Error**	**T-Statistics**	**Parameters**	**Estimate**	**St. Error**	**T-Statistics**
RE_t	**0.684**	0.003	**206.56**	RE_t	**0.865**	0.017	**50.00**
$DIST_t$	**0.761**	0.003	**216.92**	$DIST_t$	**0.701**	0.018	**39.05**

Null Hypotheses	**Likelihood Ratio Statistic**	**Marginal Significance Level**
$a_1 = a_1^*$	**105.69**	**0.000**
$a_2 = a_2^*$	**10.66**	**0.001**
$a_1 = a_1^*$ and $a_2 = a_2^*$	**331.51**	**0.000**
$a_1^* = a_2^*$	**148.48**	**0.000**

* Notes: Bold numbers indicate significance at less than 5% level.

Table 6: Stock Returns Results*

Deciles	RE_t	$DIST\_E_t$
1st Decile	**0.084** **(2.926)**	**-0.05** **(-2.131)**
2nd Decile	**0.05** **(3.241)**	-0.013 (-0.741)
3rd Decile	**0.043** **(4.346)**	0.017 (1.092)
4th Decile	**0.043** **(3.555)**	**0.031** **(2.368)**
5th Decile	**0.022** **(2.656)**	**0.041** **(3.867)**
6th Decile	0.011 (1.362)	**0.038** **(4.009)**
7th Decile	0.002 (0.3)	**0.026** **(2.489)**
8th Decile	0.004 (0.418)	0.016 (1.391)
9th Decile	**-0.017** **(-2.03)**	**0.022** **(2.302)**
10th Decile	**-0.072** **(-4.81)**	**0.042** **(4.722)**
Hedge	**0.156** **(4.822)**	**0.092** **(3.375)**

* Notes: Associated t-statistics are reported in parenthesis and bold numbers indicate significance at less than 5% level.

Table 7: Retained Earnings vs. Total Accruals*

$$NI_{t+1} = a_0 + a_1 RE_t + a_2 DIST_t + a_3 TACC_t + u_{t+1}$$

$$ARET_{t+1} = \beta\left(NI_{t+1} - a_0 - a_1^* RE_t - a_2^* DIST_t - a_3^* TACC_t\right) + \varepsilon_{t+1}$$

	Persistence Coefficients			**Valuation Coefficients**			
Parameters	**Estimate**	**St. Error**	**T-Statistics**	**Parameters**	**Estimate**	**St. Error**	**T-Statistics**
RE_t	**0.744**	0.004	**165.77**	RE_t	**0.875**	0.023	**38.00**
$DIST_t$	**0.751**	0.003	**212.44**	$DIST_t$	**0.700**	0.018	**38.60**
$TACC_t$	**-0.088**	0.004	**-19.65**	$TACC_t$	-0.014	0.022	-0.63
Null Hypotheses		**Likelihood Ratio Statistic**			**Marginal Significance Level**		
$a_1 = a_1^*$		**31.16**			**0.000**		
$a_2 = a_2^*$		**7.71**			**0.005**		
$a_3 = a_3^*$		**9.98**			**0.002**		
$a_1 = a_1^*, a_3 = a_3^*$		**114.46**			**0.000**		
$a_1 = a_1^*, a_2 = a_2^*, \text{and } a_3 = a_3^*$		**338.30**			**0.000**		
$a_1^* = a_2^*$		**61.65**			**0.000**		
$a_1^* = a_3^*$		**450.65**			**0.000**		
$a_2^* = a_3^*$		**692.18**			**0.000**		
$a_1^* = a_2^* = a_3^*$		**706.95**			**0.000**		

* Notes: Bold numbers indicate significance at less than 5% level.

Table 8: Retained Earnings vs. Distributed Earnings to Equity Holders*

Panel A: Quintiles based RE_t and $DIST\_E_t$.

$RE_t(1)$	**0.068 (3.454)**	$DIST\_E_t(1)$	-0.032 (-1.725)
$RE_t(2)$	**0.021 (3.472)**	$DIST\_E_t(2)$	**0.028 (4.557)**
$RE_t(3)$	**-0.044 (-4.088)**	$DIST\_E_t(3)$	**0.032 (4.253)**
Hedge (RE_t)	**0.112 (4.974)**	**Hedge ($DIST\_E_t$)**	**0.064 (2.83)**

Panel B: Intersection of Quintiles based on RE_t and $DIST\_E_t$.

Quintiles	$DIST\_E_t(1)$	$DIST\_E_t(2)$	$DIST\_E_t(3)$
$RE_t(1)$	0.009 (0.241)	**0.077 (3.304)**	**0.067 (5.028)**
$RE_t(2)$	**-0.014 (3.722)**	**0.025 (2.735)**	**0.022 (-4.21)**
$RE_t(3)$	**-0.068 (-2.64)**	**-0.023 (-2.64)**	-0.022 (-1.06)

Panel C: Test-Statistics of Control Hedge Portfolio Strategies

$DIST\_E_t(1)$ **Constant: Hedge (RE_t)**	**0.077 (2.239)**	$RE_t(1)$ **Constant: Hedge ($DIST\_E_t$)**	0.058 (1.481)
$DIST\_E_t(2)$ **Constant: Hedge(RE_t)**	**0.099 (3.545)**	$RE_t(2)$ **Constant: Hedge($DIST\_E_t$)**	0.036 (1.449)
$DIST\_E_t(3)$ **Constant: Hedge(RE_t)**	**0.088 (4.046)**	$RE_t(3)$ **Constant: Hedge($DIST\_E_t$)**	0.046 (1.904)

Panel D: Test- Statistics of Non-Overlap Hedge Portfolio Strategies

Long Weighted Average of $\{RE_t(1), DIST\_E_t(1)\}$ & $\{RE_t(1), DIST\_E_t(2)\}$	**0.065 (2.682)**
Short Weighted Average of $\{RE_t(3), DIST\_E_t(2)\}$ & $\{RE_t(3), DIST\_E_t(3)\}$	**-0.021 (-2.44)**
Hedge (RE_t) Non-Overlap Strategy	**0.086 (2.956)**
Long Weighted Average of $\{DIST\_E(3), RE_t(2)\}$ & $\{DIST\_E(3), RE_t(3)\}$	**0.02 (2.449)**
Short Weighted Average of $\{DIST\_E(1), RE_t(1)\}$ & $\{DIST\_E(1), RE_t(2)\}$	-0.003 (-0.13)
Hedge ($DIST\_E_t$) Non-Overlap Strategy	0.023 (0.74)

Panel E: Test-Statistic of a Joint $(RE_t, DIST\_E_t)$ Hedge Portfolio Strategy

Long on $\{RE_t(1), DIST\_E_t(3)\}$ **& Short on** $\{RE_t(3), DIST\_E_t(1)\}$	**0.135 (6.435)**
Difference between $(RE_t, DIST\_E_t)$ **and** RE_t **Hedge Strategy**	0.023 (1.001)
Difference between $(RE_t, DIST\_E_t)$ **and** $DIST\_E_t$ **Hedge Strategy**	**0.071 (3.748)**

* Notes: Associated t-statistics are reported in parenthesis and bold numbers indicate significance at less than 5% level.

Table 9: Returns from Retained Earnings Decomposition*

Deciles	DRE_t	$NDRE_t$	**Interaction Term** ($DRE_t \times NDRE_t$)
1st Decile	**0.055** **(3.132)**	0.005 (0.325)	0.02 (0.999)
2nd Decile	**0.062** **(6.234)**	0.017 (1.251)	**0.027** **(2.188)**
3rd Decile	**0.06** **(6.252)**	**0.023** **(2.764)**	**0.031** **(3.521)**
4th Decile	**0.026** **(2.407)**	0.016 (1.63)	**0.03** **(4.001)**
5th Decile	**0.027** **(2.318)**	0.02 (1.989)	**0.031** **(2.595)**
6th Decile	0.01 (1.342)	**0.027** **(3.014)**	0.018 (1.933)
7th Decile	0.017 (1.779)	**0.025** **(2.701)**	**0.034** **(3.377)**
8th Decile	0.009 (1.175)	**0.033** **(2.676)**	**0.026** **(2.5)**
9th Decile	-0.005 (-0.462)	0.015 (1.351)	0.012 (1.287)
10th Decile	**-0.048** **(-3.453)**	0.032 (1.672)	-0.015 (-1.359)
Hedge	**0.103** **(5.516)**	-0.027 (-1.455)	0.035 (1.893)

* Notes: Associated t-statistics are reported in parenthesis and bold numbers indicate significance at less than 5% level.

Figure 1: Hedge Portfolio Returns on Retained Earnings

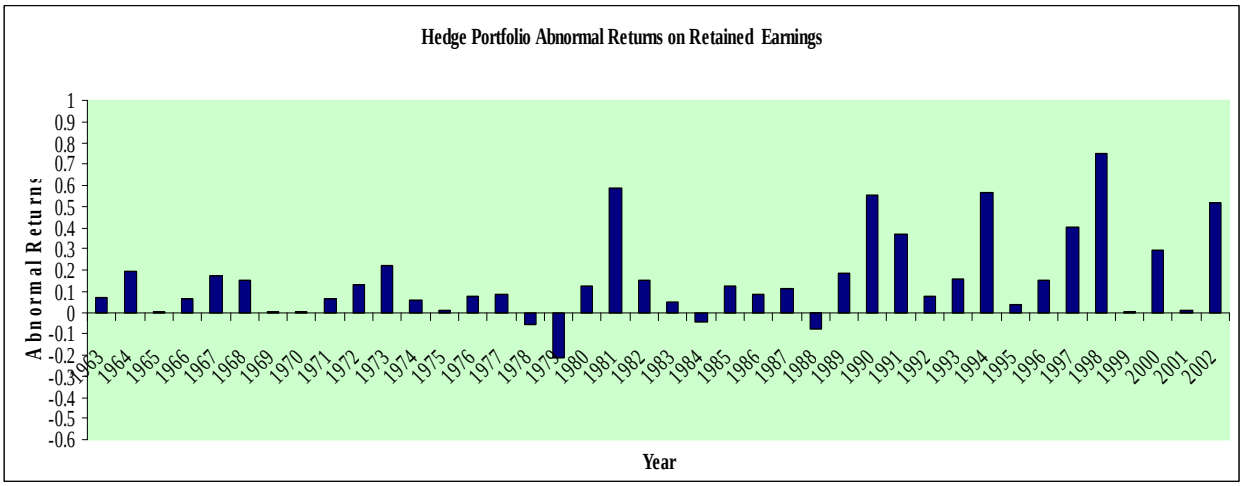

Figure 2: Hedge Portfolio Returns on Distributed Earnings to Equity holders

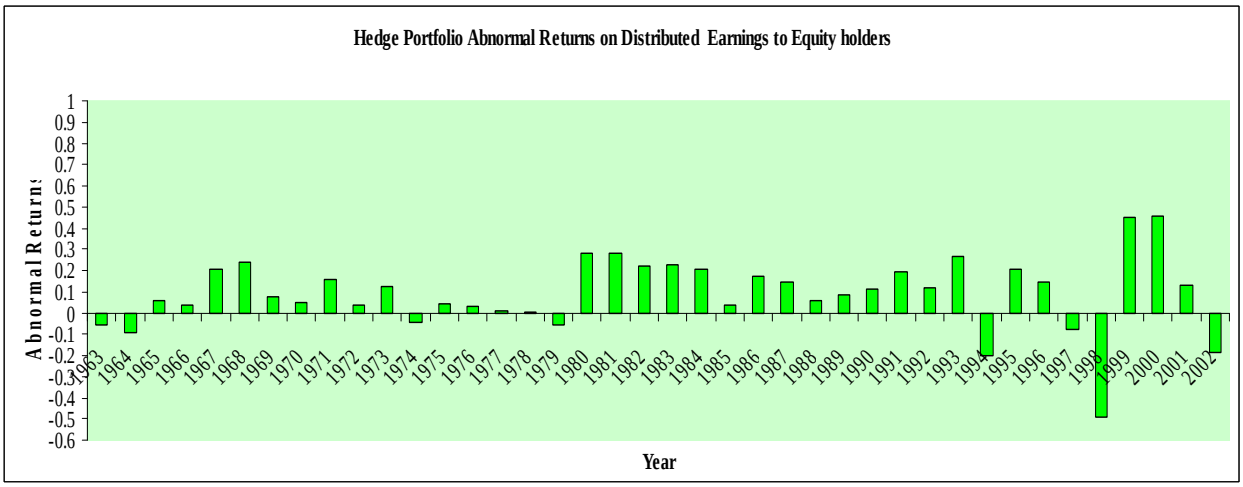

Figure 3: Hedge Portfolio Returns on Discretionary Retained Earnings