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Earnings Persistence and Levels of the Accrual Ratio and Discretionary Accruals

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ABSTRACT

This paper evaluates how persistent earnings and its accrual and cash flow components are conditional on the modified Jones Model discretionary accruals and the accrual ratio. Consistent with prior research cash flows are more persistent than both earnings and the accruals component of earnings. While the difference in persistence of the extreme deciles of Discretionary Accruals are not very large, those of the Accrual Ratio are much larger, suggesting that the Accrual Ratio can be a simple but effective gauge of earnings persistence and can complement Discretionary Accruals as a measure of the persistence dimension of earnings quality.

INTRODUCTION

The accrual ratio is the ratio of the accrual component of earnings scaled by average net operating assets. Since earnings backed by cash are deemed more sustainable than those backed by accruals, larger accrual ratios denote lower quality earnings (e.g., CFA Institute, 2018). While discretionary accruals as a measure of earnings quality has been extensively studied in the accounting literature (some popular examples include Sloan 1996, Dechow & Dichev 2002, Collins et al., 2003, Graham et al. 2005, and Dichev et al, 2013), the accrual ratio, favored by analysts and other investment practitioners, has been less examined in the accounting literature[1].

The accounting and investing professions have long been buffeted by how best to gauge the quality of a publicly traded firm's earnings. The academic profession has relied largely on measures of "discretionary accruals", gauges of accruals that are beyond the norm given a firm's operations. But each of those measures is wrought with its own unique limitations (see for example**,** Hribar and Collins 2002, Ball and Shavikumar 2006, Owens et al., 2017.)

Furthermore, as business models have changed in an increasingly global world, the relation between accruals and cash flows have declined (Bushman et al., 2016). This trend potentially reduces the descriptive power of discretionary accrual models based largely on working capital accruals. Leuz and Wysocki (2016) emphasize the importance of evaluating alternative means of gauging earnings and disclosure. While the Accrual Ratio may not have the statistical sophistication of discretionary accrual models, it is apparent from the CFA Institute and CFA exam review materials that the Accrual Ratio is an important practitioner tool for gauging earnings quality. The CFA Institute review materials for the CFA exams emphasize the importance of assessing earnings quality generally and the importance of the accrual ratio as a measure of the quality of earnings (CFA Institute, 2018)**.**

Both academic and practitioner gauges of earnings management (e.g., the accrual ratio and discretionary accruals respectively) are measured with error because managed earnings are unobservable. Given the imperfection in both measures, each measure can complement the other to help investors improve their evaluation of earnings quality.

This study is important for several reasons. First, discretionary accruals are not as easy to estimate as the accrual ratio, making it less accessible to the larger investment community including even sophisticated market participants like analysts. For example, analysts would not only require access to large data sets of firm financial data but would also have to be well trained in estimating and interpreting economic models like the Jones and Modified Jones Models used to calibrate discretionary accruals. No such access to large data sets and training is required to estimate and interpret the accrual ratio.

[1] For example, a Google search of the term "accrual ratio" yields links to Investopedia, CFA Institute and the CFA exam-related materials. An identical search on Google Scholar yields links to accrual and earnings quality-related studies but none explicitly mentions the Accrual Ratio. Thus, the Accrual Ratio is primarily a practitioner measure. For example, it as the primary measure of earnings quality in review materials for Level II of the CFA series of exams (e.g., CFA Institute 2018).

Second, the accrual ratio can provide complementary information to academic measures like discretionary accruals (and vice versa), helping refine and improve investment decisions, which in turn helps improve capital allocation in the economy. This paper responds to Leuz & Wysocki's (2016) call for complementary measures of the quality of disclosure. Since accruals that are more difficult to map to cashflows are less transparent (e.g. discretionary accruals), improving gauges of accrual quality contributes to reducing information asymmetry in the capital markets.

Finally, while prior literature has decomposed earnings into accrual and cash flow components to gauge their differential persistence and valuation implications (e.g., Sloan, 1996, Fairfield et al. 2004, Richardson et al., 2005), I am unaware of any paper that has explicitly evaluated the Accrual Ratio or compared it to discretionary accruals, the preferred academic measure of earnings quality. Specifically, this is the first paper of which I am aware that compare the properties of earnings based on the levels of these two disparate measures of earnings quality in the context of persistence. While Richardson and Tuna (2008) explore the Accrual Ratio in a chapter of "International Financial Statement Analysis", it is a text of the CFA Institute, focused on training analysts, not a research paper.

In this study, I evaluate the relative informativeness of the two measures – discretionary accruals and the accrual ratio – in the context of persistence. I demarcate my sample into increasing deciles of Discretionary Accruals (measured using two-digit SIC codes) and regress year t earnings and earnings components on year t-1 earnings and earnings components respectively. I run the same regressions for the middle six deciles that serve as a hold out sample for comparison. I estimate identical regressions after demarcating the same sample of firm-years into deciles based on increasing measures of the Accrual Ratio[2].

I find that cash flows are more persistent than both earnings and accruals, consistent with Sloan (1996). While the difference in persistence between the top and bottom two deciles of Discretionary Accruals is not very large, that between the corresponding Accrual Ratio deciles is much larger. This suggests that the Accrual Ratio may be an overlooked, simple, but effective gauge of earnings quality. χ^2 tests of the coefficients of the top two and bottom two deciles of the Accrual Ratio and Discretionary Accruals confirm that while there are significant differences in persistence between the top and bottom two deciles of both measures, the difference for the Accrual Ratio is much larger. When earnings are decomposed into their accrual and cash flow components the differences in $\chi^{2\ \text{statistic}}$ between the Accrual Ratio and Discretionary Accrual sorting of the data suggest that virtually all the difference in persistence are driven by differences in persistence of the accrual component of earnings, suggesting that the Accrual Ratio holds incremental complementary information about earnings quality.

The rest of the paper is organized as follows. I present the literature and hypotheses in the next section, the research design and data in Section 3 and the results in Section 4. I discuss the results and conclude in Section 5.

LITERATURE AND HYPOTHESES

Top gauges of earnings quality in the accounting literature include level of accruals, persistence and smoothness. Persistence, how well an accounting number in year t predicts the same number in year t+1, is an important criterion for evaluating the quality of inputs to equity valuation[3]. Examples of such studies include Sloan (1996), Finger (1994), Xie (2001), and more recently, Richardson et al., (2006) and Allen et al., 2013. The idea behind using persistence as an earnings quality gauge is that a more persistent number is more predictable for a longer period into the future, making it a better input to valuation (Dechow et al. 2010).

Accrual accounting helps accounting to match the economic benefits and costs that entities derive from economic events to the periods in which those benefits and related costs occur. However not only are accruals prone to manipulation, especially when management faces pressures to meet earnings targets, but also, economic models that attempt to capture the earnings process face challenges that threaten their reliability. For example, to model the tendency of accruals to reverse and for earnings to map into future cash flows, Dechow & Dichev (2002) propose an accruals model that is a function of past, current, and future cashflows. Dechow & Dichev (2002) restrict their model to working capital accruals and so excludes long-term accruals, while Richardson et al. (2006) find that accruals that are unrelated to sales growth are more easily manipulated and are less persistent. Recently, Bushman et al. (2016)

[2] I present details of how the Accrual Ratio is calculated in the Appendix.
[3] These are primarily earnings and its cash flow and accrual components.

have contended that the relationship between accruals and cashflows over the last several decades have declined, making Leuz et al.'s (201bb6) call for alternative measures of earnings quality even more prescient.

Another issue that challenges the validity of models of discretionary accruals is the conditional conservatism of accounting, where losses are recognized in a timely manner, but gains are not (e.g. Ball & Shavikumar 2006). Still, the extent to which losses and gains are differentially recognized in practice as well as the role non-working capital accruals play in accrual quality are relatively less explored.

Similarly, increased mergers and acquisitions introduce random shocks that can distort models of discretionary accruals. For example, Hribar and Collins (2002) document that mergers and acquisition activity that are correlated with the partitioning variable of earnings management can bias empirical results toward presence of earnings management when there is none if accruals are measured from the balance sheet. More recently Owens et al. (2017) make a similar finding that random shocks introduced by mergers, acquisitions and divestitures, for example, make it difficult to refine models of abnormal accruals.

Furthermore, Bushman et al., 2016 reinforce this sentiment of the difficulty of economic models of abnormal accruals capturing the appropriate relation between accruals and cash flows by documenting that the explanatory power (R^2) of regressing accruals on cash flows have declined from about 90% in the 1960s to about 20% in recent years. Similarly, R^2 of regressing changes in accruals on changes in cash flows have declined from about 70% in the 1960s to about zero in recent years.

Given the challenges of capturing accurately the economic relation between accruals and cash to gauge managed versus unmanaged accruals, an alternative measure of earnings quality is more likely to complement existing models of earnings quality.

Furthermore, since the Discretionary Accruals has been documented as being exploited by institutional investors (Collins et al., 2003), it is more likely that the Accrual Ratio, a less popular measure, would be a stronger differentiator of earnings quality.

This study extends the earnings quality literature by evaluating the relative information content of discretionary accruals and the accrual ratio by demonstrating that the accrual ratio can be a complement to discretionary accruals when measuring the quality of earnings. The paper's hypothesis reflects this.

H: The Accrual Ratio is a stronger distinguisher of earnings quality as measured by persistence than is Discretionary Accruals.

RESEARCH DESIGN AND DATA

I obtain company accounting information from Compustat. I require each firm to have sufficient data to calculate discretionary accruals based on the Modified Jones Model (Jones 1991, Dechow et al., 1995), the Accrual Ratio, and related control variables. I require at least nine observations per two-digit SIC code to be included in the discretionary accrual estimation. Customarily, I exclude the highly regulated financial and utility industries. The final sample has 62,298 firm-year observations spanning 1988 to 2014[4]. I sort the data into deciles of discretionary accruals estimated based on two-digit SIC codes as well as on accrual ratios[5].

Choice of Accrual Measure

I use the Modified Jones Model Discretionary Accruals for two reasons. First, though Dechow & Dichev (2002) improve the R^2 of prior discretionary accrual measures by mapping accruals into past, current and future cash flows, their measure is unsigned and excludes long term accruals such as those linked to Property Plant and Equipment (PPE).

[4] While I attempt to include as much firm years in my analysis as possible, only data through 2014 was available in all the databases I used when the foundational analysis was done.

[5] The data are sorted cross-sectionally. That is, the first level of sorting is the accrual measure, the second, is the unique firm identifier, and finally the year.

Second, according to Dechow et al., (2010), the Kothari et al., (2005) performance-matched Jones Model is more likely to add noise to the abnormal accrual measure as the matched firm's ROA could also be managed.

I evaluate if persistence varies by level of discretionary accruals and the accrual ratio by estimating the following models for the top two, bottom two and middle six deciles of the Accrual Ratio and Discretionary Accruals.

$$ROA_t = \alpha + \beta ROA_{t-1} \quad (1a)$$
$$ROA_t = \alpha + \beta_1 ACCRUAL_{t-1} + \beta_2 CFO_{t-1} \quad (1b)$$
$$ACCRUAL_t = \alpha + \beta_1 ACCRUAL_{t-1} \quad (2)$$
$$CFO_t = \alpha + \beta_1 CFO_{t-1} \quad (3)$$

Where
CFO_t = Cash Flow from Operations for year t,
$ACCRUAL_t$ = Net Income – Cash Flow from Operations for year t.

Both CFO and ACCRUAL are scaled by Average Total Assets and t is a time subscript in years. The definitions of the Accrual Ratio and Discretionary Accruals are in the Appendix .

All regressions are estimated cross-sectionally by firm year and with White-corrected heteroscedasticity-consistent (i.e., robust) standard errors, which should make inferences from them appropriate (Greene, 2003).

RESULTS

Univariate Statistics

The data spans a wide spectrum of industries, covering 62 two-digit SIC codes. There is also wide variability in the data and the average size of firms in the data skews small, with average total assets and market value in the $2.2 billion range, the corresponding standard deviations in the range of $4.4 billion to $5 billion reinforces the point of wide variability in the data (Table 1a). I compare the descriptive statistics of the top and bottom two deciles of the Accrual Ratio in Table 1b and those based on Discretionary Accruals in Table 1c.

Unsurprisingly the mean of signed discretionary accruals is much smaller than that of absolute discretionary accruals. Correlations among the primary variables used in the paper are in Table 2. As expected, the correlation between Total Accruals and Accrual Ratio is high, at .34 ($p<.05$) but that between Discretionary Accruals and the Accrual Ratio, at .07, is low but significant ($p<.05$). The low correlation suggests that Discretionary Accruals and the Accrual Ratio are likely to be complementary rather than substitutes. While most of the other pairwise correlations are significant, the coefficients tend to be small. To allay any related concerns, I estimate all regressions with White-corrected robust standard errors helping ensure that regression coefficients are unbiased.

These comparisons suggest that the Accrual Ratio likely conveys incremental information beyond that contained in Discretionary Accruals. Table 1b shows that firms with high Accrual Ratios tend to have higher incomes and tend to be larger (Average Total assets of $1.26 billion versus $1.17 billion). On the other hand, firms with low Discretionary Accruals tend to earn less income and tend to be larger ($6.4 billion versus about $1.8 billion in Average Total Asset) (Table 1c). What is common between both sorts of the data is that in both cases, high accrual firms tend to have higher Z-scores' suggesting they face higher levels of financial distress compared to their low accrual counterparts.

[See Tables 1: a, b and c; and Table 2 at the Appendix]

Multivariate Results

I first run persistence tests that are not conditioned on the level of accruals. Those results (see Table 3a) show that cash is the more persistent, and accrual-based income the least. Consistent with accruals being designed to smooth out the potential for wide variability in cash flows (e.g., Dechow 1994), net income is a blend of both. Next, I include the deciles of Accrual Ratio and Discretionary Accruals in the earnings persistence model (Table 3b).

The positive coefficients on Accrual Ratio Decile and the interaction of the Accrual Ratio Decile and lagged ROA suggests that firms with large accrual ratios tend to have more persistent income (Column 1, Table 3b). This can be explained by the facts that the Accrual Ratio captures both managed and unmanaged earnings and accruals can be managed to achieve higher persistence. On the other hand, the combined coefficients of Discretionary Accrual Decile and the interaction of lagged ROA and Discretionary Accrual Decile is negative, suggesting that lower discretionary accruals tend to be associated with incrementally higher persistence (Column, 2, Table 3b). This result is consistent with Discretionary Accruals being designed to capture only managed earnings, albeit with some error.

When earnings are decomposed into their accrual and cash flow components, higher levels of accruals are associated with incrementally lower persistence (columns 3, 4 and 5, Table 3b) but the results for cash flows (last two columns, Table 3b) are consistent with the results for overall net income (ROA). That is high Accrual Ratios are associated with incrementally higher persistence while high discretionary accruals are associated with incrementally lower persistence. In the next two sub-sections, I evaluate persistence of income and income components after sorting the data by the levels of Accrual Ratio and Discretionary Accrual respectively.

[See Tables 3a and 3b at the Appendix]

Persistence based on Accrual Ratio Sorting

Persistence tests of the bottom two deciles of Accrual Ratio are in Table 4a, the middle six in Table 4b, and the top two in Table 4c. The persistence of earnings (ROA) increases as Accrual Ratio increases (Column 1, tables 4a, b and c) -- .599, .639 and .841 respectively. When earnings are decomposed into their accrual and cash flow components (Column 2 tables 4a, b and c), the monotonic increase in earnings persists in both the accrual and cash flow components. The accrual components are .314, .454, and .495 respectively while the cash flow components are .821, .822, and 1.022. This confirms the results from the Table 3b: the increasing persistence of earnings and its components as accrual ratio increases reflects that the Accrual Ratio captures both managed and unmanaged earnings and that earnings can be managed to achieve high persistence.

When the persistence of the accrual and cash flow components of earnings are estimated separately (Column 3 of Tables 4a, b, and c), the persistence of accrual increases monotonically in Accrual Ratio from bottom two to top two deciles -.129, .222. and.348 while cash flows persist at the rates of .814, .747, and .864 from bottom two through middle 6 to top two deciles of the Accrual Ratio.

[See Table 4a, b, c at the Appendix]

Persistence based on Discretionary Accrual Sorting

The bottom two deciles of Discretionary Accruals are in Table 5a, the middle six in Table 5b, and the top two in Table 5c. Earnings (i.e., ROA), persists at the rates of .753. .759 and .648 from the lowest to the top deciles of Discretionary Accruals (Column 1 of Tables 4a, b and c). When earnings are decomposed into their accrual and cash flow components, accruals persist at the rates of .602, .449 and .510 while the persistence of cash flows decline monotonically from 1.112 for the bottom two deciles, through .956 for the middle six deciles to .824 for the top two deciles (Colum 2 of Tables 5a, b, and c).

When the persistence of the accrual and cash flow components of earnings are estimated separately (Column 3 of tables 5a, b, and c), there does not appear to be any systematic pattern in persistence of both accrual and cash flow from bottom two to top two deciles of Discretionary Accruals. Accruals persist at the rates of .389, .232, and .302 while cash flows persist at the rates of .678, .830 and .785.

[See Table 5a, b, and c at the Appendix]

Test of difference in persistence of earnings and earnings components of top and bottom two deciles of Accrual Ratio and Discretionary Accruals

It is estimated that Seemingly Unrelated Regressions (SUR) of the persistence models to evaluate the differences between top and bottom deciles of the two measures of earnings quality. The test statistic for the null hypothesis that

$\beta_{TOP2} - \beta_{BOTTOM2} = 0$ follows a χ^2 distribution with 1 degree of freedom. As Table 6 shows, almost all coefficients show significant differences between the top two and bottom two deciles but those based on the Accrual Ratio sorting display much larger differences (evidenced by the larger test statistics and significance levels). When earnings are decomposed into their accrual and cash flow components the differences in χ^2 statistics between the Accrual Ratio and Discretionary Accrual sortings of the data suggest that virtually all the difference in persistence are driven by differences in persistence of the accrual component of earnings (compare statistics in Panel A to those of Panel B of Table 6). These results suggest that the Accrual Ratio bears incremental information that can complement Discretionary Accruals to help investors evaluate earnings quality more rigorously in their investment decisions.

[See Table 6 at the Appendix]

Collectively these results suggest that the Accrual Ratio holds information content incremental to Discretionary Accruals. Importantly firms with low accrual ratios tend to have lower earnings persistence than firms with higher Accrual Ratios. The higher persistence of earnings and the accrual component of earnings of high Accrual Ratio firms reaffirms that accruals can be used to achieve higher earnings persistence. The smaller differences found for bottom and top two deciles of Discretionary Accruals may be a result of sophisticated investors' attempts to arbitrage on the accrual anomaly since the publication of Sloan (1996) (Collins et al., 2003). This in turn makes the case for using the Accrual Ratio as a complementary measure of earnings quality.

DISCUSSION AND CONCLUSION

In both sorts of the data, the cash flow component of income is the most persistent and income itself is more persistent than accruals as it is a combination of cash flows and accruals. However, whereas the Accrual Ratio sort shows a monotonic increase in persistence as the ratio increases, the opposite is the case for the Discretionary Accrual sort, though the persistence of income increases slightly in the middle deciles. Also, the difference in persistence between the top and bottom two deciles of the Discretionary Accrual sort is not very large. Again, this partly reflects the effect of arbitragers. Still, the larger differences between the top and bottom two deciles of Accrual Ratio in the persistence regressions suggest that the Accrual Ratio can provide information that can complement Discretionary Accruals as an earnings quality gauge.

Recent research on earnings management has documented that to circumvent being "caught" top management is structuring real economic transactions to achieve specific near-term earnings goals (e.g., Graham et al., 2005, Dichev et al. 2013). This may be contributing to the higher persistence of firms with high Accrual Ratios. Future research can explore the extent to which real transaction designed to achieve specific earnings goals map into the Accrual Ratio and Discretionary Accruals respectively. The challenge is identifying which transactions were motivated by earnings management. Since the research that have identified real earnings management have largely been achieved through surveys, using the survey approach can help researchers to understand better the timing and types of such transactions as a first step to the mapping to the gauges of earnings quality.

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APPENDIX

1. Estimation of Discretionary Accruals (DISC-ACCRUAL)

I estimate Discretionary accruals using the Modified Jones Model proposed by Dechow et al. (1995, restated here as Equation 6).

$$TOTACC_t = \alpha + \beta_1(\Delta SALES_t - \Delta REC_t) + \beta_2 PPE_t + \varepsilon_t \quad (6)$$

Where

$TOTACC_t$ = Total Accrual, measured as Net Income – Cash Flow from Operations

$\Delta SALES_t$ = Change in Sales from the prior year

ΔREC_t = Change in Receivables from the prior year

PPE_t = Property, Plant and Equipment

ε_t = Error term (residuals) representing the measure of discretionary accruals, DISC-ACCRUAL.

Equation 6 is estimated at the 2-digit SIC code level and I require there to be at least nine observations per SIC code to enter the sample.

2. Calculation of the Accrual Ratio

I estimate the Accrual Ratio as follows:

Total Operating Assets = Total Assets – Cash – Marketable Securities – Cash Equivalents

Total Operating Liabilities = Total Liabilities – Long Term Debt – Short Term Debt

Net Operating Assets = Total Operating Assets – Total Operating Liabilities

Total Accruals^{CF} = Net Income –Cash Flow from Operations – Cash Flow from Investing Activities

Total Accrual^{BS} = Net Operating Assets$_{END}$ – Net Operating Assets$_{BEG}$

Accruals Ratio^{CF} = Total Accruals^{CF} / (NOA_{END} + NOA_{BEG}) / 2

Accruals Ratio^{BS} = Total Accruals^{CF} / (NOA_{END} + NOA_{BEG}) / 2

Where

NOA_{END} and NOA_{BEG} are ending and beginning Net Operating Assets respectively,

Total Accruals^{CF} is Total Accrual calculated from the Statement of Cash Flow,

Total Accruals^{BS} is Total Accrual calculated from the Balance Sheet,

I use the Statement of Cash Flow based Accrual Ratio due to the risk of the effect of non-articulation events such as mergers and acquisitions on the Balance Sheet (Hribar and Collins 2002). Larger Accruals Ratios denote lower earnings quality.

Table 1a

	Mean	1st Quartile	Median	3rd Quartile	Std. Dev.
ROA	-0.0	-0.02	0.04	0.09	0.19
Book-to-Market	0.6	0.27	0.46	0.75	0.48
Discretionary Accruals	$-64.6	$-46.99	$-0.25	$26.89	$283.17
Absolute Discretionary Accruals ($millions)	$148.7	$10.36	$33.96	$114.99	$307.44
Accruals Ratio (Cashflow-based0	0.0	-0.02	0.01	0.05	0.14
Accrual Income /Avg TA	-0.1	-0.10	-0.05	-0.01	0.11
CFO / Avg TA	0.1	0.02	0.08	0.14	0.15
Loss Year	0.3	0.00	0.00	1.00	0.46
Net Income ($millions)	$93.5	$-3.83	$10.29	$66.84	$250.45
Average Total Assets ($millions)	$2,210.9	$103.43	$367.43	$1,555.52	$4,824.02
Market Value of Equity ($millions)	$2,208.7	$109.52	$409.20	$1,650.61	$4,475.85
Total Assets ($millions)	$2,296.3	$107.42	$383.58	$1,626.52	$5,002.14
N	62,298				

Table 1a: Descriptive Statistics - Primary Variables

Table 1b: Mean and Median Difference Tests of Top and Bottom Two Deciles of the Accrual Ratio

	Mean (Bottom 2 Deciles)	Mean (Top 2 Deciles)	p-value	Median (Bottom 2 Deciles)	Median (Top 2 Deciles)	p-value
ROA	0.02	-0.16	0.00	0.07	-0.11	0.00
Book-to-Market	0.43	0.60	0.00	0.34	0.44	0.00
Discretionary Accruals ($millions)	-3.91	-89.89	0.00	7.63	-8.62	0.00
Absolute Discretionary Accruals ($millions)	$98.73	$135.93	0.00	$25.77	$25.87	0.84
Accruals Ratio (Cashflow-based)	0.17	-0.18	0.00	0.12	-0.11	0.00
Accrual Income /Avg TA	-0.02	-0.16	0.00	-0.02	-0.14	0.00
CFO / Avg TA	0.03	-0.01	0.00	0.07	0.04	0.00
Loss Year	0.24	0.71	0.00	0.00	1.00	0.00
Net Income ($millions)	75.10	-5.37	0.00	11.52	-12.10	0.00
Average Total Assets ($millions)	$1,264.10	$1,169.33	0.03	$219.62	$171.39	0.00
Market Value of Equity ($millions)	$1,756.69	$1,034.11	0.00	$382.06	$169.68	0.00
Total Assets ($millions)	$1,417.16	$1,142.15	0.00	$253.87	$162.94	0.00
N	62,298					

Table 1c: Mean and Median Difference Tests of Top and Bottom Two Deciles of the Disc. Accruals

	Mean (Bottom 2 Deciles)	Mean (Top 2 Deciles)	p-value	Median (Bottom 2 Deciles)	Median (Top 2 Deciles)	p-value
ROA	0.05	0.01	0.00	0.06	0.04	0.00
Book-to-Market	0.65	0.52	0.00	0.52	0.42	0.00
Discretionary Accruals	157.02	-371.52	0.00	100.66	-181.46	0.00
Absolute Discretionary Accruals	205.96	396.28	0.00	100.66	181.46	0.00
Accruals Ratio (Cashflow-based)	0.03	-0.01	0.00	0.02	-0.00	0.00
Accrual Income /Avg TA	-0.02	-0.11	0.00	-0.03	-0.08	0.00
CFO / Avg TA	0.06	0.11	0.00	0.08	0.11	0.00
Loss Year	0.19	0.29	0.00	0.00	0.00	0.00
Net Income ($millions)	$102.85	$246.66	0.00	$20.96	$97.10	0.00
Average Total Assets ($millions)	$1,766.22	$6,363.86	0.00	$468.71	$2,950.65	0.00
Market Value of Equity ($millions)	$1,754.03	$6004.02	0.00	$437.34	$2,951.60	0.00
Total Assets ($millions)	$1,855.73	$6,582.81	0.00	$496.62	$3,038.70	0.00
N	62,298					

Table 2: Correlation of Primary Variables

Table 2: Correlation of Primary Variables

	1	2	3	4	5	6	7	8	9	10	11
Cumulative Annual Returns, 1	1										
ROA, 2	0.16**	1									
Number of EPS Estimates, 3	-0.00	0.19**	1								
Inst. Share Ownership, 4	0.06**	0.27**	0.43**	1							
Zmijewski's Z-score, 5	0.20**	0.27**	0.06**	0.08**	1						
Book-to-Market, 6	-0.26**	-0.02**	-0.19**	-0.14**	-0.25**	1					
Discretionary Accruals, 7	0.02**	0.01*	-0.40**	-0.15**	0.09**	0.06**	1				
Accrual Ratio, 8	0.06**	0.26**	0.05**	0.06**	0.16**	-0.08**	0.07**	1			
NI-based Accrals/Avg TA, 9	0.07**	0.49**	-001	0.06**	0.19**	-0.02**	0.19**	0.34**	1		
CFO / Avg TA, 10	0.14**	0.79**	0.24**	0.29**	0.21**	-0.01**	-0.13**	0.10**	-0.08**	1	
Loss Year, 11	-0.16**	-0.70**	-0.18**	-0.24**	-0.20**	0.13**	-0.01**	-0.25**	0.41**	-0.54**	1

Table 3a: Unconditional Persistence of Components of Income & Components of Income

	ROA	ROA | CFO & ACC	Accrual Income	CFO
Intercept	0.006***	-0.020***	-0.048***	0.017***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.748***			
	(0.000)			
Accrual $Income_{t-1}$/Avg TA		0.496***	0.290***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		0.942***		0.823***
		(0.000)		(0.000)
N	62298	62298	62298	62298
Adj R-squared	0.508	0.562	0.080	0.605

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; CFO = Cashflow from Operations, ACC = Accrual Income;
format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested.

Table 3b: Persistence of Income, Accrual Income, and Cash Income | AR & DA

	ROA|AR	ROA|DA	Acc | AR	Acc DA	Acc |AR&DA	CF|AR	CF|DA	CF|AR&DA
Intercept	0.005***	0.006***	-0.048***	-0.047***	-0.047***	0.017***	0.017***	0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.706***	0.794***						
	(0.000)	(0.000)						
ROA_{t-1}X Accrual Ratio (AR) Decile	0.011***							
	(0.000)							
ROA_{t-1}X Disc. Accrual (DA) Decile		-0.011***						
		(0.000)						
Accrual $Income_{t-1}$ /Avg TA			0.345***	0.568***	0.600***			
			(0.000)	(0.000)	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA X AR Decile			-0.012***		-0.009***			
			(0.000)		(0.000)			
Acc. $Inc._{t-1}$/Avg TA X DA Decile				-0.068***	-0.066***			
				(0.000)	(0.000)			
CFO_{t-1}/Avg TA						0.812***	0.884***	0.870***
						(0.000)	(0.000)	(0.000)
CFO_{t-1}/Avg TA X AR Decile						0.003**		0.004***
						(0.045)		(0.007)
CFO_{t-1}/Avg TA X DA Decile							-0.014***	-0.015***
							(0.000)	(0.000)
N	62298	62298	62298	62298	62298	62298	62298	62298
Adj R-squared	0.510	0.509	0.088	0.124	0.129	0.605	0.607	0.607

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 4a: Persistence of Components of Income - Bottom 2 Deciles of Accrual Ratio

	ROA	ROA | CFO & ACC	Accrual Income	CFO
Intercept	-0.085***	-0.111***	-0.146***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.599***			
	(0.000)			
Acc. $Inc._{t-1}$ //Avg TA		0.314***	0.129***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		0.821***		0.814***
		(0.000)		(0.000)
N	11064	11064	11064	11064
Adj R-squared	0.376	0.448	0.016	0.598

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 4b: Persistence of Components of Income - Middle 6 Deciles of Accrual Ratio

	ROA	ROA | CF & ACC.	Accrual Income	CFO
Intercept	0.021***	-0.003***	-0.042***	0.030***
	(0.000)	(0.006)	(0.000)	(0.000)
ROA_{t-1}	0.639***			
	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA		0.454***	0.222***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		0.822***		0.747***
		(0.000)		(0.000)
N	37668	37668	37668	37668
Adj R-squared	0.443	0.513	0.080	0.514

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 4c: Persistence of Components of Income - Top 2 Deciles of Accrual Ratio

	ROA	ROA | CF & ACC	Accrual	CF
Intercept	0.031***	0.008***	-0.006***	0.003***
	(0.000)	(0.000)	(0.000)	(0.007)
ROA_{t-1}	0.841***			
	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA		0.495***	0.348***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		1.022***		0.864***
		(0.000)		(0.000)
N	13566	13566	13566	13566
Adj R-squared	0.578	0.621	0.103	0.630

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 5a: Persistence of Components of Income - Bottom 2 Deciles of Discretionary Accruals

	ROA	ROA | CF & ACC	Accrual	CF
Intercept	-0.010***	-0.055***	-0.084***	0.051***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.753***			
	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA		0.602***	0.389***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		1.112***		0.678***
		(0.000)		(0.000)
N	15975	15975	15975	15975
Adj R-squared	0.349	0.429	0.112	0.431

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 5b: Persistence of Components of Income - Middle 6 Deciles of Discretionary Accruals

	ROA	ROA | CF & ACC	Accrual	CF
Intercept	0.005***	-0.019***	-0.045***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.759***			
	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA		0.449***	0.232***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		0.956***		0.830***
		(0.000)		(0.000)
N	34632	34632	34632	34632
Adj R-squared	0.554	0.610	0.063	0.627

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 5c: Persistence of Components of Income - Top 2 Discretionary Accruals

	ROA	ROA | CF & ACC	Accrual	CF
Intercept	0.034***	0.014***	-0.008***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA_{t-1}	0.648***			
	(0.000)			
Acc. $Inc._{t-1}$ /Avg TA		0.510***	0.302***	
		(0.000)	(0.000)	
CFO_{t-1}/Avg TA		0.824***		0.785***
		(0.000)		(0.000)
N	11691	11691	11691	11691
Adj R-squared	0.412	0.461	0.089	0.489

p-values in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; Acc. = Accrual; Inc. = Income; CFO = Cashflow from Operations; AR = Accrual Ratio; DA = Discretionary Accruals; format of columns headings: Dependent Variable | Earnings Quality feature (AR and/or DA) whose persistence is being tested. For example, "ROA|AR" means that ROA is the dependent variable and the Accrual Ratio (AR) is the earnings quality feature being evaluated.

Table 6: Test of Difference in Persistence

- Top 2 Versus Bottom 2 Deciles of Earnings Quality

Panel A: Sorting by Accrual Ratio

Section 1: Dependent Variable = Total Net Income (ROA_t)

Variable	**χ^2 Statistic**	**P-value**
ROA_{t-1}	255.07	0

Section 2: Decomposition of Earnings into Accrual and Cash Flow **Components: Dependent Variable = Total Net Income (ROA_t)**

Variable	**χ^2 Statistic**	**P-value**
Accrual $Income_{t-1}$	55.54	0
CFO_{t-1}	148.91	0

Section 3: Dependent Variable = Accrual $Income_t$

Variable	**χ^2 Statistic**	**P-value**
Accrual $Income_{t-1}$	137.63	0

Section 4: Dependent Variable = CFO_t

Variable	**χ^2 Statistic**	**P-value**
CFO_{t-1}	18.71	0

Panel B: Sorting by Discretionary Accruals

Section 1: Dependent Variable = Total Net Income (ROA_t)

Variable	**χ^2 Statistic**	**P-value**
ROA_{t-1}	11.46	0.0007

Section 2: Decomposition of Earnings into Accrual and Cash Flow Components: Dependent Variable = Total Net Income (ROA_t)

Variable	**χ^2 Statistic**	**P-value**
Accrual $Income_{t-1}$	11.47	0.0007
CFO_{t-1}	71.25	0

Section 3: Dependent Variable = Accrual $Income_t$

Variable	**χ^2 Statistic**	**P-value**
Accrual $Income_{t-1}$	16.85	0

Section 4: Dependent Variable = CFO_t

Variable	**χ^2 Statistic**	**P-value**
CFO_{t-1}	22.96	0