Information in Accruals about the Quality of Earnings*

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Information in Accruals About Earnings Quality

Abstract

We extend the analysis in Sloan (1996) to identify the source of information in accruals about earnings quality. Our results indicate that information in accruals about earnings quality is not limited to the current accruals analyzed by Sloan, but extends to non-current accruals. We also show that while information in accruals originates almost exclusively from asset accruals, liability accruals play a useful role in helping to isolate information in asset accruals about earnings quality. Finally, we show that information in accruals about earnings quality originates from both growth in the scale of operations and deterioration in the efficiency of asset usage. Overall, our results indicate that total accruals, defined as the difference between earnings and free cash flows, provide an intuitive, robust and parsimonious measure of earnings quality. Contrary to existing studies, our results also indicate that the information in accruals about earnings quality is not attributable to a single factor, such as 'discretionary' accruals or firm growth.

1. Introduction

This paper provides a systematic examination of the source of information in accruals about earnings quality. Our work extends work in Sloan (1996) demonstrating that growing accruals are a leading indicator of deterioration in earnings and stock returns. We extend Sloan's analysis in several ways. First, we extend the analysis of accruals from the subset of accruals considered by Sloan to include all accruals relating to firms' operating activities. Second, we separately analyze the information content of asset and liability accruals. Third, we separately analyze the information content of accruals related to growth in the operating activities of the firm versus accruals related to reduced efficiency of the operating activities of the firm.

Our results provide several important new insights. First, we show that information in accruals about earnings quality extends beyond the set of accruals considered by Sloan. In fact, we find that the additional accruals we consider provide relatively more information about future stock returns and future SEC enforcement actions than the original accruals considered by Sloan. Second, we show that liability accruals play a unique role in providing information about earnings' quality. While liability accruals, *per se*, have little direct information about earnings quality, they play an important role in extracting information about earnings quality from asset accruals. Third, we show that both the sales growth and efficiency components of accruals contribute to the information in accruals about earnings quality.

Our results have implications for existing research that builds on Sloan's original findings. One branch of subsequent research examines which of the individual components of accruals provides the most information about earnings quality. Research in this vein includes Hribar (2000), Thomas and Zhang (2000) and Chan, Chan, Jegadeesh and Lakonishok (2001). This research generally concludes that most of the information in accruals stems from inventory accruals. However, our results show that focusing on individual subsets of accruals results in a loss of information. We show that netting asset accruals (e.g.inventory) with liability accruals (accounts payable) provides more information than asset accruals alone and that our measure of total accruals provides more information than any single class of accruals.

A second branch of subsequent research examines whether the information in accruals about earnings quality is contained in the discretionary or nondiscretionary component of accruals. Research in this vein includes Xie (2001) and Chan, Chan, Jegadeesh and Lakonishok (2001). This research generally concludes that information in accruals is restricted to the discretionary component of accruals. However, our decomposition of accruals into sales growth and efficiency indicates that nondiscretionary accruals associated with sales growth provide an important source of information about earnings quality.

A third branch of research argues that the information in accruals relates primarily to growth rather than to earnings quality. Research in this vein includes Fairfield, Whisenant and Yohn (2001). However, we provide two key pieces of evidence that are inconsistent with this argument. First, we show that growth that is associated with offsetting increases in both asset and liability accruals does not contain information about earnings quality. Second, our decomposition of accruals into growth and efficiency indicates that a substantial portion of the information in accruals is attributable to efficiency, even after controlling for growth.

The remainder of the paper is organized as follows. The next section develops our research design, including construct definitions and relation to existing research. Section 3 describes our data and section 4 analyzes our results. Section 5 concludes.

2. Research Design

Our research hypothesis builds on the basic research hypothesis developed in Sloan (1996). Sloan's hypothesis stems from the conceptual framework underlying accrual accounting. Information about enterprise earnings and its components measured by accrual accounting generally provides a better indication of enterprise performance than current cash receipts and payments. Accrual accounting attempts to record the financial effects on an enterprise of transactions and other events and circumstances in the period in which those transactions, events and circumstances occur, rather than only in the periods in which cash is received or paid by the enterprise.

Accordingly, accrual accounting attempts to recognize the expected future financial benefits and obligations accruing to an enterprise over a period. The accrual process involves accruing expected future cash receipts and disbursements and deferring past cash receipts and disbursements. However, the accrual process does not extend to all expected future benefits and obligations. Accrual accounting involves a trade-off between relevance and reliability. While information in accruals about the expected future benefits and obligations is considered to be relevant to financial statement user, it is also considered to be less reliable than information in underlying cash receipts and disbursements. Thus, many expected future benefits and obligations that are associated with considerable uncertainty are considered to lack sufficient reliability to be recognized in accrual accounting. Nevertheless, accrual accounting involves compromising some level of reliability in an attempt to provide relevant information to investors.

Sloan's basic hypothesis builds on the trade-off between relevance and reliability in accrual accounting. He recognizes that accounting earnings consists of two underlying components. A cash component that provides both relevant and reliable information, and an accrual component that provides relevant information, but for which reliability has potentially been compromised. Because the accrual component is expected to be less reliable than the cash component, Sloan hypothesizes that the accrual component of earnings is less persistent than the cash component of earnings.

Our analysis contributes to Sloan's original analysis in three significant ways. First, we conduct our analysis using a more comprehensive definition of accruals. Second, we decompose our measure of accruals based on broad balance sheet classifications and conduct our analysis on each of the classifications. Third, we decompose our measure of accruals into growth and efficiency components and conduct our analysis on each of these components. We describe our motivations and techniques for each of these contributions below.

2.1 Definition of Accruals

Sloan's definition of accruals is motivated by the classification of cash flows mandated in SFAS 95. SFAS 95 classifies cash flows into cash flows from operating activities, cash flows from investing activities and cash flows from financing activities. Cash flows from investing activities relate to the acquisition and disposal of productive assets, cash flows from financing activities relate to the issuance and repayment of long-term sources of capital, and cash flows from operating activities relate to all cash flows not defined as investing or financing activities. According to the FASB:

> "Cash flows from operating activities are generally the cash effects of transactions and other events that enter the determination of net income."

Following this lead, Sloan defines accruals as the difference between net income and cash flows from operating activities.

More generally, however, we can classify any accounting adjustments that create a difference between net income and cash flows as resulting from the accrual accounting process. Under a pure cash basis of accounting, net income and cash flows would, by definition, be identical. Thus, a more complete definition of accruals would be to define the accrual component of earnings as the difference between net income and net cash inflows:

> Total Net Accruals = Net Income – Cash From Operating Activities– Cash From Investing Activities– Cash From Financing Activities

It seems reasonable to consider why Sloan did not include accruals relating to investing and financing activities in his analysis. The exclusion of accruals relating to financing activities are perhaps the easiest to justify. There is a clear distinction between the operating and financing activities of a firm. Cash flows associated with the issuance of new capital and the repayment of existing capital have no direct relation to the operating activities of a firm. For example, a firm clearly does not improve its operating performance just by generating cash flow through the issuance of new capital. Moreover, because accruals relating to financing activities are financial obligations, involve deferrals of past cash inflows and are carried at cost, they involve little subjective judgment and are inherently reliable.

In contrast, it is more difficult to justify the exclusion of accruals relating to investing activities. These accruals clearly relate to the operating activities of the firm, but they differ from other operating accruals in that they relate to expenditures that provide productive capacity rather than expenditures that directly produce a good or service. However, it is difficult to argue this distinction makes these accruals any more reliable. Accruals relating to investing activities typically involve the capitalization of cash outflows relating to capital expenditures, development costs, business acquisitions and long-term loans. The ultimate cash flow stream associated with these accruals is typically uncertain. As a result, the initial recognition and reversal of these accruals can involve significant subjectivity. For example, the capitalization of software development costs, the recognition of an appropriate allowance on long-term receivables and the choice of an appropriate depreciation/amortization schedule are all classic examples of subjective accounting decisions.

A further justification for including accruals relating to investing activities is that the eventual reversals of many of these accruals are classified as operating activities. For example, the depreciation/amortization of long-lived assets and the provision for losses on long-term receivables are classified as operating activities under SFAS 95. Without the ability to net the reversals of these accruals against their originating accruals, we are likely to learn little about the reliability of the amounts entering current earnings. For example, consider the case of a company that makes risky long-term loans to its customers. If the company makes any provision for losses at all on these loans, then it will depress earnings relative to operating cash flow, resulting in lower accruals according to Sloan's definition. Thus, according to Sloan's definition of accruals, we would see lower accruals and assume a higher quality of earnings. But in reality, total accruals are very large once we consider the origination of the long-term receivables, and earnings may well be overstated if the provision for losses is not sufficient to cover subsequent uncollectibles.[1] The same logic can be applied to firms making reckless capital expenditures and development expenditures.

In short, there is no clear reason to expect that accruals relating to investing activities will be any more reliable than accruals relating to operating activities. Moreover, many accruals that are classified as operating activities involve the reversal of accruals that were initially categorized as investing activities. In order to get a more complete picture of the reliability of a firm's earnings, we therefore measure 'total net operating accruals':

Total Net Operating Accruals = Net Income – Cash From Operating Activities – Cash From Investing Activities

This revised definition of accruals also has a couple of alternative intuitive interpretations. First, it can be expressed as the change in net operating assets:

Total Net Operating Accruals = Change in Net Operating Assets

Where net operating assets are defined as non-financial assets less non-financial liabilities.[2] In order to report earnings without any contemporaneous cash flow, an accrual is required, which results in additional net operating assets on the balance sheet.

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[1] For a real world example along these lines, see Boston Chicken.
[2] We specify our exact definition of non-financial assets and non-financial liabilities in section 3.

By measuring the change in the net operating assets on the balance sheet, this definition of accruals measures the total amount of earnings that is not represented by an underlying cash flow. The second way to express our new definition is as the difference between earnings and free cash flow:

Total Net Operating Accruals = Net Income – Free Cash Flow

Where free cash flow is measured as the total net cash flows generated by the firm's operating and investing activities. Free cash flow is revered in the finance literature as the 'primitive' construct that should be discounted in valuing a company and is frequently cited as a more objective measure of performance than accounting earnings.[3] It therefore makes intuitive sense that we can assess the reliability of accounting earnings by how much it differs from free cash flows.

We conduct our entire analysis using the comprehensive measure of Total Net Operating Accruals defined above. To facilitate cross-sectional comparisons of the magnitude of accruals in our empirical analysis, we deflate our measure of accruals by net operating assets (NOA) at the beginning of the period over which accruals are measured. NOA provide a natural deflator, as they represent the cumulative stock of accruals made by a company, and our resulting deflated measure of accruals can be interpreted as the growth rate in NOA:

$$\text{Total Net Operating Accruals}_t / NOA_{t-1}$$

$$= (NOA_t - NOA_{t-1}) / NOA_{t-1}$$

$$= \text{Growth Rate in NOA}$$

[3] See, for Example, Copeland et al.

Deflated total net operating accruals, as defined above, represents our key measure of the extent to which earnings consists of relatively unreliable accruals, and hence our key measure of earnings quality. However, we also recognize that this aggregate measure has a number of underlying determinants that may differentially contribute to its ability to provide a signal of earnings quality. We therefore conduct decompositions of accruals into these underlying determinants and peform separate earnings quality analyses on the components. These decompositions are described below.

2.2 Balance Sheet Decomposition

The first decomposition of accruals that we consider is motivated by the different balance sheet classifications to which the accounts generating the accruals are assigned. Previous research has conducted related decompositions based on the balance sheet line items of the accounts generating the accruals [e.g., Hribar (2000), Thomas and Zhang (2000) and Chan, Chan, Jegadeesh and Lakonishok (2001)]. These papers are exploratory and analyze the balance sheet line items underlying Sloan's (1996) definition of accruals. The most robust common conclusion emerging from these studies is that accruals relating to inventory are the most important determinant of earnings quality. However, these studies offer little in the way of an ex ante justification or explanation for this result. One obvious explanation for the result is that inventory accruals are among the most frequently used accruals, and therefore account for a disproportionate amount of the variation in accruals. Accruals relating to less frequently used balance sheet line items could provide just as strong a signal of earnings quality, but empirical tests lack power because there is relatively little variation in such accruals.

Instead of focusing on individual balance sheet line items, our balance sheet decomposition focuses on broad balance sheet categories. Our approach offers two advantages. First, we are able to offer an ex ante motivation for our decompositions as they relate to earnings quality. Second, because there is considerable variation in the accruals belonging to each category, our tests are less sensitive to the power issues associated with the analysis of individual balance sheet line items. We decompose accruals using a two-stage decomposition. First, we decompose accruals into current versus non-current and then we decompose these accrual components into asset versus liability related accruals. This results in the following decomposition:

Total Net Operating Accruals_t / NOA_{t-1}

= Current Net Operating Accruals_t / NOA_{t-1} + Non-Current Net Operating $\text{Accruals}_t/\text{NOA}_{t-1}$

= Change in Current Operating Assets_t / NOA_{t-1} - Change in Current Operating Liabilities_t / NOA_{t-1} + Change in Non-Current Operating $\text{Assets}_t/\text{NOA}_{t-1}$ - Change in Non-Current Operating $\text{Liabilities}_t/\text{NOA}_{t-1}$

The motivation for the current versus non-current decomposition is that the accruals in Sloan's (1996) original paper are primarily current accruals. Recall that Sloan's definition of accruals excludes accruals relating to investing activities, which by definition relate to the purchase and disposition of non-current assets. In section 2.1, we argue that there is no reason to expect that accruals relating to investing activities are any more reliable than accruals relating to operating activities. There is also empirical evidence supporting this hypothesis. Beneish, Lee and Tarpley (2001) find that the magnitude of capital expenditures is negatively related to future stock price performance and Fairfield, Whisenant and Yohn (2001) find that growth in net operating assets (which includes both current and non-current assets/liabilities) is negatively related to future profitability and stock price performance. This decomposition allows us to directly test the relative informativeness of current versus non-current accruals about earnings quality.

The motivation for the asset versus liability decomposition originates from a hypothesized difference in the reliability of accruals relating to these different balance sheet categories. Accruals relating to assets involve expected future benefits and frequently involve estimations that are inherently subjective. Examples include the allowance on receivables, the write-off of obsolete inventory and the depreciation schedule for PP&E. In contrast, the most common liabilities represent future financial obligations of the enterprise that involve little subjective estimation. Financial obligations such as accounts payable, accrued liabilities and taxes payable are listed at the (discounted) face value. A company is not permitted to record an allowance on its financial obligations for expected nonpayment. There are, of course, non-financial obligations that involve subjective obligations. Examples include advance payments, and warranty liabilities. Moreover, some financial obligations, like pension obligations, involve subjective estimation. Nevertheless, accruals related to operating liabilities are dominated by accruals relating to fixed financial obligations that involve little subjectivity. Thus, we hypothesize that liability accruals are relatively reliable and provide less direct information about earnings quality.

The word 'direct' is underlined above for an important reason. It indicates that we hypothesize that increasing accruals that are driven by declining liabilities do not signal lower earnings quality. However, this does not necessarily imply that liability accruals provide no information about earnings quality. If liability accruals are relatively reliable, then they should help in identifying unreliable asset accruals. A healthily growing business will typically experience growth in both its asset and liability accruals. We therefore hypothesize that a business in which the asset accruals are growing at a faster pace than the liability accruals is more likely to have less reliable asset accruals and lower quality earnings. Thus, we hypothesize that netting asset accruals against liability accruals provides a stronger signal of earnings quality than considering asset accruals in isolation. This hypothesis also represents an important distinction between our study and the Fairfield et al study referenced above. Fairfield et al hypothesize that the predictive ability of accruals with respect to future earnings and stock returns arises because accruals is a proxy for firm growth. However, focusing on growth in the asset base without considering offsetting growth in the liabilities provides a cleaner measure of firm growth. Thus, a growth story predicts that netting asset growth against liability growth will offer no additional information, while our quality of earnings story predicts that the netting of liabilities will provide additional information. Our second decomposition further builds on the role of growth in the creation of accruals.

2.3 Growth versus Efficiency Decomposition

Our second decomposition of accruals distinguishes between accruals that are driven by growth in the level of operating activities of the firm and accruals that are driven by less efficient use of the net operating assets of the firm. Existing research recognizes that accruals will increase in response to growth in the level of operating activities of the firm [e.g., Jones (1991)]. Such accruals are typically termed 'nondiscretionary' or 'normal' accruals and are typically modeled by taking the fitted values from a regression of accruals on growth in sales.[4] Recent studies by Xie (2001) and Chan, Chan, Jegadeesh and Lakonishok (2001) investigate whether information in accruals about earnings quality is attributable to the discretionary or nondiscretionary component of accruals. Both studies find that information in accruals about future earnings and stock returns is primarily attributable to the discretionary (i.e., non-growth related) component of accruals. However, these results conflict with the findings of Fairfield at al, who conclude that the predictive ability of accruals with respect to future earnings and stock returns arises because it serves as a proxy for growth in operating activities. The results are also difficult to reconcile with Lakonishok, Shliefer and Vishny (1994), who find that stocks with high sales growth experience lower future stock returns.

In this paper, we conduct a complete and parsimonious decomposition of total net operating accruals into growth and efficiency components in order to resolve the conflicting evidence of previous studies. Our decomposition involves a simple algebraic expansion of our definition of accruals into sales growth and operating asset efficiency components. We define operating asset efficiency in terms of net operating asset turnover (asset turnover or 'AT' hereafter):

$$\text{Asset Turnover}_t = \text{Sales}_t / \text{NOA}_t$$

[4] See Dechow, Sweeney and Sloan (1995) for a more detailed discussion of the models used for isolating the discretionary and non-discretionary components of accruals.

Asset turnover is the traditional measure of the efficiency with which a firm is using its operating assets. This construct measures the dollars worth of sales generated by each dollar invested in operating assets. Improvements in efficiency result from increases in asset turnover, indicating that more dollars of sales are being generated per dollar invested in operating assets. Recall from section 2.1 above that our measure of deflated total net operating accruals can be expressed in terms of the growth in net operating assets:

$$\text{Total Net Operating Accruals}_t / NOA_{t-1} = \Delta NOA_t / NOA_{t-1}$$

where Δ denotes the first difference

Using the above notation, we can conduct a simple algebraic expansion of our measure of accruals into sales growth and change in efficiency:

$$\Delta NOA_t/NOA_{t-1}$$

$$= \underbrace{\Delta Sales_t/Sales_{t-1}}_{\text{Sales Growth}} - \underbrace{\Delta AT_t/AT_t}_{\text{Change in Efficiency}} - \underbrace{(\Delta Sales_t/Sales_{t-1})*(\Delta AT_t/AT_t)}_{\text{Interaction}}$$

The above decomposition highlights two important determinants of our measure of accruals. First, accruals are directly related to sales growth. If asset efficiency remains unchanged, then sales growth will lead to a proportional increase in accruals. Second, accruals are inversely related to efficiency. If sales growth remains unchanged, then decreases in asset efficiency lead to a proportional increase in accruals. The decomposition also contains an interaction term, indicating that a simple linear decomposition is not possible when sales growth and efficiency changes are correlated.

A non-zero correlation is a distinct possibility. For example, economies of scale would imply a positive correlation between sales growth and change in efficiency.

This decomposition offers a distinct advantage over the previous attempts to decompose accruals using sales growth by Xie and Lakonishok et al. Both Xie and Lakonishok et al attempt to estimate the true underlying relations between sales growth and accruals using linear models and estimated model parameters for a holdout period. Our decomposition highlights the non-linear nature of the decomposition, indicating that their models are misspecified and will understate the true extent of the relation between accruals and sales growth by omitting the interactive term. Thus, by understating the relation between accruals and sales growth, their models are biased against finding any information in the sales growth component of accruals.

In the spirit of Xie and Lakonishok et al, we hypothesize that this decomposition will concentrate information about earnings quality into the efficiency component of accruals. Other things equal, sales growth will lead to a proportionate increase in the net operating assets required to sustain a firm's operating activities. We have no *a priori* reason to believe that increasing the scale of operations will compromise the quality of earnings. However, increases in accruals that are attributable to reductions in the efficiency of asset usage are consistent with a reduction in earnings quality. A reduction in operating asset efficiency indicates that more assets are required to generate the same level of operating activity. This relation is entirely consistent with a company assigning unreliably high values to its operating assets, hence lowering the quality of earnings. For example, a company could be carrying delinquent receivables, obsolete inventory or non-productive assets on its balance sheet. Of course, it is also possible that a reduction in operating asset efficiency is related to legitimate structural changes in the operations of the business (e.g., increased capital intensity, more aggressive use of consumer financing, deeper inventory to avoid stock-outs, etc.). We do not expect such structural changes to have a systematic impact on earnings quality. Thus, our empirical tests should help disentangle the relative importance of these different drivers of change in asset efficiency.

One additional concern with attributing earnings quality issues entirely to the efficiency component of accruals is the contribution of credit sales to the sales growth variable. Credit sales result from the recognition of accounts receivable accruals and so are subject to the same reliability and quality concerns as other accruals. Accordingly, we further decompose sales growth into cash sales growth and credit sales growth, where credit sales are defined as the change in accounts receivable:

$$\Delta Sales_t/Sales_{t-1} = \Delta Cash\ Sales_t/Sales_{t-1} + \Delta Credit\ Sales_t/Sales_{t-1}$$

Because credit sales are also subject to reliability concerns, we hypothesize that information concerning earnings quality will be concentrated in the credit sales and change in efficiency components of accruals.

2.4 Definition of Earnings Quality

Thus far, we have been fairly loose in our use of the term earnings quality. In this subsection, we explicitly describe how we measure earnings quality in this paper. Our purpose is not to claim that we have the 'be all and end all' definition of earnings quality. Instead, our goal is to explain the characteristics to which we are referring in this paper when we use the term earnings quality. Regardless as to whether one agrees with our particular characterization of earnings quality, the characteristics that we use are clearly of interest in their own right.

Our definition of earnings quality closely follows Sloan's focus on earnings persistence. While Sloan never uses the term earnings quality, he clearly distinguishes between the properties of the accrual and cash flow components of earnings based on the lower persistence of the accrual component. He also attributes the lower persistence of the accrual component of earnings to the lower reliability of accruals. Practitioners have long been concerned with the assessment of earnings persistence, which they frequently describe in terms of estimating 'earnings power'. The concept of earnings power is recognized and described in the FASB's conceptual framework as follows[5]:

> "Investors, creditors, and others often use reported earnings and information about the components of earnings in various ways and for various purposes in assessing their prospects for cash flows from investments in or loans to an enterprise. For example, they may use earnings information to help them … estimate "earning power" or other amounts they perceive as "representative" of long-term earning ability of an enterprise ….. Measures of earnings and information about earnings disclosed by financial reporting should, to the extent possible, be useful for those and similar uses and purposes."

The conceptual framework then goes on to add:

> "…procedures such as averaging or normalizing reported earnings for several periods and ignoring or averaging out the financial effects of "nonrepresentative" transactions and events are commonly used in estimating "earning power." However, both the concept of "earning power" and the

[5] FASB Statement of Financial Accounting Concepts No. 1. *Objectives of Financial Reporting*, Paragraphs. 47 and 48.

> techniques for estimating it are part of financial analysis and are beyond the scope of financial reporting."

Thus, the FASB recognizes the importance of the earnings persistence in assessing the performance of an enterprise, but acknowledges that reported earnings is not necessarily representative of long-run earnings power, and it is therefore up to the user to assess earnings persistence. We therefore measure the quality of earnings as the degree to which earnings performance persists into the next period.[6]

In addition to focusing on the persistence of earnings as our key measure of earnings quality, we also conduct corroborative tests using two complementary measures. Following Sloan, the first of these two measures is the stock return over the twelve-month period encompassing the release of the next year's earnings. Sloan provides evidence that investors do not use information in the accrual component of earnings about earnings persistence. Hence, he demonstrates that future stock returns can be systematically predicted for firms with extreme accruals. Firms with extreme accruals have less persistent earnings, and therefore experience mean reversion in earnings performance in the next year. Stock prices respond to this predictable mean reversion in earnings performance 'as if' investors do not use information in accruals about earnings persistence. We therefore examine the extent to which the various components of accruals predict future stock returns and the extent to which this predictive ability is

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[6] The FASB explicitly uses the term 'quality of current earnings' to describe the implications of current earnings for future earnings in FAS No. 132:

> "Those users stated that they needed information about the quality of current earnings, including recognized and unrecognized amounts, that is useful in forecasting earnings for future periods in an effective and efficient manner."
> [FAS 132, Appendix A, par. 26]

consistent with investors ignoring information in the accrual components about earnings persistence.

The second of the two corroborative measures that we look at is the occurrence of an SEC enforcement action alleging that annual earnings have been overstated in violation of GAAP. This measure of earnings quality is also employed by Dechow, Sweeney and Sloan (1996) and Bradshaw, Richardson and Sloan (2001). Because SEC enforcement actions require a GAAP violation, they represent extreme cases of low earnings quality. They can be thought of as representing a sufficient but not necessary signal of low earnings quality. Nevertheless, to the extent that the results for the SEC enforcement actions corroborate our earnings and return results, they will help reinforce our conclusions.

3. Data

Our empirical tests employ data from three sources. Financial statement data are obtained from the *Compustat* annual database. Data on stock returns are obtained from the *CRSP* daily stock returns files. Information relating to SEC Enforcement Actions is found using the *Lexis-Nexis Academic Universe* product. Our sample is restricted to the eleven-year period beginning in fiscal 1988 and ending in fiscal 1998. We confine our analysis to this period because some of our tests use data mandated in *Statement of Financial Accounting Standards No. 95* (SFAS 95), the standard governing the preparation of the statement of cash flows, which took effect in fiscal 1988.

As discussed in section 2.1, our primary measure of accruals is total net operating accruals deflated by lagged net operating assets (*Total Accruals*). Recall that total net operating accruals equal the change in net operating assets, so we calculate *Total Accruals* as follows:

$$Total\ Accruals = \frac{NOA_t - NOA_{t-1}}{NOA_{t-1}}$$

where, $NOA_t = Operating\ Assets_t - Operating\ Liabilities_t$

Operating Assets is calculated as total assets (item 6) less cash and short-term investments (item 1).[7] Operating liabilities is calculated as total assets (item 6) less total debt (items 9 and 34) less book value of total common and preferred equity (items 60 and 130) less minority interest (item 38). The earnings measure used throughout this paper is core return on NOA (*RNOA*) calculated as operating income after depreciation (item 178) scaled by lagged NOA. Our measure of cash flows is the difference between *RNOA* and *Total Accruals*:

$$Cash\ Flow_t = RNOA_t - Total\ Accruals_t$$

Our balance sheet accruals decomposition begins with a decomposition of *Total Accruals* into its current and non-current components. We define the current component of *Total Accruals* as follows:

$$Current\ Accruals_t = \frac{CurrentNOA_t - CurrentNOA_{t-1}}{NOA_{t-1}}$$

[7] Note that our definition of operating assets includes long-term investments. Some prefer to define operating assets after the deduction of long-term investments (e.g., Penman 2001, p. 270). However, we include long-term investments as they are frequently closely linked to the operating activities of the business and involve considerable subjective judgment with respect to collectibility. For a good example, see Boston Chicken, where the key earnings quality issue related to the accounting for the long-term notes receivable used to fund local area developers.

where, current NOA is calculated as the difference between current operating assets and current operating liabilities. Current operating assets are calculated as total current assets (item 4) less cash and short-term investments (item 1). Current operating liabilities are calculated as total current liabilities (item 5) less short-term debt (item 34).

Non-current accruals are calculated in a similar fashion as:

$$NonCurrent\ Accruals_t = \frac{NonCurrentNOA_t - NonCurrentNOA_{t-1}}{NOA_{t-1}}$$

where, noncurrent NOA is calculated as the difference between noncurrent operating assets and noncurrent operating liabilities. Noncurrent operating assets are calculated as the difference between operating assets and current operating assets as defined above. Noncurrent liabilities are calculated in a similar fashion.

The second stage of the balance sheet decomposition splits current and non-current accruals into their respective asset and liability components. The four components are change in current (noncurrent) operating assets and change in current (noncurrent) operating liabilities. All variables are as defined above and all four components are scaled by lagged NOA.

Following the discussion in section 3.2, our growth versus efficiency decomposition begins by separating *Total Accruals* into sales growth, change in efficiency and interaction components. Sales growth is simply the change in sales (item 12) scaled by lagged sales. The change in asset turnover is defined as follows:

$$\Delta Asset\ Turnover = \frac{\left(Sales_t / NOA_t \right) - \left(Sales_{t-1} / NOA_{t-1} \right)}{\left(Sales_t / NOA_t \right)}$$

Our final decomposition splits sales growth into cash and credit components. Cash sales growth is calculated as follows:

$$Cash\,Sales\;Growth = \frac{\left(Sales_t - \Delta AR_t\right) - \left(Sales_{t-1} - \Delta AR_{t-1}\right)}{Sales_t}$$

The change in accounts receivable is obtained from the statement of cash flows (item 302). Credit sales growth is simply the difference between total sales growth and cash sales growth.

Our stock return tests also require data from the *CRSP* files. Stock returns are measured using compounded buy-hold returns, inclusive of dividends and other distributions. Market adjusted returns are calculated by deducting the corresponding return on a value-weighted market portfolio. Returns are calculated for a twelve-month period beginning four months after the end of the fiscal year.[8] Finally, we identify firm-years that were subject to enforcement actions for GAAP violations associated with earnings overstatements by reading SEC enforcement actions reported on Lexis-Nexis over our sample period.

Our final sample with non-missing financial statement and returns data consists of 40,851 firm years.[9] One shortcoming of our variable measurement methods is that our decompositions require that we employ balance sheet data to estimate the various components of accruals. Collins and Hribar (2000) point out that this estimation procedure can introduce errors into the measurement of accruals, particularly in the presence of mergers and acquisitions. Indeed, the empirical distributions of our accrual

[8] This is standard in the literature as firms generally report 10K's within four months after the end of the fiscal year (e.g., Alford et al. 1994).
[9] Results are similar if we use separate samples for the earnings and returns tests to maximize the number of observations in each set of tests. We require all data to ensure comparability across tables.

variables contained a small number of extreme outliers, and inspection of some these outliers indicated that they were attributable to measurement errors associated with the use of the balance sheet approach. We conduct three additional procedures to confirm the robustness of our results to measurement errors introduced by the balance sheet approach. First, we trim the 1% tails of all our financial variables in an effort to remove extreme outliers that may be attributable to measurement error. Second, we recomputed our *Total Accruals* variable using data from the statement of cash flows rather than data from the balance sheet. Note in this respect that while we can compute *Total Accruals* using statement of cash flow data, we cannot compute the components of *Total Accruals* without using balance sheet data. *Total Accruals* is computed from the statement of cash flows as the difference between income before extraordinary items (item 123) less total operating and investing cash flows (items 308 and 311). Results with this statement of cash flow measure of *Total Accruals* are very similar to the results obtained using our trimmed balance sheet measure of *Total Accruals*. Third, we also conducted our analyses after removing firms experiencing a change in reported goodwill. Results are qualitatively similar for this sample.

4. Results

4.1 Descriptive Statistics

We begin by presenting univariate statistics and pair-wise correlations for our key variables. We organize these descriptive statistics around the balance sheet and growth versus efficiency decompositions that we use to motivate our paper. Table 1 contains descriptive statistics for the balance sheet decomposition, while table 2 contains descriptive statistics for the growth versus efficiency decomposition.

Panel A of table 1 provides univariate statistics for the balance sheet decomposition of total accruals. The mean value of *Total Accruals* is 0.092, indicating that total net operating accruals average about 9.2% of net operating assets. This indicates that the average sample firm has been originating more accruals than it has been reversing, suggesting that the average firm in the sample is growing. Note that the positive mean value for accruals documented here differs from the negative mean value for accruals documented by Sloan and related studies. This difference arises because Sloan's definition of accruals includes the reversals of the investing accruals (depreciation and amortization), but not the origination of the investing accruals. Inspection of the current and non-current components of accruals reveals that non-current accruals have a somewhat higher mean and variance than current accruals. Thus, non-current accruals appear to be a relatively more important source of variation in total accruals. This result suggests that previous studies using Sloan's definition of accruals, which focuses on current accruals, ignore an important source of variation in total accruals. The means and variances of the asset and liability components indicate that both are relatively large in the case of current accruals, but that asset accruals dominate liability accruals for non-current accruals. The variances for the asset and liability components of current accruals also make it clear that the current liability accruals play an important role in dampening the impact of variation in current asset accruals on current accruals- the standard deviation of current accruals is only 0.158, while the standard deviation of current asset accruals is 0.191.

Panel A of table 1 also provides descriptive statistics on the cash flow component of earnings and the future RNOA and abnormal stock return variables that we use to evaluate earnings quality. Note that the mean value for cash flows of 0.042 is much smaller than the mean value of total accruals, indicating that most of the earnings performance reported over the period is attributable to accruals rather than cash flows. Accruals must ultimately reverse and thus be mean zero in the long run, but over our sample period, the average firm has been growing and hence originating substantially more new accruals than reversing old accruals.

Panel B of table 1 reports the pair-wise correlations for the variables in panel A. Focusing first on the correlations between *Total Accruals* and each of the components of accruals gives an idea of the relative importance of each component to variation in total accruals. The correlation between total accruals and non-current accruals exceeds that between total accruals and current accruals, suggesting that non-current accruals account for relatively more of the variation in total accruals. Focusing next on the asset and liability components, we see that accruals related to changes in operating assets have higher correlations with total accruals than do accruals relating to changes in liabilities. It is also of interest that the correlations between *Total Accruals* and both D*Current Operating Liabilities* and D*Non-current Operating Liabilities* are positive. The direct effect of increases in liability accounts is to reduce accruals, so one might have expected negative correlations for between these two components and total accruals. There is, however, a simple explanation for the observed positive correlations. The asset and liability components of accruals are strongly correlated. For example, the Pearson (Spearman) correlation between D*Current Operating Liabilities* and D*Current*

Operating Liabilities is 0.570 (0.526). Growing firms tend to have both growing assets and growing liabilities. Thus, while the direct effect of increased liabilities is to reduce accruals, increased liabilities tend to be associated with increased assets, which leads to an indirect increase in accruals. This indirect asset effect dominates the direct liability effect, leading to a net positive correlation between changes in liabilities and total accruals. This is why we hypothesize that netting asset accruals against liability accruals should provide a better indication of earnings quality. To the extent that asset accruals are offset by liability accruals, they are more likely to be reliable accruals associated with growth in a firm's operating activities.

Moving to the correlations between accruals and the other variables, we see evidence of the strong negative correlation between accruals and cash flows previously documented by Dechow (1994). This negative correlation indicates that the overriding effect of accruals is to eliminate transitory components from cash flows. We also see that accruals tend to be negatively correlated with future stock returns and positively correlated with SEC enforcement actions, consistent with the hypothesis that accruals signal information about earnings quality.

Panel A of table 2 provides univariate statistics for the growth-versus-efficiency decomposition of total accruals. The mean values in this panel clearly indicate that the positive mean value for total accruals (0.092) can be attributed to the positive mean value for sales growth (0.109). The mean value for ΔAsset Turnover (0.002) is close to zero, indicating that there have been no systematic trends in operating efficiency over the sample period. The standard deviations, however, indicate that both sales growth (0.211) and ΔAsset Turnover (0.223) contribute to the variation in total accruals. The decomposition of sales growth into cash sales growth and credit sales growth indicates that almost all of the average sales growth over the sample period is attributable to cash sales growth and that most of the variation in sales growth is attributable to cash sales growth.

Panel B of table 2 reports the pair-wise correlations for the variables in panel A. The correlations indicate that the *DAsset Turnover* component of accruals has a much stronger correlation with *Total Accruals* than the *Sales Growth* component. Thus, while growth is clearly one important source of variation in accruals, changes in efficiency, as captured by *DAsset Turnover* are a somewhat more important determinant. There is also evidence of a strong positive correlation between the *Sales Growth* and *DAsset Turnover* components of accruals. This indicates that growing firms tend to experience increases in asset turnover, consistent with increasing economies to scale. The positive correlation between these two components is also indicative of a potentially important role for the interaction component of the sales versus efficiency decomposition.

Focusing briefly on the correlation between the components of earnings and future stock returns and SEC enforcement actions, we see a somewhat mixed pattern. Changes in efficiency have the strongest correlation with stock returns, while changes in growth have the strongest correlation with SEC enforcement actions. Thus, there is evidence that both components contain information about earnings quality.

4.2 Earnings Persistence Results

Table 3 presents our analysis of the persistence of the cash flow and accrual components of earnings. Following Sloan, our analysis consists of regressions of next year's RNOA on the cash flow and accrual components of this year's RNOA. Mean reversion in RNOA implies that the coefficients of the components of this year's RNOA will be less than one. Our key predictions concern the relative magnitudes of the coefficients on the cash flow and accrual components of RNOA. If the accrual components of earnings cause earnings to be relatively less persistent than the cash flow component of earnings, then the coefficients on the accrual components of earnings will be less than the coefficients on the cash flow component of earnings. Thus, in addition to providing conventional t-statistics for the estimated regression coefficients, we also provide F-tests of the null hypothesis that the coefficients on each of the accrual component of earnings are equal to the coefficient on the cash flow component of earnings.

The regression in Panel A of table 3 presents the basic regression of next year's earnings on the cash flow and accrual components of this year's earnings. Recall that both the cash flow and accrual components differ from those used in Sloan because we define accruals as total accruals (both current and non-current) and cash flow as the net free cash flow from operating activities. Consistent with Sloan, the accrual component of earnings is significantly less persistent than the cash flow component of earnings. The economic magnitude of the difference is, however, relatively small. We find that the coefficient on cash flows is 0.792, while the coefficient on accruals is 0.761. In contrast, Sloan finds that the persistence of the accrual component is around 10% lower than the cash flow component.

The regression in Panel B of table 3 separates total accruals into the current and non-current components. The results of this regression help to reconcile our basic regression results with those in Sloan. Recall that Sloan's definition of accruals coincides closely with our 'Current Accruals' variable. The results in panel B indicate that the coefficient on the current component of accrual (0.691) is indeed well below the coefficient on the cash flow component (0.798). However, the coefficient on the non-current component (0.817) is actually slightly higher than the coefficient on the cash flow component. Thus, while current accruals are clearly less persistent than cash flows, non-current accruals appear to be about as persistent as cash flows. At first glance, these results appear difficult to reconcile. One potential explanation is that current accruals, by their very nature, tend to reverse in one year or less. Thus, firms with extreme current accruals experience reversals in current accruals that translate to reversals in earnings within the next year. Non-current accruals, however, take somewhat longer to reverse, and so a reversal in the next year is not apparent. If long-term accruals do contain information about longer-term earnings reversals, then we may pick this up in our stock return and SEC enforcement action tests.

Panel C of table 3 further decomposes the current and non-current components of accruals into their underlying operating asset and liability changes. Note that both the current and non-current liability changes have significantly negative coefficients because we subtract the change in the liability accounts in computing accruals. The results in Panel C generally confirm the results in panel B, in that the coefficients on both the asset and liability components of current accruals are significantly lower than the coefficients on the cash flow component of earnings. Similarly, the coefficients on the asset and liability components of non-current accruals are very similar to those on cash flows. The most important takeaway from the results in panel C is that the coefficient on the change in current operating liabilities is the lowest of all (-0.561). Thus, current operating liability accounts contain important information about earnings quality. The intuition behind the interpretation of this result is somewhat subtle. Recall that increases in operating liability accounts cause reductions in earnings. The relatively low coefficient on changes in current liabilities indicates that these reductions are relatively transitory. But to fully understand this result, one needs to recall the positive correlation between changes in current assets and changes in current liabilities. What this result is really telling us is that the least persistent earnings will be experienced by firms with significant changes in their current asset accounts that are not matched by offsetting changes in their current liability accounts.

Panels D and E of table 3 report results for the growth versus efficiency decomposition of total accruals. Recall again that the coefficients on the ΔAsset Turnover and interaction terms are expected to be negative, because these terms are subtracted in combining the components into total accruals. These regressions clearly indicate that the ΔAsset Turnover component is responsible for the lower persistence of earnings. Thus, firms that are growing in a healthy manner do not experience low earnings persistence, while firms that are experiencing deterioration in the efficiency with which they use their asset operating assets experience lower earnings persistence. This result is consistent with the results in Xie (2001). Xie finds that the lower persistence of earnings is attributable to the discretionary component of earnings, which he obtains by taking the residuals from a regression of accruals on sales growth.

4.3 Stock Return Results

Table 4 repeats the regressions in table 3 after replacing the independent variables with next year's stock returns. In these regressions, we can think of stock returns as reflecting information available in the components of this year's earnings that was not anticipated in this year's stock prices, but was realized in next year's stock prices. The regression in panel A of table 4 confirms Sloan's basic finding of a significant negative coefficient on the accrual component of earnings. This result is consistent with investors not anticipating the lower persistence of earnings that is documented in panel A of table 3.

Panel B of table 4 decomposes accruals into its current and non-current components. Recall from table 3 that we found that the lower persistence of accruals was entirely attributable to current accruals. Consistent with this result, Panel B of table 4 confirms that current accruals are the most significant predictor of future stock returns. However, the coefficient on non-current accruals is also significant and negative, which is more difficult to reconcile with the results from table 3. One possible explanation for this result is that non-current accruals reverse over periods longer than one year, but that investors become aware of the longer-term reversals during the subsequent year. Alternatively, investors could be expecting increases (decreases) in earnings for firms with significant increases (decreases) in non-current accruals, and so are disappointed when they do not materialize.

Panel C of table 4 decomposes accruals into their underlying changes in asset and liability accounts. This regression illustrates that changes in current liabilities play an important role in predicting future stock returns, consistent with their role in predicting earnings persistence in table 3. The change in current operating liabilities has a significantly positive coefficient, indicating that increases in current liabilities lead to increases in future stock returns. To further understand the intuition behind this result, recall from table 1 panel B that the simple pair-wise correlation between the change in current liabilities and future stock returns is negative and insignificant. The positive and significant coefficient in the regression specification arises from the positive correlation between changes in current assets and changes in current liabilities. Recall from table 3 that earnings persistence is the lowest for firms with large changes in current assets that are not accompanied by offsetting changes in current liabilities. Similarly, the coefficients in table 4 indicate that future stock returns are the strongest for firms with large changes in current assets that are not accompanied by changes in current liabilities. Again, this result highlights the important role of current liabilities in helping to extract information about earnings quality from current assets.

Panels D and E of table 4 provide the stock return results for the growth versus efficiency decomposition of accruals. Consistent with the earnings persistence regressions in table 3, we see that ΔAsset Turnover is the most important predictor of future stock returns. However, inconsistent with the earnings persistence regressions, we also find that sales growth has incremental explanatory power with respect to future stock returns. This result likely reflects the well-documented over-pricing of growth stocks [e.g., Lakonishok, Shleifer and Vishny (1994)]. It suggests that investors expect growth stocks to generate significant growth in earnings, and are disappointed when this growth does not materialize.

Table 5 reports the results of trading strategies based on the accrual components of earnings. In the tradition of the trading strategy literature, we form decile portfolios based on the fundamental variables of interest and the report the results to holding value-weighted positions in these portfolios of the year following the release of the fundamental information. The results in panel A show that the total accruals variable provides the most profitable trading strategy, with hedge portfolio returns over the next year of 21.8%. The current and non-current components of earnings both also prove profitable with returns of 15.0% and 19.9% respectively. These results should not be surprising given the results for total accruals, since the correlation results in table 1 indicate that current and non-current accruals are highly positively correlated. The panel B results indicate that the predictive ability of the trading strategies originates almost entirely from the accruals related to asset accounts. This result is not surprising, since the variability in asset accruals is much greater than the variability in liability accruals. Panels C and D of table 5 report the trading strategy results for the sales growth and Δasset turnover components of accruals. Consistent with the regression results in table 4, we see that both components contribute in approximately equal proportions to the predictive ability of accruals with respect to future stock returns. Overall, the key takeaway that emerges from table 5 is that total accruals provides the basis for a simple and parsimonious trading strategy. Attempts to decompose total accruals into its component do not yield more profitable strategies. Moreover, the hedge portfolio returns of over 20% to the total accrual strategy dwarf the returns to other anomalies (e.g., market-to-book effect) that have attracted much attention in the finance and accounting literature.

4.4 SEC Enforcement Action Results

Table 6 presents our final set of tests, which examine the relation between accruals and SEC enforcement actions. Due to the dichotomous nature of the dependent variable, we use logistic regression analysis. The regression in panel A of table 6 confirms that there is a significant positive relation between total accruals and the likelihood of a subsequent SEC enforcement action alleging that earnings were overstated in that year. Surprisingly, the results in panels B and C of table 6 indicate that the relation between accruals and SEC enforcement actions is almost entirely attributable to non-current asset accruals. This result is difficult to reconcile with the earnings persistence results in table 3, but is consistent with the stock return results in table 4. It suggests that firms with high non-current asset accruals have quality of earnings problems, but that these problems do not necessarily manifest themselves over the next year.

The results for the growth versus efficiency decomposition are in panels D and E of table 6. These results suggest that sales growth is the primary determinant of an SEC enforcement action. These results are again difficult to with the earnings persistence results in table 3, but are more consistent with the return results in table 4. While firms with changes in asset efficiency have lower earnings persistence, firms with higher sales growth are more likely to be subject to an SEC enforcement action. Overall, these results indicate that it is difficult to uniquely associate quality of earnings issues with a single component of accruals.

5. Conclusion and Implications

We have provided a systematic examination of the source of information in accruals about earnings quality. Our results provide several important new insights. First, we show that information in accruals about earnings quality extends beyond the set of ‘current’ accruals considered by Sloan (1996). In fact, we find that non-current accruals provide relatively more information about future stock returns and subsequent

SEC enforcement actions than current accruals. Second, we show that liability accruals play a unique role in helping to extract information from asset accruals about earnings quality. Third, we show that both the sales growth and efficiency components of accruals contribute to the information in accruals about earnings quality. Taken as a whole, our evidence suggests that information in accruals about earnings quality is not concentrated in a particular component of accruals. Total accruals, defined to include both current and non-current accruals, provides a robust and parsimonious measure of earnings quality.

One troubling aspect of our study is the lack of consistency of our results across the different variables that we use to measure the nebulous construct of earnings quality. In particular, we find that current accruals and changes in asset efficiency are strong determinants of earnings persistence, but that non-current accruals and sales growth are important predictors of future stock returns and subsequent SEC enforcement actions. These results highlight the importance corroborating empirical results on earnings quality across variables that capture different aspects of earnings quality.

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TABLE 1
Descriptive Statistics and Correlations for Total Accruals and its Components.
Balance Sheet Decomposition

Panel A: Descriptive Statistics

	Mean	Std. Dev.	25%	Median	75%
Total Accruals	0.092	0.263	-0.045	0.064	0.213
Current Accruals	0.028	0.158	-0.035	0.015	0.087
Non-Current Accruals	0.064	0.193	-0.026	0.033	0.130
D Current Operating Assets	0.060	0.191	-0.019	0.032	0.127
D Current Operating Liabilities	0.032	0.123	-0.015	0.018	0.069
D Non-current Operating Assets	0.072	0.199	-0.023	0.039	0.139
D Non-current Operating Liabilities	0.009	0.055	-0.003	0.001	0.015
Cash Flow	0.042	0.262	-0.077	0.068	0.180
Future RNOA	0.147	0.248	0.043	0.139	0.259
Mkt. Adj. Returns	0.005	0.704	-0.337	-0.089	0.189

Panel B: Correlation Tables - Pearson (below diagonal) and Spearman (above diagonal) (p-values shown in italics below correlations)

	Total Accruals	Current Accruals	NonCurr Accruals	D Current Operating Assets	D Current Operating Liabilities	D Non-current Operating Assets	D Non-current Operating Liabilities	Cash Flow	Future RNOA	Mkt. Adj. Returns	SEC Action
Total Accruals	--	0.676	0.788	0.679	0.215	0.770	0.134	-0.609	0.318	-0.074	0.024
		(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*
Current Accruals	0.684		0.191	0.743	-0.028	0.205	0.088	-0.389	0.218	-0.067	0.010
	(0.0001)	--	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0744)*
Non-Current Accruals	0.803	0.114		0.356	0.313	0.952	0.104	-0.497	0.275	-0.047	0.026
	(0.0001)	*(0.0001)*	--	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*
D Current Operating Assets	0.666	0.770	0.277		0.526	0.374	0.139	-0.340	0.331	-0.055	0.015
	(0.0001)	*(0.0001)*	*(0.0001)*	--	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0028)*
D Current Operating Liabilities	0.162	-0.079	0.285	0.570		0.321	0.099	-0.061	0.238	0.002	0.012
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	--	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.7315)*	*(0.0335)*
D Non-current Operating Assets	0.783	0.128	0.962	0.293	0.292		0.300	-0.464	0.289	-0.043	0.027
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	--	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*
D Non-current Operating Liabilities	0.025	0.066	-0.019	0.092	0.059	0.256		-0.005	0.143	0.020	-0.002
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0004)*	*(0.0001)*	*(0.0001)*	--	*(0.4084)*	*(0.0001)*	*(0.0002)*	*(0.7052)*
Cash Flow	-0.633	-0.384	-0.548	-0.337	-0.031	-0.522	0.029		0.272	0.115	-0.027
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.1780)*	--	*(0.0001)*	*(0.0001)*	*(0.0001)*
Future RNOA	0.277	0.188	0.224	0.269	0.178	0.229	0.048	0.325		0.270	-0.017
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.6600)*	*(0.0001)*	*(0.0001)*	*(0.0001)*	--	*(0.0001)*	*(0.0001)*
Mkt. Adj. Returns	-0.082	-0.062	-0.061	-0.053	-0.002	-0.061	-0.009	0.055	0.145		-0.019
	(0.0001)	*(0.0001)*	*(0.0001)*	*(0.0001)*	*(0.6600)*	*(0.0001)*	*(0.1780)*	*(0.0001)*	*(0.0001)*	--	*(0.0008)*
SECAction	0.025	0.008	0.028	0.016	0.016	0.027	-0.001	-0.030	-0.019	-0.010	
	(0.0001)	*(0.1460)*	*(0.0001)*	*(0.0003)*	*(0.0050)*	*(0.0001)*	*(0.8110)*	*(0.0001)*	*(0.0001)*	*(0.0680)*	--

The sample consists of 32,761 firm years from 1988 to 1998.
Total Accruals is calculated as $[(NOA_t – NOA_{t-1})/NOA_{t-1}]$. NOA is defined as Operating Assets-Operating Liabilities where Operating Assets=Total Assets (Compustat Item #6) – Cash and Short-Term Investments (Compustat Item #1). Operating Liabilities=Total Assets (Compustat Item #6) – Debt in Current Liabilities (Compustat Item #34) – Long term debt (Compustat Item #9) – Minority Interest (Compustat Item #38) – Common Equity (Compustat Item #60) – Preferred Stock (Compustat Item #130).

$RNOA_t$ is calculated as Operating Income after Depreciation at time t (Compustat Item #178) / NOA_{t-1}. Future RNOA = Operating $Income_t$ / NOA_t. CF_t=cash flow which is calculated as $RNOA_t$-Total $Accruals_t$. Current Accruals is calculated as [(Current NOA_t – Current NOA_{t-1})/NOA_{t-1}]. Current NOA is defined as Current Operating Assets – Current Operating Liabilities. Where Current Operating Assets=Current Assets (Compustat Item #4) – Cash and Short-Term Investments (Compustat Item #1) and Current Operating Liabilities=Current Liabilities (Compustat Item #5) - Debt in Current Liabilities (Compustat Item #34). MB_t=Market Value of Equity/Book value of equity. Where Market value is price at the end of the year (Compustat item #199) x Number of shares outstanding (Compustat #25) / Book value of equity (Compustat item #60).

Non-Current Accruals is calculated as [(Non-Current NOA_t – Non-Current NOA_{t-1})/NOA_{t-1}]. Where Non-Current NOA is computed as NOA – Current NOA. Sales Growth = [($Sales_t$ / $Sales_{t-1}$) – 1] where sales is Compustat Item #12. Cash Sales Growth = [($Sales_t$ +ΔAR_t) – ($Sales_{t-1}$ + ΔAR_{t-1})]/$Sales_{t-1}$ where ΔAR_t=(Compustat item #302). Credit Sales Growth = [ΔAR_t -ΔAR_{t-1}]/ $Sales_{t-1}$

$$\Delta \text{Asset Turnover} = \left[\left(\frac{Sales_t}{NOA_t}\right) - \left(\frac{Sales_{t-1}}{NOA_{t-1}}\right) \Big/ \frac{Sales_t}{NOA_t}\right].$$

ΔCurrent Operating Assets = [Current Operating $Assets_t$ - Current Operating $Assets_{t-1}$]/ NOA_{t-1}.
ΔCurrent Operating Liabilities = [Current Operating $Liabilities_t$ - Current Operating $Liabilities_{t-1}$]/ NOA_{t-1}.

ΔNon-current Operating Assets = [Non-current Operating $Assets_t$ – Non-current Operating $Assets_{t-1}$]/ NOA_{t-1} where Non-current operating assets=Operating Assets-Current Operating Assets.

ΔNon-current Operating Liabilities = [Non-current Operating $Liabilities_t$ – Non-current Operating $Liabilities_{t-1}$]/ NOA_{t-1} where Non-current Operating Liabilities =Operating Liabilities -Current Operating Liabilities.

SEC Action is an indicator variable equal =1 if the firm year is subject to an SEC accounting and auditing enforcement action; 0 otherwise.

Market adjusted returns are calculated by deducting the value-weighted market portfolio from the raw returns. Where raw returns are calculated from the start of the fifth month subsequent to the fiscal year-end in which cash flows and accruals are measured.

TABLE 2

Descriptive Statistics and Correlations for Total Accruals and its Components.

Growth & Efficiency Decomposition

Panel A: Descriptive Statistics

	Mean	Std. Dev.	25%	Median	75%
Total Accruals	0.092	0.263	-0.045	0.064	0.213
Sales Growth	0.109	0.211	-0.005	0.085	0.205
D Asset Turnover	0.002	0.223	-0.104	0.012	0.119
Cash Sales Growth	0.107	0.212	-0.005	0.084	0.202
Credit Sales Growth	0.002	0.074	-0.018	0.000	0.024
Cash Flow	0.042	0.262	-0.077	0.068	0.180
Future RNOA	0.147	0.248	0.043	0.139	0.259
Mkt. Adj. Returns	0.005	0.704	-0.337	-0.089	0.189

Panel B: Correlation Tables - Pearson (below diagonal) and Spearman (above diagonal) (p-values shown in italics below correlations)

	Total Accruals	**Sales Growth**	**D Asset Turnover**	**Cash Sales Growth**	**Credit Sales Growth**	**Cash Flow**	**Future RNOA**	**Mkt. Adj. Returns**	**SEC Action**
Total Accruals	--	0.487 *(0.0001)*	-0.609 *(0.0001)*	0.434 *(0.0001)*	0.198 *(0.0001)*	-0.609 *(0.0001)*	0.318 *(0.0001)*	-0.074 *(0.0001)*	0.024 *(0.0001)*
Sales Growth	0.491 *(0.0001)*	--	0.275 *(0.0001)*	0.952 *(0.0001)*	0.199 *(0.0001)*	-0.195 *(0.0001)*	0.315 *(0.0001)*	-0.034 *(0.0001)*	0.021 *(0.0001)*
D Asset Turnover	-0.646 *(0.0001)*	0.304 *(0.0001)*	--	0.292 *(0.0001)*	-0.042 *(0.0001)*	0.488 *(0.0001)*	-0.074 *(0.0001)*	0.053 *(0.0001)*	-0.008 *(0.1449)*
Cash Sales Growth	0.429 *(0.0001)*	0.939 *(0.0001)*	0.321 *(0.0001)*	--	-0.064 *(0.0001)*	-0.171 *(0.0001)*	0.287 *(0.0001)*	-0.033 *(0.0001)*	0.022 *(0.0030)*
Credit Sales Growth	0.191 *(0.0001)*	0.202 *(0.0001)*	-0.036 *(0.0001)*	-0.147 *(0.0001)*	--	-0.113 *(0.0001)*	0.101 *(0.0001)*	-0.008 *(0.2477)*	-0.002 *(0.6914)*
Cash Flow	-0.633 *(0.0001)*	-0.224 *(0.0001)*	0.497 *(0.0001)*	-0.201 *(0.0001)*	-0.097 *(0.0001)*	--	0.272 *(0.0001)*	0.115 *(0.0001)*	-0.026 *(0.0001)*
Future RNOA	0.277 *(0.0001)*	0.243 *(0.0001)*	-0.063 *(0.0001)*	0.214 *(0.0001)*	0.082 *(0.0001)*	0.325 *(0.0001)*	--	0.269 *(0.0001)*	-0.017 *(0.0001)*
Mkt. Adj. Returns	-0.082 *(0.0001)*	-0.031 *(0.0001)*	0.064 *(0.0001)*	-0.029 *(0.0001)*	-0.006 *(0.0001)*	0.055 *(0.0001)*	0.145 *(0.0001)*	--	-0.017 *(0.0021)*
SEC Action	0.025 *(0.0001)*	0.023 *(0.0001)*	-0.005 *(0.3703)*	0.026 *(0.0010)*	-0.010 *(0.0639)*	-0.030 *(0.0010)*	-0.019 *(0.0001)*	-0.009 *(0.1080)*	--

The sample consists of 32,761 firm years from 1988 to 1998. Please see variable definitions in table 1.

TABLE 3

Ordinary Least Squares Regressions of Future Earnings on Total Accruals and its Components[a]

Panel A: OLS regressions with Total Accruals

$$(1) \qquad RNOA_{t+1} = g_0 + g_1 \text{Cash Flow}_t + g_2 \text{Total Accruals}_t + u_{t+1}$$

Regression Coefficient	g_0	g_1	g_2	$Adj.\ R^2$
Estimated value	0.044	0.792	0.761	0.495
(t-statistic)	(38.51)	(164.66)	(158.89)	
F-test[b]			44.35**	

Panel B: OLS regressions for Initial Balance Sheet Decomposition

$$(2) \qquad RNOA_{t+1} = g_0 + g_1 \text{Cash Flow}_t + g_2 \text{Current Accruals}_t + g_3 \text{Non Current Accruals}_t + u_{t+1}$$

Regression Coefficient	g_0	g_1	g_2	g_3	$Adj.\ R^2$
Estimated value	0.042	0.798	0.691	0.817	0.499
(t-statistic)	(36.82)	(165.88)	(102.81)	(134.63)	
F-test[b]			219.80**	12.88**	

Panel C: OLS regressions for Extended Balance Sheet Decomposition

$$(3) \qquad RNOA_{t+1} = g_0 + g_1 \text{Cash Flow}_t + g_2\, \text{DCurrent Operating Assets}_t + g_3\, \text{DCurrent Operating Liabilities}_t + g_4\, \text{DNon-Current Operating Assets}_t + g_5\, \text{DNon-Current Operating Liabilities}_t + u_{t+1}$$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	g_5	$Adj.\ R^2$
Estimated value	0.040	0.789	0.699	-0.561	0.784	-0.772	0.503
(t-statistic)	(34.60)	(163.28)	(103.67)	(-54.18)	(123.30)	(-41.08)	
F-test[b]			149.12**	464.83**	0.42	0.06	

Panel D: OLS regressions for Initial Growth versus Efficiency Decomposition

$$(4) \qquad RNOA_{t+1} = g_0 + g_1 \text{Cash Flow}_t + g_2\, \text{Sales Growth}_t + g_3\, \text{DAsset Turnover}_t + g_4\, (\text{Sales Growth}_t * \text{DAsset Turnover}_t) + u_{t+1}$$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	$Adj.\ R^2$
Estimated value	0.042	0.780	0.796	-0.710	-0.882	0.499
(t-statistic)	(35.32)	(160.46)	(142.97)	(-122.00)	(-57.73)	
F-test[b]			9.18**	168.22**	23.23**	

Panel E: OLS regressions for Extended Growth versus Efficiency Decomposition

(5) $$RNOA_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2 Cash\ Sales\ Growth_t + g_3 Credit\ Sales\ Growth_t + g_4 DAsset\ Turnover_t + g_5 (Sales\ Growth_t * DAsset\ Turnover_t) + u_{t+1}$$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	g_5	*Adj.* R^2
Estimated value	0.043	0.779	0.794	0.807	-0.709	-0.881	0.499
(t-statistic)	(35.34)	(160.56)	(140.28)	(59.95)	(-121.12)	(-57.94)	
F-test[b]			7.08**	6.55*	170.30**	22.94**	

[a] The sample consists of 32,761 firm years from 1988 to 1998.
Please see variable definitions in table 1.

[b] The F-tests reported for the accrual component coefficients are for tests of the null hypothesis that the coefficient on the accrual component equals the coefficient on the cash flow component of earnings (g_1).

** Significant at the 1% level using a two-tailed test

* Significant at the 5% level using a two-tailed test

TABLE 4
Ordinary Least Squares Regressions of Future Returns on Total Accruals and its Components[a]

Panel A: OLS regressions for Total Accruals

(1) $Returns_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2 Total\ Accruals_t + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	$Adj.\ R^2$
Estimated value	0.023	0.013	-0.211	0.007
(t-statistic)	(5.20)	(0.67)	(-11.14)	

Panel B: OLS regressions for Initial Balance Sheet Decomposition

(2) $Returns_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2 Current\ Accruals_t + g_3 Non\ Current\ Accruals_t + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	$Adj.\ R^2$
Estimated value	0.023	0.014	-0.241	-0.190	0.007
(t-statistic)	(5.01)	(0.73)	(-8.97)	(-7.87)	

Panel C: OLS regressions for Extended Balance Sheet Decomposition

(3) $Returns_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2\ DCurrent\ Operating\ Assets_t + g_3\ DCurrent\ Operating\ Liabilities_t + g_4\ DNon\text{-}Current\ Operating\ Assets_t + g_5\ DNon\text{-}Current\ Operating\ Liabilities_t + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	g_5	$Adj.\ R^2$
Estimated value	0.023	0.013	-0.235	0.279	-0.200	0.109	0.007
(t-statistic)	(4.88)	(0.59)	(-8.72)	(6.98)	(-7.98)	(1.72)	

Panel D: OLS regressions for Initial Growth versus Efficiency Decomposition

(4) $Returns_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2\ Sales\ Growth_t + g_3\ DAsset\ Turnover_t + g_4 (Sales\ Growth_t * DAsset\ Turnover_t) + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	$Adj.\ R^2$
Estimated value	0.023	0.004	-0.190	0.250	0.102	0.007
(t-statistic)	(4.78)	(0.22)	(-8.63)	(10.72)	(1.69)	

Panel E: OLS regressions for Extended Growth versus Efficiency Decomposition

(5) $\boldsymbol{Returns_{t+1} = g_0 + g_1 Cash\ Flow_t + g_2\, Cash\ Sales\ Growth_t + g_3\, Credit\ Sales\ Growth_t + g_4\, DAsset\ Turnover_t + g_5\, (Sales\ Growth_t * DAsset\ Turnover_t) + u_{t+1}}$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	g_5	*Adj.* R^2
Estimated value (t-statistic)	0.023 (4.89)	0.004 (0.19)	-0.198 (-8.77)	-0.114 (-2.13)	0.252 (10.81)	0.105 (1.73)	0.007

[a] The sample consists of 32,761 firm-years from 1988 to 1999.
Please see variable definitions in table 1.
Returns is calculated as raw annual buy-hold return (inclusive of dividends and distributions) less the value-weighted market portfolio. The return cumulation period begins at the start of the fifth month after fiscal year end.

TABLE 5
Annual Mean Returns for Total Accruals and its Components[a,b]

Panel A: Portfolios constructed on Balance Sheet Decomposition

Portfolio Rank	**Total Accruals**		**Current Accruals**		**Non-Current Accruals**	
	Raw	**Mkt Adj.**	**Raw**	**Mkt Adj.**	**Raw**	**Mkt Adj.**
Low	0.276	0.129	0.228	0.080	0.261	0.114
2	0.206	0.059	0.206	0.059	0.206	0.058
3	0.202	0.055	0.179	0.032	0.162	0.015
4	0.161	0.014	0.154	0.007	0.168	0.020
5	0.147	(0.000)	0.132	(0.015)	0.154	0.007
6	0.127	(0.020)	0.145	(0.002)	0.127	(0.021)
7	0.109	(0.038)	0.156	0.009	0.126	(0.021)
8	0.095	(0.052)	0.117	(0.031)	0.112	(0.035)
9	0.104	(0.043)	0.091	(0.056)	0.107	(0.040)
High	0.059	(0.089)	0.078	(0.069)	0.062	(0.085)
Hedge Ret	0.218	0.218	0.150	0.150	0.199	0.199
Number	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**

Panel B: Portfolios constructed on Balance Sheet Decomposition

Portfolio Rank	**DCurrent Operating Assets**		**DCurrent Operating Liabilities**		**DNon-Current Operating Assets**		**DNon-Current Operating Liabilities**	
	Raw	**Mkt Adj.**	**Raw**	*Mkt Adj.*	**Raw**	**Mkt Adj.**	**Raw**	**Mkt Adj.**
Low	0.230	0.082	0.168	0.021	0.263	0.116	0.153	0.006
2	0.202	0.055	0.140	(0.008)	0.210	0.063	0.160	0.013
3	0.169	0.021	0.126	(0.021)	0.172	0.025	0.151	0.004
4	0.145	(0.002)	0.157	0.010	0.154	0.007	0.138	0.004
5	0.141	(0.006)	0.135	(0.012)	0.149	0.002	0.201	0.042
6	0.146	(0.002)	0.157	0.009	0.128	(0.019)	0.126	(0.021)
7	0.140	(0.007)	0.159	0.012	0.121	(0.026)	0.144	(0.003)
8	0.115	(0.033)	0.161	0.013	0.119	(0.028)	0.144	(0.003)
9	0.118	(0.030)	0.174	0.027	0.107	(0.040)	0.133	(0.014)
High	0.080	(0.067)	0.110	(0.038)	0.061	(0.086)	0.131	(0.016)
Hedge Ret	0.149	0.149	0.059	0.059	0.202	0.202	0.022	0.022
Number	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**	**40,851**

Panel C: Portfolios constructed on Growth & Efficiency Decomposition

Portfolio	Sales Growth		D Asset Turnover	
Rank	**Raw**	**Mkt Adj.**	**Raw**	**Mkt Adj.**
Low	0.180	0.033	0.083	(0.064)
2	0.182	0.035	0.108	(0.040)
3	0.158	0.011	0.124	(0.023)
4	0.168	0.020	0.123	(0.024)
5	0.162	0.015	0.122	(0.025)
6	0.143	(0.004)	0.177	0.030
7	0.161	0.014	0.161	0.014
8	0.116	(0.031)	0.183	0.035
9	0.138	(0.009)	0.206	0.059
High	0.077	(0.070)	0.199	0.052
Hedge Ret	0.103	0.103	0.116	0.116
Number	**40,851**	**40,851**	**40,851**	**40,851**

Panel D: Portfolios constructed on Growth & Efficiency Decomposition

Portfolio	Cash Sales Growth		Credit Sales Growth	
Rank	**Raw**	**Mkt Adj.**	**Raw**	**Mkt Adj.**
Low	0.175	0.028	0.163	0.016
2	0.169	0.022	0.167	0.020
3	0.165	0.018	0.149	0.001
4	0.158	0.010	0.131	(0.012)
5	0.166	0.019	0.146	(0.002)
6	0.149	0.002	0.155	0.006
7	0.157	0.010	0.156	0.009
8	0.129	(0.018)	0.144	(0.003)
9	0.130	(0.017)	0.145	(0.002)
High	0.085	(0.062)	0.126	(0.021)
Hedge Ret	0.090	0.090	0.037	0.037
Number	**40,851**	**40,851**	**40,851**	**40,851**

[a] Portfolios are formed based on total accruals and various components.
Please see variable definitions in table 1.
Firm-year observations are ranked annually and assigned in equal numbers to decile portfolios based on the various measures.

[b] Annual returns are calculated from the start of the fifth month subsequent to the fiscal year-end in which firms are assigned to portfolios. Market adjusted returns are calculated by deducting the value-weighted market portfolio from the raw returns. Results are similar using size-adjusted returns, where size-adjusted returns are calculated by deducting the market returns for all firms in the size-matched decile, where size is measured as market capitalization. All returns are adjusted for the de-listing bias.

TABLE 6
Logistic Regressions of SEC Enforcement Actions on Total Accruals and its Components[a]

Panel A: LOGISTIC regressions for Total Accruals

(1) $SECAction = g_0 + g_1 Total\ Accruals_t + u_{t+1}$

Regression Coefficient	g_0	g_1	*Model Chi-Square*	*P-Value*
Estimated value (p-value)	-6.93 (0.0001)	2.23 (0.0001)	19.51	(0.0001)

Panel B: LOGISTIC regressions for Initial Balance Sheet Decomposition

(2) $SECAction = g_0 + g_1 Current\ Accruals_t + g_2 Non\ Current\ Accruals_t + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	*Model Chi-Square*	*P-Value*
Estimated value (p-value)	-6.95 (0.0001)	0.90 (0.3123)	2.88 (0.0001)	23.09	(0.0001)

Panel C: LOGISTIC regressions for Extended Balance Sheet Decomposition

(3) $SECAction = g_0 + g_1\ DCurrent\ Operating\ Assets_t + g_2\ DCurrent\ Operating\ Liabilities_t + g_3\ DNon\text{-}Current\ Operating\ Assets_t + g_4\ DNon\text{-}Current\ Operating\ Liabilities_t + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	*Model Chi-Square*	*P-Value*
Estimated value (p-value)	-7.00 (0.0001)	0.99 (0.2456)	0.54 (0.6779)	2.59 (0.0001)	-3.56 (0.1325)	25.44	(0.0001)

Panel D: LOGISTIC regressions for Growth & Efficiency Decomposition

(4) $SECAction = g_0 + g_1\ Sales\ Growth_t + g_2\ DAsset\ Turnover_t + g_3\ (Sales\ Growth_t * DAsset\ Turnover_t) + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	*Model Chi-Square*	*P-Value*
Estimated value (p-value)	-7.06 (0.0001)	3.20 (0.0001)	-0.29 (0.7385)	-6.82 (0.0102)	27.82	(0.0001)

Panel E: LOGISTIC regressions for Growth & Efficiency Decomposition

(5) $SECAction = g_0 + g_1\,Cash\ Sales\ Growth_t + g_2\,Credit\ Sales\ Growth_t + g_3\,DAsset\ Turnover_t + g_4\,(Sales\ Growth_t * DAsset\ Turnover_t) + u_{t+1}$

Regression Coefficient	g_0	g_1	g_2	g_3	g_4	*Model Chi-Square*	*P-Value*
Estimated value (p-value)	-7.11 (0.0001)	3.56 (0.0001)	-1.27 (0.3770)	-0.52 (0.5332)	-6.84 (0.0076)	34.29	(0.0001)

[a] The sample consists of 32,761 firm-years from 1988 to 1999. Our sample is selected via a reading of the SEC Accounting and Auditing Enforcement Releases from 1987-2001.
Please see variable definitions in table 1.