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GRADUATE COLLEGE

THE IMPACT OF SIZE AND SOURCE OF NONARTICULATION ON THE INFORMATION CONTENT OF REPORTED CASH FLOWS FROM OPERATIONS

A Dissertation

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Doctor of Philosophy

By

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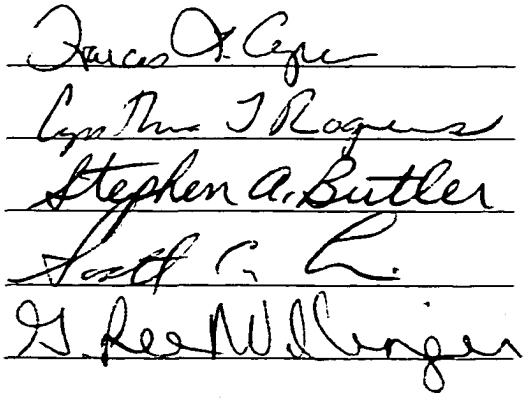
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THE IMPACT OF SIZE AND SOURCE OF NONARTICULATION ON THE INFORMATION CONTENT OF REPORTED CASH FLOWS FROM OPERATIONS

A dissertation APPROVED FOR THE
MICHAEL F. PRICE COLLEGE OF BUSINESS

BY



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1. INTRODUCTION

Prior to Statement of Financial Accounting Standard No. 95 (SFAS 95), Statement of Cash Flows, studies regarding the information content of operating cash flows were forced to rely on estimates of cash flow derived from the income statement and changes in balance sheet accounts. Results varied with the proxy used for operating cash flows and the economic circumstances facing the firm. With the implementation of SFAS 95, it became possible to evaluate the effectiveness of the earlier proxies. Studies show that operating cash flows estimated by the traditional method of examining changes in balance sheet accounts are often quite different from those reported in the cash flow statement, that is, the cash flow statement does not articulate with the balance sheet. Because of this nonarticulation, the results of the pre-SFAS 95 studies cannot be interpreted as evidence of the information content of cash flows as reported under SFAS 95. The nonarticulation itself may also be a factor in determining the market's response to operating cash flows. Managers may be trying to signal private information about future cash flows. Alternatively, the nonarticulation may be due to events that introduce noise into the valuation process.

The Financial Accounting Standards Board (FASB) enacted SFAS 95 requiring the addition of a Statement of Cash Flows to the set of required financial statements because of the need for statement users to have access to information regarding cash flows. Investors use cash flow information in assessing the value of a firm, that is, the market value of a stock is based on the present value of expected future cash flows available to shareholders. Cash flow information also allows statement readers to assess the quality of a firm's reported earnings. Earnings growth

without corresponding growth in operating cash flows may signal collection problems or managed accruals intended to artificially bolster earnings. Without sufficient operating cash flows, growth must be funded by sales of assets or by incurring additional debt. As cash flow information is rarely announced prior to the issuance of a firm's financial statements, the Statement of Cash Flows is the first and possibly only place investors can find details on how growth is being financed. If nonarticulation causes investors to doubt the veracity of reported operating cash flows, the usefulness of the statement in assessing earnings quality is compromised.

The purpose of this paper is to determine whether investors derive value from the information in reported cash flow from operations and to investigate the effects of nonarticulation on this information. The association between returns and operating cash flows may not be a linear relation; it has been hypothesized to vary with the size and sign of accruals and the magnitude of the changes in operating cash flows from one period to the next.[1] In this paper I focus on the magnitude and potential sources of nonarticulation to determine whether these characteristics differentially affect the information content of reported cash flow from operations.

This research begins to examine the motivations for and consequences of managers' cash flow reporting choices. It should be of interest to analysts and investors who use financial statement data for estimating firm value and assessing the quality of earnings. It should also be of interest to educators who instruct students in the preparation of the cash flow statement. If firms are not reporting in ways

[1] The effects of size and sign of accruals on the cash flow/return association is examined by Cheng, Liu and Schaefer (1996 and 1997a). The effects of the magnitude of the changes in cash flow is examined by Ali (1994) and Pfeiffer, Elgers, Lo and Rees (1998).

consistent with SFAS 95 guidelines, we should reexamine the way we approach this topic in the classroom.[2] Lastly, if non-articulating statements introduce noise into the valuation process, the Financial Accounting Standards Board (FASB) may wish to reconsider the discretion allowed in cash flow reporting.

1.1 Background

The importance of cash flows appears to be on the rise in the investing community. Tergesen (2001) states "while the concept of high-quality earnings seemed quaint during the Internet stock craze, it is prized now that companies are warning of earnings slowdowns." She cites examples of Motorola and other firms whose declining profits were foretold by inventories rising faster than sales, details that were available in the operating section of the cash flow statement each quarter. Operating cash flows that are not growing at the same rate as earnings are often the first sign of future earnings problems. For financial accounting, the accrual method is the required method for computing earnings as it is believed to provide more information to investors than does cash earnings. Accrual adjustments are intended to alleviate revenue-matching problems related to cash flows, and therefore better reflect firms' performance. However, when accounting methods allow earnings to appear artificially high or inflation, losses and write-offs distort earnings, cash flows may present a clearer picture of a firm's future prospects.

Since SFAS 95 was implemented in 1988, studies examining operating cash flows (CFO) as reported on the Statement of Cash Flows have emerged. Most

[2] Most textbooks discuss the preparation of the Statement of Cash Flows using the direct method of computing operating cash flows but acknowledge that the indirect method is prevalent in practice. The indirect method begins with operating income and adjusts for changes in current assets and liabilities, similar to the way CFO has been estimated in past research. The direct method more clearly describes

conclude that cash flow from operations is strongly associated with returns and contains information incremental to that obtained from accrual earnings. Cheng, Liu and Schaefer (1997b) find that reported CFO contains incremental information content for returns given CFO estimated from other financial statements and earnings. The implications of this research are a) that reported CFO differs from CFO information derived from the balance sheet and income statement and b) there is additional information in this difference (the nonarticulation component).

Nonarticulation may occur for many reasons. Some transactions simply do not articulate by nature of their reporting. For example, a business combination may result in an increase in operating assets such as inventory and receivables. Estimating cash flows using changes in the balance sheet accounts, the increases in inventory and receivables would imply an outflow of cash from operating activities. There would be no such effect in the operating section of the Statement of Cash Flows as this event would properly be shown as an outflow from an investing activity.[3] Therefore, the reporting of an acquisition may cause estimated cash flow from operations to deviate from reported amounts.

Other reasons for the nonarticulation between estimated and reported cash flow from operations are not so easily identifiable. The differences may be due to managers' efforts to reveal private information regarding their expectations of future cash flows. Managers may also attempt to manipulate the cash flow report to lessen the impact of lower than expected earnings, to create the appearance of higher

---

sources and uses of operating funds. The final result should be the same for both methods, only the degree of detail differs.

[3] FAS95, paragraph 17, part c.

earnings quality or because cash flow from operations are valued by the market differently than are other sources of cash flows. Studies such as Bahnson, Miller and Budge (1996) and Collins and Hribar (1999) document the magnitude of the nonarticulation 'problem.' Drtina and Largay (1985), Nurnberg (1993) and others discuss potential sources. Table 1 summarizes the literature on nonarticulation sources. None of these studies, however, examine how these sources of nonarticulation may affect the information content of cash flow information.

[Insert Table 1 about here]

1.2 Findings

Pre-SFAS 95 studies of the incremental information content of CFO relied on estimates of CFO obtained from the income statement and balance sheet and the assumption that this estimate would approximate true cash flows. Post-SFAS 95 studies documenting the magnitude of nonarticulation provide evidence that this assumption does not hold for most firms. The present study confirms prior evidence regarding the prevalence of nonarticulation in external financial statements. It also confirms earlier findings (Cheng, Liu and Schaefer, 1997b) that investors value the information provided by the Statement of Cash Flows with regard to operating flows. That is, reported cash flow from operations yield information incremental to that in earnings and cash flow estimates derived from other financial statements. This suggests that the nonarticulation component of reported CFO is valued differently from the estimated CFO component.[4]

[4] A decomposition of the regression equation is provided in appendix A. Earnings, estimated cash flows and reported cash flows may be restated as the primitive elements accruals, estimated cash flow and nonarticulation.

The wide-spread practice of presenting nonarticulating statements in conjunction with the empirical evidence that nonarticulation is valued differentially from cash flow information derived from the income statement and balance sheet motivates further investigation regarding the information content of nonarticulation. With regard to sources of nonarticulation, the evidence indicates that in firm-years with acquisition activity operating cash flows are less informative while the information content of earnings increases relative to firm-years without such activity. This suggests that the Statement of Cash Flows is less informative due to the complex reporting of acquisition activity, shifting reliance for valuation information to earnings. The occurrence of large foreign currency adjustments appears to increase the information content of reported CFO. The Statement of Cash Flows provides details of the adjustment separating true cash effects from restatements of assets and liabilities making reported CFO more informative. Finally, the occurrence of dispositions appears to have no effect on the valuation of either reported cash flow or earnings information.

If nonarticulation is managers' way of providing the market with private information, reported CFO would be expected to be most informative when nonarticulation is high. Testing the effects of the magnitude of nonarticulation on the information content of earnings and reported CFO I find that as the degree of nonarticulation increases, the information content of both reported CFO and earnings decreases. It appears that investors discount both sources of information when they cannot reconcile the reported CFO with cash flow information provided from other financial statements.

In summary, the evidence suggests that the informativeness of reported cash flow from operations is affected by the source and possibly the magnitude of the differences between reported and estimated cash flow measures. When the reporting of CFO is complicated by events such as an acquisition, or when the degree of nonarticulation is high, the operating information in the Statement of Cash Flows is less useful to investors. Alternatively, the reporting of events such as foreign currency adjustments in the Statement of Cash Flows is informative to investors as this clarifies the cash effects as intended by SFAS 95. The investing public might be better served by this statement if the indirect method of reporting (balance sheet approach) were replaced by a more detailed method such as the direct approach presently used by less than three percent of reporting firms.[5]

2. LITERATURE REVIEW[6]

2.1 Incremental Information Content of Cash Flows

Pre-SFAS 95 studies provide mixed results regarding the incremental information content of cash flows. These studies employed measures of CFO derived from changes in working capital adjusted for changes in current asset and liability accounts. For example, Bowen, Burgstahler and Daley (1987) find evidence that unexpected cash flows provide information with respect to unexpected returns while controlling for unexpected accruals. Rayburn (1986) finds a significant association between CFO and returns after controlling for accrual adjustments over a 20-year

[5] Accounting Trends and Techniques (1996) indicates that 97.5 percent of their surveyed firms report using the indirect method only.

[6] A comprehensive review of recent studies regarding the information provided by cash flows is in appendix B.

window. Wilson (1986) examines returns around the annual report date and concludes that CFO and total accruals provide information incremental to earnings and each other, however, Bernard and Stober (1989) could not replicate Wilson's results outside of his sample period.[7]

Cheng, Liu and Schaefer (henceforth CLS) authored some of the first studies (CLS 1996, 1997a, 1997b) to use data reported under SFAS 95 to examine the incremental information content of operating cash flows. In their 1997 paper (CLS, 1997b), they examine the value-relevance of cash flow from operations using reported cash flow information from 1988 through 1993. Their findings indicate that both reported CFO and estimated CFO have incremental explanatory power for abnormal returns after controlling for earnings, however, when both cash flow measures are included in the same regression, estimated CFO becomes insignificant. The authors conclude that cash flow information as reported under SFAS 95 is informative to market participants and that errors in estimates of CFO reduce its usefulness to investors.

The studies discussed above applied linear regression methodology to examine the relation between CFO and returns. Recent studies have begun to examine contexts wherein cash flow measures exhibit increased importance by allowing for nonlinear relations. Ali (1994) finds that given earnings, small changes in CFO have incremental information content whereas large changes are not informative. He speculates that this result occurs because large changes are expected to be less persistent. Pfeiffer, Elger, Lo and Rees (1998) replicate Ali using an

[7] See also Ball and Brown (1968), Beaver, Griffin and Landsman (1982) and Bowen, Burgstahler and Daley (1986). Neill, Schaefer, Bahnson and Bradbury (1991) provide a comprehensive review of early

alternative measure of market expectation and find incremental information content for all levels of unexpected CFO.[8] CLS (1996 and 1997a) find that the relation between CFO and returns is stronger when earnings are transitory and when the accrual component of earnings is large and negative. The results of these studies suggest that the market responds differentially to operating cash flows when firms face differing economic conditions. The present study extends CLS (1997b) and contributes to the stream of research into conditional factors affecting the information content of CFO by examining whether the magnitude or the source of the difference between estimated and reported CFO may affect the incremental information content of CFO for security returns.

2.2 The Articulation (or lack thereof) Between Financial Statements

With the exception of CLS's (1996, 1997a and 1997b) use of reported cash flow data, prior incremental information content studies assumed that cash flows could be derived from other sources using simple models.[9] Drtina and Largay (1985) discuss the problems in calculating cash flow from operations using information provided in the (previously required) Statement of Changes in Financial Position. The first problem they note is in classifying items as operating vs. non-operating. Specific examples of this problem include determining whether dividends and interest on short-term debt (investments) are financing (investing) or operating items. Reporting of depreciation expenses when inventories are manufactured, the method

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cash flow studies.

[8] The PELR (1998) expectation model uses the variables' historical auto- and cross-correlation structures. Both PELR (1998) and Ali (1994) relies on estimates of cash flow information as in pre-SFAS 95 studies.

[9] Dechow (1994) uses reported CFO in examining the relative information content of CFO and earnings. She finds that earnings consistently outperform CFO measures. A 1999 working paper by Collins and Hribar also uses reported CFO to examine errors in estimating accruals. These were not incremental information content studies.

of calculating the current portion of long-term leases, the reclassification of current/non-current accounts, and changes in reporting entities also affect the computation of cash flow from operations from other financial data.

White, Sondhi and Fried (1998, p. 88) call the classification of cash flows into their operating, financing and investing components "essential to the analysis of cash flow data." SFAS 95 was implemented to supply investors and other statement users with information relating to each classification to assist in assessing the amount, timing and uncertainty of future cash flows. In light of this new approach to reporting cash flows, Livnat and Zarowin (1990) sought to determine if cash flow from operating (CFO), investing (CFI), and financing (CFF) activities have information content given accruals. Because the different components are likely to provide different signals regarding future profitability, they are likely to have different relations with returns. Livnat and Zarowin found aggregate CFO to be highly significant whereas aggregate CFF was insignificant, consistent with irrelevance theories in the finance literature.[10] Aggregate CFI, although significant, exhibited a considerably lower response than that of CFO. This study preceded available SFAS 95 data forcing them to use estimates, which may have affected their results. If different cash flow classifications are valued differently, managers may have incentives to shift items between categories in the Statement of Cash Flows contributing to nonarticulating CFO.

The accuracy of CFO proxies used in prior information content studies can be assessed using SFAS 95's mandated disclosure of CFO. Bahnson, Miller and Budge

[10] Miller and Modigliani (1961) discuss the irrelevance of financing method and dividend policy to valuation.

(1996) examined 9,757 firm years reported under SFAS 95 and found that for approximately 75 percent of the sample, reported CFO did not agree with an independent calculation of CFO based on prior models. Extrapolating from their Exhibit 2, more than 55 percent of their sample firms had deviations of over ten percent, that is, relatively large differences between reported and estimated values. Examining a small sample in greater detail, they found that these differences were not explained in notes to financial statements. These results are confirmed by Collins and Hribar (1999) who find that 78% of their sample firms have differences between estimated and reported CFO of over ten percent of earnings before extraordinary items.

There are many reasons estimated and reported CFO may diverge including: a) unintentional mistakes in applying reporting rules, b) lack of details in financial statements available for estimation, c) errors in Compustat coding, d) intentional reclassifications used to signal managers' private information about future cash flows, e) manipulations of classifications intended to convey a more favorable impression of a firm's cash flow position, and f) activities such as business combinations, disposals and foreign currency adjustments. Unfortunately, only a few of these are observable.

Anecdotal evidence that firms are classifying cash flows in seemingly inconsistent and perhaps inappropriate ways in light of SFAS 95 guidelines can be found in annual reports and the financial press. For example, firms can realize a large tax benefit when employee stock options are exercised. This tax benefit is reported by some firms as an operating cash flow, by others as a financing cash flow and by

yet others as a non-cash transaction.[11] The FASB's Emerging Issues Task Force addressed this topic in the summer of 2000 and declared that, as with other tax items, this tax benefit should be included in cash flow from operations. Although this ruling will improve consistency between firms reporting this item, there is no actual cash provided. David Zion, a Bear Stearns accounting analyst claims that this item significantly inflates operating cash flow for seven of the largest companies in the NASDAQ 100 in 1999.[12]

The difference between estimated and reported CFO may also be due to identifiable transactions such as business combinations, divestirures or foreign currency adjustments. Since total reported cash flow is a fixed amount (it must be equal to the change in cash and cash equivalents), unexplained differences between reported CFO and those estimated from other statement data may occur because reported amounts are shifted between operating activities and investing or financing activities. Livnat and Zarowin's (1990) results suggest that estimated CFO has a greater impact on returns than CFF and CFI. If this result holds true for reported cash flows, firms may have an incentive to manage the Statement of Cash Flow classifications contributing to the nonarticulation problem.

[11] Cisco Systems, Inc. 1997 Annual Report indicates $198 million of these tax benefits as cash flows from operations. Ascend Communications, Inc. reports their $64.5 million in tax benefits in cash flows from financing. See Jereski (1997). Boston Chicken reported $15.2 million in option tax benefits as a non-cash transaction for 1997 (annual report).

[12] As reported by Anne Tergesen in Business Week (January 22, 2001, p.102).

3. HYPOTHESIS DEVELOPMENT

3.1 Information Contained in Non-articulating Cash Flow from Operations

The FASB requires that firms' annual reports include a Statement of Cash Flows detailing the sources and uses of cash by operating, investing and financing activities. Cheng, Liu and Schaefer (1997b) attempt to assess the value relevance of CFO disclosures under SFAS 95, and find that reported cash flow from operations (RCFO) exhibit incremental information content after controlling for earnings and a measure of CFO estimated from other financial statement data (ECFO). They conclude that the disclosures required under SFAS 95 are justified.

To establish the CLS results in a longer sample period and to provide a benchmark for additional tests, I test the following hypothesis (stated in alternative form):

> H1: Reported cash flow from operations contain incremental information for abnormal returns, given earnings and estimated cash flow from operations.

Tests of hypothesis one will provide evidence regarding the average market response to nonarticulation, the additional information provided by RCFO given ECFO. The focus of Cheng, Liu and Schaefer (1997b) was to evaluate the usefulness of the newly required Statement of Cash Flows. Their findings suggest that, on average, reported CFO contains incremental information given earnings and estimates of CFO derived from other financial statements. They did not examine how different sources of nonarticulation may affect the information content.

Income statement information and comparative balance sheets do not reveal specific information about many of the firm's transactions. The Statement of Cash

Flows, prepared using the prevalent balance sheet approach, may not be much more useful in providing this information. Investors can only deduce that what is reported does not equal their estimates. When a potential source of the nonarticulation is apparent, for example, the occurrence of an acquisition or a revaluation due to a foreign currency translation, the market response to the seeming discrepancies in reported CFO may be different than in cases where the source is unknown. In fact, when a plausible reason for nonarticulation is not available and potential errors or manipulation are suspected, investors may place less value on both reported performance measures, accounting earnings as well as reported CFO.

Business combinations, divestitures and foreign currency activities are frequently cited sources of nonarticulation.[13] Business combinations/divestitures affect investors' ability to estimate operating results from changes in balance sheet accounts, but knowing that the nonarticulation is due (at least in part) by a change in the reporting entity, investors may respond differently to this component than when its source is uncertain. Foreign currency adjustments may also affect nonarticulation because of restatements of current assets and liabilities. Knowledge of the presence of these non-operating transactions may alter investors' reactions to nonarticulating CFO relative to situations where no explanation is evident.

To examine the impact of nonarticulation caused by business combinations, divestitures and foreign currency activity on information content of reported CFO and earnings, I test the following hypotheses (stated in alternative form):

[13] See, for example, Bahnson, Miller and Budge (1996), Huefer, Ketz and Largay (1989) and Collins and Hribar (1999). Collins and Hribar call these factors "the most important and pervasive factors contributing to the nonarticulation problem" (p. 6).

H2: The information content of reported CFO, given earnings and estimated CFO, varies depending on the source of the nonarticulating CFO.

H3: The information content of earnings, given reported CFO and estimated CFO, varies depending on the source of the nonarticulating CFO.

The tests of these hypotheses extend CLS (1997b) by examining the effect of nonarticulation source on the information content of reported CFO. In addition, I separate the results for firms in which estimated and reported CFO are essentially equal (virtually no nonarticulation) from firms with larger discrepancies. By constraining the coefficient on reported CFO to be the same for all firms, the above test ignores the possibility that the information content may differ for firms with differing levels of nonarticulation. Prior studies have examined contexts in which CFO exhibits more or less information content such as the presence of large, negative accruals (CLS 1997a), transitory earnings (CLS 1996), and large changes in CFO indicating less persistence (Ali 1994). Evidence that some firms present nonarticulating cash flow information suggests another context under which the informativeness of cash flows may be examined.

The lack of details available in financial statements makes estimation of CFO imprecise. As with any estimate, small differences between estimated and reported CFO are inherent and should have little impact on returns. Large differences, however, may signal unusual transactions or reporting practices. For example, a large difference may indicate that a business combination has taken place during the period. Alternatively, it may signal managers' private information about future earnings/cash flows. If investors interpret the differences as new information, RCFO will exhibit a larger response coefficient for firms with large differences. Finally, if

the nonarticulation reflects managers' manipulation of reporting classifications, investors may also question the integrity of reported earnings and discount both cash flow and earnings measures. Considering that nonarticulation can be quite large for some firms, I examine whether the magnitude the nonarticulation affects the information content of cash flows for security returns. My fourth and fifth hypotheses (stated in alternative form) address these issues:

H4: The information content of reported CFO, given earnings, varies with the absolute magnitude of the difference between estimated and reported CFO.

H5: The information content of earnings, given reported CFO, varies with the absolute magnitude of the difference between estimated and reported CFO.

3.2 Differential Valuation of Cash Flow Components

The emphasis on CFO in prior studies suggests that operating flows drive valuation, to the exclusion of information about investing and financing activities. If cash flow from operations are valued more highly than is cash flow from investing or financing, failure to articulate the operating cash flows may be due to managers shifting cash flows between reporting categories. Livnat and Zarowin (1990) find that estimated CFO is valued more highly than is estimated CFF and estimated CFI exhibits a negative relation with returns, the response to which is weaker than the response to estimated CFO.[14]

Anecdotal evidence indicates that firms are not classifying like transactions in the same categories as are other firms; what would appear to be an investing or financing activity is classified as an operating flow by some firms. In this study, I test

[14] On average, investment spending, an outflow of cash, generates positive returns, hence the negative relation.

whether reported cash flow classifications are valued differentially, that is, whether manipulation of reporting classification could affect returns. This could help to explain the non-intuitive classifications and contribute an explanation as to why nonarticulation occurs.

4. METHOD AND RESULTS

4.1 Tests of Information Content of Nonarticulating Statements

To facilitate comparison with prior studies, financial data for December 31 year-end firms trading on the NYSE or ASE was obtained from the Compustat Industrial Annual Files and matched to (12 monthly) returns obtained from CRSP resulting in 5,280 firm-year observations containing the variables necessary to perform my tests.[15] Outliers, defined as earnings and cash flow variables scaled by beginning market value in excess of +/- 1.5 were omitted as in Cheng, Liu and Shaefer (1997b) reducing the sample to 5,018. Finally, Cook's D influence statistics were run to detect influential observations, resulting in the elimination 33 additional observations for final sample of 4,985 firm years. Table 2 provides summary statistics for each variable included in the regressions across the ten-year sample period 1989 through 1998.[16] The mean value of estimated cash flow from operations (deflated by the beginning market value of equity) is 0.1186, similar to the means of 0.145 in CLS (1996), 0.158 in CLS (1997b) and 0.138 in Dechow (1994). The mean value of the reported cash flow from operations (deflated) is 0.1061. The average CAR of -0.0387 is slightly lower than that reported by Cheng, Liu and Schaefer (1997b) of -0.021.

[15] Observations were omitted if desired variables had information coded by Compustat as .0001 to .0009.
[16] 1988 was the first year firms were required to include a Statement of Cash Flows. Since lags in earnings component variables are needed for these tests, data was collected for 1988 through 1998, although regressions are estimated for 1989 through 1998.

Table 3 provides Pearson correlation coefficients for the contemporaneous variables.[17]

[Insert Tables 2 and 3 about here]

Studies of the cash flow component of earnings prior to SFAS 95 generally disaggregate net income into its estimated cash flow and accrual components and regress cumulative abnormal returns on changes in estimated CFO and changes in estimated accruals. Using a 'change' specification assumes that earnings components follow a random walk process. This process may not best describe the time-series properties of annual operating cash flows. Using both levels and changes of a variable can capture either a random walk or higher order process such as mean reversion (Ali and Zarowin 1992).[18] Further, Biddle, Seow and Siegel (1995) show that levels and changes can be modeled parsimoniously using a one-period lag wherein the coefficient on the contemporaneous variable(s) measures the response to new information and allows for direct assessment of its significance.[19,20] As I make no assumptions as to the persistence of the CFO measures, this study employs both contemporaneous levels and one-period lag measures for all variables.

To test hypotheses one, incremental information content of reported CFO, the following regression is estimated:

$$CAR_t = b_0 + b_1ECFO_t + b_2ECFO_{t-1} + b_3EARN_t + b_4EARN_{t-1} + b_5RCFO_t + b_6RCFO_{t-1} + e_t \quad (1)$$

[17] As in CLS (1997b) some of the correlations were quite high. Regressions were examined for variance inflation factors to assure that collinearity problems did not affect the results.
[18] CLS (1997b) use levels and changes of earnings and cash flow variables.
[19] Pfeiffer and Elgers (1999) use contemporaneous levels and one-period lags to capture the mean reversion tendency exhibited by earnings variables previously documented by Dechow (1994).
[20] With levels and change specifications, it is necessary to sum the coefficients on each to measure response.

where

CAR_t = cumulative abnormal returns for 12 months from April of year t to March of year t+1 to assure that the effects of the annual report are included for calendar year firms.[21]

$EARN_t$ = income before extraordinary items (Compustat #18) scaled by beginning market value of equity.

$RCFO_t$ = reported CFO_t (Compustat #308) scaled by beginning market value of equity.

As in CLS (1997b),[22] I compute $ECFO_t$ as follows:

(Compustat numbers)

123 Income (flow of funds statement)
\+ 124 Extraordinary items and discontinued operations (flow of funds stmt)
\+ 125 Depreciation and amortization
\+ 126 Deferred Taxes
\+ 106 Equity method earnings
\+ 213 (Gain) or loss on net long-term asset sales
\+ 217 Other operating items
\- Δ2 Receivables
\- Δ3 Inventories
\- Δ68 Current assets - other
\+ Δ70 Accounts payable
\+ Δ71 Income taxes payable
\+ Δ72 Current liabilities – other

Coefficients are estimated using annual regressions (1989 – 1998). The mean of the annual coefficients is then divided by its standard error to assess significance. This method is used to correct for cross-sectional dependence in the dependent variable (Bernard, 1987). All independent variables are scaled by market value of equity at the beginning of year.

Table 4 presents the results of estimating equation 1. Consistent with CLS findings, RCFO is significantly positive (.2121, $p < .05$) in the current sample,

[21] EVENTUS is used to estimate market model expected returns using a maximum of 60 months (minimum of 30) prior to the year of interest.

suggesting that reported CFO contains information incremental to earnings and estimated CFO (cash flow information available from the income statement and balance sheet), supporting hypothesis 1. CLS (1997b) find that ECFO exhibits no incremental information content when RCFO is included in the regression,[23] however, in the present study, ECFO is also significantly positive (0.0929, $p < .01$) and different from the coefficient of RCFO. This result suggests that operating cash flow information available in the other statements is valued as well as the additional details found in the Statement of Cash Flows.

Equation 1 may be decomposed into its primitive components of accruals, estimated CFO and a nonarticulation component as shown in appendix A. By definition, RCFO is composed of ECFO and nonarticulation therefore, the coefficient on RCFO (b_5) in equation 1 includes the market response to both components. The coefficient (b_1) is the response to ECFO alone. Since the coefficients b_1 and b_5 are statistically different from one another (paired t-test, p=0.0554), this provides evidence that, on average, the nonarticulation component of reported CFO is valued differently than the estimated CFO component. The finding that $b_5 > b_1$ implies that there is a stronger association between RCFO and returns than between ECFO and returns. Likewise, coefficient on EARN (b_3) includes the effects of all three earnings components, ECFO, nonarticulation and accruals. Paired t-tests ($b_3 = b_5$ and $b_3 = b_1$) provide evidence that estimated and nonarticulation components of CFO are valued

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[22] Ali (1994) also uses this measure.

[23] In the present sample for 1989 to 1993 (2,298 observations), I can not duplicate the CLS results (3,982 observations). Differences in data collection include the use of Compustat PC PLUS by CLS vs. Compustat tapes by Ratliff. In addition, the present study may eliminate more observations due to missing data needed for additional tests. It should also be noted that the p-values for ECFO are slightly less than 10% in the CLS study, indicating that this variable may be significantly different from zero.

differently than are accruals (p values of .0012 and < .0000 respectively). That is, investors derive unique information from each component.

[Insert Table 4 about here]

The finding that earnings information is value-relevant has been accepted theory. Previously available cash flow information has also been assumed to contain incremental information content given earnings. The present study provides evidence that investors derive information from reported CFO that was not available in other financial statement data. The difference between estimated and reported CFO (nonarticulation) may signal managers' private information about future cash flows or provide information regarding non-operating transactions such as changes in entity or foreign transactions. If this information serves to clarify the amounts and timing of future cash flows, the FASB has achieved its goal in requiring firms to provide a Statement of Cash Flows. Investors can use the operating section to assist in evaluating the quality of earnings and make better decisions as to their investments.

The results of equation 1 suggested that, on average, investors value the information in reported CFO (RCFO) differently than that obtained from estimates (ECFO). It is possible that different sources of nonarticulation affect the information content of RCFO differently. The market response to earnings may be affected by the source of nonarticulation as well. Different reasons for nonarticulating statements may prompt investors to rely more on earnings or cash flow information or even to discount both reported measures if the source of the nonarticulation is not apparent. Prior literature on nonarticulation identifies the most prevalent and testable reasons for it to be acquisitions, dispositions and foreign currency adjustments. Table 5

provides information as to the number and descriptive statistics of sample firms with each of these characteristics. Panel A indicates that firms with high nonarticulation tend to have higher cumulative abnormal returns, higher levels of acquisitions and foreign currency adjustments but similar levels of dispositions.

[Insert Table 5 about here]

To test whether the source of nonarticulation affects the information content of RCFO and/or earnings equation 2 is estimated for each of these identified sources.

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

This equation is estimated several times, changing the source of nonarticulation (D_t) each time. First, D_t is specified as an indicator variable with a value of 1 if the firm has an acquisition (disposition, foreign currency adjustment) during the year. Next, D_t is replaced with the level of acquisition (disposition, foreign currency adjustment) deflated by beginning market value of equity.

Tables 6, 7 and 8 present the results of estimating equation 2 for acquisitions, foreign currency adjustments and dispositions, respectively. Panel A of table 6 (indicator variable) reveals that there is evidence that an acquisition reduces the market's response to reported cash flow information. RCFO for firms without acquisition activity exhibits a coefficient (c_3) of 0.3087 ($p < .01$). The adjustment for firms with acquisitions is -0.2767 ($p < .05$), reducing the RCFO response for firms with acquisitions by 90 percent to 0.0320. As for earnings, the coefficient for firms without acquisition activity is 0.9573 ($p< .01$), increasing by 0.4132 ($p < .01$) to 1.3705 (43 percent) when acquisition activity is present.

In the presence of an acquisition, investors appear to place less value on reported CFO and more on earnings information. Acquisitions contribute to nonarticulation because the balance sheet approach to deriving CFO may indicate changes in short term assets and liabilities (typically indicating operating flows) that appear on the Statement of Cash Flows as investing flows. Even though a firm has purchased inventories that could be sold immediately and receivables that could be collected immediately, no outflow for operating items is reported. The occurrence of a contemporaneous acquisition reduces the information value of the operating section regarding the amount and timing of future cash flows of the reporting firm. Investors appear to respond to this by reducing their response to this information source in favor of earnings.

Using an indicator variable to indicate the occurrence of an acquisition forces all levels of acquisition to be valued equally. I next re-estimate equation 2 replacing the indicator variable for an acquisition with the dollar value of current acquisitions deflated by the market value of equity at the beginning of the period. Results shown in Panel B of Table 6 indicate that the relative magnitude of the acquisition does not significantly affect the valuation of either RCFO or earnings as indicated by interaction terms insignificantly different from zero.

[Insert Table 6 about here]

Nearly all of the firms had foreign currency adjustments (in no year was the number of firms less than 97 percent), rendering the indicator variable approach unsuitable for testing the effect of foreign currency adjustments. Estimating the equation with the (deflated) level of foreign currency adjustment yields no evidence

that the magnitude of the adjustment has any affect on the information content of RCFO or earnings (panel B) as indicated by interaction terms insignificantly different from zero. Acknowledging that many of the foreign currency adjustment firms also had acquisitions that might overwhelm the foreign currency affects, the regression was again estimated without acquisition firms. Panel C of table 7 suggests that the level of FCA does affect the information content of RCFO for firms without acquisition activity ($p < .05$). The coefficient on RCFO is increased by 17 percent (from .2566 to 02995) for firms that have foreign currency adjustments and no acquisition activity. Since the foreign currency adjustment does not represent actual cash flows, the amounts reported on the Statement of Cash Flows may help to clarify operating cash flows for investors. The information in earnings is not changed. Finally, redefining the indicator variable as firms with large foreign currency adjustments (>$10,000) as in Collins and Hribar (1999), the results (panel D of table 7) confirm that the occurrence of foreign currency adjustments affects the information content of reported CFO ($p < .05$). The coefficient on RCFO is more than four times as great for firms with high levels of foreign currency adjustment (0.8775) as for firms with little or no foreign currency adjustment (0.2168). This is consistent with the cash flow statement providing information to assist investors in determining the true cash effect of the foreign currency adjustment.

[Insert Table 7 about here]

Panel A of table 8 shows that the occurrence of a disposition does not seem to affect the valuation of RCFO or earnings, contrary to the occurrence of an acquisition. Evaluating the equation with the level of disposition (panel B) confirms

this result. Removing acquisition firms from the analysis does not change the result of either specification (panels C disposition indicator variable and panel D level of disposition). As with foreign currency adjustments, equation 2 is reevaluated be redefining the dummy variable as large dispositions (>$10,000). Panel E of table 8 indicates that the previous results were not due to relatively small asset disposals.

[Insert Table 8 about here]

Hypotheses 2, that the information content of reported CFO is affected by the source of the nonarticulation appears to be supported in the present study. The occurrence of acquisitions appear to reduce the market response to reported CFO; large foreign currency adjustments (as well as average adjustments when the effects of acquisitions are removed) increase the response and dispositions have no effect at all.

Hypotheses 3, that the information content of earnings is affected by the source of the nonarticulation, is also supported with regard to acquisitions using the dummy variable specification for equation 2. On average earnings provide incremental information content; for firms with acquisition activity the response is increased by 41 percent. This is likely due to the reduced reliance (90 percent) on the information content of reported CFO. Earnings include current operating results for acquired segments so may better predict future cash flows. Neither foreign currency adjustments nor dispositions indicated a change in the market response to earnings. Operating results for discontinued segments are not included in operating income (earnings) as used in the present study, which may be why dispositions did not affect the earnings response. The cash flow statement may clarify the cash and non-cash

portions of the foreign currency adjustments but this has no effect on earnings. Overall, different sources of nonarticulation do affect the information content of earnings lending support to hypotheses 3.

Both CLS (1997b) and the current study find that reported CFO contains information incremental to that in estimated CFO. Hypothesis 4 (5) posits that the magnitude of the difference between estimated and reported CFO generates information for investors. If nonarticulation contains information and managers are using the difference between estimated and reported CFO to signal market participants of future cash flow expectations, reported cash flows should be most informative where the difference is the greatest. Alternately, if large differences cause investors to doubt the veracity of reported CFO and/or earnings, these performance measures should be least informative when differences are greatest.

I first test whether reported CFO is more or less informative when nonarticulation is above a minimum threshold. The magnitude of nonarticulation (difference between reported and estimated operating cash flows deflated by the market value of equity at the beginning of the period) was computed for each firm year as follows:

$$\text{Nonarticulation} = \frac{(RCFO_t - ECFO_t)}{MVE_{t-1}}$$

If the absolute value of the nonarticulation is greater (less) than 5 percent,[24] nonarticulation is considered to be material and D_t in the following equation is equal to 1 (0).[25]

[24] Five percent is a traditional materiality threshold. The intention is to rule out economically insignificant differences. Small amounts may be due to estimation error.

$$CAR_t = d_0 + d_1RCFO_t + d_2RCFO_{t-1} + d_3EARN_t + d_4EARN_{t-1} + d_5D_t + d_6RCFO_t*D_t + d_7EARN_t*D_t + d_8RCFO_{t-1}*D_t + d_9EARN_{t-1}*D_t + e_t \quad (3)$$

The coefficient d_1 (d_3) indicates the average response to RCFO (EARN). The coefficient d_6 (d_7) captures the differential response to RCFO (EARN) for firms with high nonarticulation. Table 9 provides the results of estimating equation (3). Results show that (d_7) is significantly negative ($p < .05$), indicating that for firm-years with nonarticulation of 5 percent or higher, reported earnings provide less information than in firm-years with virtually no nonarticulation.[26] The interaction variable for RCFO (d_6) is not significant at traditional levels indicating no difference in RCFO response between firms with high and low nonarticulation. When investors cannot reconcile the estimates of CFO with reported amounts they appear to discount the information value of earnings but not cash flows.

[Insert Table 9 about here]

Equation 3 classifies observations as either high or low non-articulation. Allowing the cash flow and earnings responses to differ for firms with different levels of nonarticulation may yield clearer results. Observations are placed in portfolios consisting of the lowest (absolute value) nonarticulation (first quartile) to the highest nonarticulation (fourth quartile). Equation 4 is then estimated for each portfolio.

$$CAR_t = f_0 + f_1RCFO_t + f_2RCFO_{t-1} + f_3EARN_t + f_4EARN_{t-1} + e_t \quad (4)$$

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[25] ECFO is not included in the equation because, by definition, when nonarticulation is low RCFO is approximately equal to ECFO resulting in multicollinearity problems. There is no reason to expect the information content of estimated CFO and nonarticulation (reported CFO) to differ due to the size of nonarticulation.

[26] The combined result is decreased but still significantly positive (0.6261, $p < .01$) for the earnings response.

As shown in Table 10, the coefficient (f_1) on RCFO falls monotonically as one moves from the portfolio with the lowest nonarticulation (mean 0.5225) to the portfolio with the largest degree of nonarticulation (mean 0.2240). However, the difference between the coefficients in portfolio 1 and portfolio 4 is not significant at traditional levels (p=0.1029). The response to earnings (f_3) also declines monotonically from the first portfolio (mean 1.0697) to the fourth portfolio (mean 0.6349). Again the difference in means between the first and fourth portfolios is not significant (p=0.1824). The reduced informativeness (lower response coefficients) of both RCFO and earnings at higher levels of nonarticulation would suggest that the magnitude of nonarticulation is not a signal of managers' private information. It does appear that investors are wary of reported CFO that does not articulate with estimates and may discount the information value of both performance measures. These results yield limited support for hypotheses 4 (size of nonarticulation affects informativeness of reported CFO) and hypothesis 5 (size of nonarticulation affects informativeness of earnings) but additional testing, or finer partitions may be needed to confirm this result.

[Insert Table 10 about here]

Equation 4 was also estimated allowing for actual (negative and positive) differences between RCFO and ECFO instead of absolute magnitude. In portfolio 1, ECFO > RCFO in all observations (mean nonarticulation of -0.1624); portfolio 4 includes large positive differences (mean nonarticulation of .1218). The results in table 11 indicate no difference in the response for either RCFO or EARN between the

first and fourth quartiles, suggesting that the markets' valuation of RCFO or earnings is not affected by whether reported CFO is greater or less than estimated CFO.

[Insert Table 11 about here]

Overall, the results regarding the size of nonarticulation are not conclusive. While the response to both RCFO and EARN falls monotonically as nonarticulation increases in size, means of these variables are not significantly different between the extreme portfolios.

4.2 Sensitivity Tests

Misspecification of equations due to omitted variables can affect the results of tests and conclusions made regarding them. When variables have previously been found to be significant, these variables should be considered as control variables in future research. CLS (1997a) find that the magnitude of accruals affects the information content of CFO. If accruals mitigate timing problems associated with cash flows, earnings are a better indicator of firm value. Alternatively, accruals may represent transitory (nonrecurring) items having minimal valuation implications making cash flows more relevant performance measure.[27] In either case, large accruals have the potential to cause the incremental information content of cash flows and earnings to differ from average results.

Although Cheng, Liu and Schaefer (1996) did not predict how large accruals would affect the information content, their results indicated that as earnings became more transitory, the incremental information content of earnings decreased while

[27] The 'big bath' effect wherein managers are believed to make large negative accruals when results are already bad in order to improve future results is an example of this.

increasing for cash flows from operations.[28] To test the robustness of the cash flow and earnings responses in the presence of high/low levels of accruals, equations 1, 2 and 3 were re-estimated.[29] Accruals are defined as $|Earn_t - RCFO_t|$ scaled by the beginning market value of equity. If scaled accruals are above the median for all firms for the year, accruals are designated as high.

For the re-estimation of equation 1 and all tests of equation 2 (acquisition dummy and level, disposition dummy and level and foreign currency adjustment level) the results for the low accrual portfolio mirror the full sample results in both sign and magnitude of the coefficients.[30] Results for firms with high accruals vary. This may be due to the dual affects of accruals, that is, firms making accruals to correct timing results are combined with firms with large, transitory adjustments confounding the results. In equation 3, the response to earnings and RCFO does not differ between the high or low accrual portfolios. These results suggest that researchers should apply caution when evaluating results of tests when firms have high accruals.

Ali, (1994) suggests that the information content of CFO is affected by small (though not large) changes in CFO since large changes may not be persistent. Pfeiffer, Elgers, Lo and Rees (1998) replicated Ali (1994) and found that RCFO contained information content for all portfolios of changes in CFO, when using an

[28] CLS (1996) also condition on earnings permanence. Their results indicate that when earnings are more transitory the response to RCFO is increased while the response to earnings is decreased. High accruals may be another proxy for transitory earnings.
[29] Estimating equations (2) and (3) for firms with high and low levels of accruals results in a more parsimonious specification, although using the interaction variable approach offers the advantage of easily evaluating the significance of an interaction, different intercepts and slopes (responses) to the variables.
[30] Tables showing the results of the re-estimations are in appendix D. See tables D1 through D7.

alternate expectations model.[31] In light of these results observations are separated into portfolios of high and low changes in CFO (defined as the change in RCFO from t-1 to t scaled by the beginning market value of equity greater than the yearly cross-sectional median). Equations 1, 2 and 3 are again re-estimated.[32] The present study differs from Ali (1994) and Pfeiffer, et. al. (1998) in that reported CFO is used in place of estimates for equation 3 and in addition to estimates for equations 1 and 2. The present study also employs levels and one-period lags of the earnings and cash flow variables in place of a random walk model (Ali) or the alternative expectation model used by Pfeiffer.

The portfolio of high changes in CFO firms closely reflects the full sample, the major difference being that for some of the nonarticulation sources (equation 2), ECFO was not significantly different from zero. For every re-estimation, the response to both RCFO and ECFO is insignificant for the low changes in RCFO portfolio indicating that operating cash flows provide no incremental information content given earnings. Low changes in reported CFO from year to year may simply mean that there is no new information to be obtained from this source for these firms. Earnings are significant for both portfolios over all regressions; the earnings response coefficients do not differ between high or low changes in CFO portfolios.

4.3 Alternate Explanations for Nonarticulation

Although the literature suggests that acquisitions, dispositions and foreign currency adjustments are the main causes of nonarticulation, much of it may be from

[31] PELR (1998) incorporate serial- and cross-dependencies of earnings components in their expectations model.

[32] Results are in Tables D8 through D14 in appendix D.

unidentified sources. To see how well these factors explain nonarticulation I evaluate the following:

$$NA_t = g_0 + g_1 ACQEFT_t + g_2 FCA_t + g_3 DSP_t + e_t \quad (5)$$

where

NA_t = Nonarticulation computed as ($RCFO_t$ - $ECFO_t$)

$ACQEFT_t$ = Acquisition effect computed as total acquisition (Compustat #129) – change in property, plant and equipment (Compustat #141) – change in goodwill (Compustat #204)

FCA_t = Foreign currency adjustment (Compustat #150)

DSP_t = Asset disposals (Compustat #66)

Table 12 presents the results of regressing nonarticulation on these predicted sources. In the 1990, 52 percent of the nonarticulation was explained by these three items. In succeeding years, R^2 declined dramatically, implying that for most years these sources are not very helpful in explaining the causes of nonarticulation. In seven of ten years, FCA is significantly associated with nonarticulation and is the only variable that is significant overall.

[Insert Table 12 about here]

Descriptive statistics for firms with high vs. low nonarticulation[33] were presented in Table 5. High nonarticulation firms have significantly higher abnormal returns as well as higher levels of acquisition and foreign currency adjustments than do low nonarticulation firms. High nonarticulation firms have a significantly higher percentage of firms with acquisition activity but a lower percentage of firms with foreign currency adjustments. Dispositions as measured in the present study do not differ significantly in either size or percentage of firms between the two groups.

Although the evidence indicates that high nonarticulation firms have larger levels of two predicted sources of nonarticulation, they provide little explanatory power for total nonarticulation. This suggests that other sources of nonarticulation are present.

Another potential explanation for nonarticulation is the misclassification of cash flow items within the Statement of Cash Flows. The FASB requires that operating, financing and investing cash flows be separately reported to assist investors in assessing the amount, timing and uncertainty of future cash flows. Managers have an incentive to opportunistically choose classifications to enhance the impression of future cash flows if the market values one type of flow over another. Livnat and Zarowin (1990) find that estimated CFO contains more information for returns than does estimated CFI or estimated CFF. To examine whether Livnat and Zarowin's results hold using reported cash flow values, the following regression is estimated:[34]

$$CAR_t = h_0 + h_1RCFO_t + h_2RCFO_{t-1} + h_3RCFI_t + h_4RCFI_{t-1} + h_5RCFF_t + h_6RCFF_{t-1} + h_7ACCR_t + h_8ACCR_{t-1} + e_t \quad (6)$$

where

$RCFO_t$ = cash flow from operations (Compustat # 308) scaled by beginning market value of equity

$RCFI_t$ = cash flow from investing (Compustat # 311) scaled by beginning market value of equity

$RCFF_t$ = cash flow from financing (Compustat # 313) scaled by beginning market value of equity

$ACCR_t$ = operating income (Compustat #18) less the sum of $RCFO_t$, $RCFI_t$, and $RCFF_t$

[33] High nonarticulation is defined as the absolute value of (RCFO-ECFO)/MVE greater than five percent.
[34] Contemporaneous levels and one-period lags are used as no assumptions are made as to the time-series properties of independent variables.

[Insert Table 13 about here]

Table 13 presents the results of estimating equation 6. As expected, all four components have significant associations with returns. RCFO is valued most highly (1.2969, $p < .01$), followed by accruals (0.7891, $p < .01$), RCFF (0.2305, $p < .10$) and RCFI (.2156, $p < .10$). Unlike Livnat and Zorowin's (1990) results, the current study finds a positive association for investing cash flows. This implies that investors reward downsizing of capital assets as opposed to outflows for additional investment, consistent with academic literature that finds share prices increasing with divestitures and related acquisitions while declining for acquisitions of unrelated business.[35] Using a paired t-test, I find that RFCO is valued significantly higher than all other components ($p < .01$ in all cases) implying that managers could gain by shifting reported inflows to CFO or outflows from CFO, assuming the market cannot costlessly determine that manipulation has occurred and derive correct values. If managers opportunistically report CFO to take advantage of the different valuation, nonarticulation of operating cash flows will be increased.

5. CONCLUSIONS

Empirical evidence suggests that differences between reported and estimated cash flow from operations (nonarticulation) occur frequently. Suggested explanations for nonarticulation include business combinations, divestitures and foreign currency activities, but often the reasons are not apparent. This study attempts to examine whether differences between estimated and reported CFO are informative and

whether the magnitude or the source of this difference affects the information content of reported CFO. Results indicate that the valuation of reported CFO and earnings are affected by the presence of acquisition activity, a predictable source of nonarticulation. In firm years where acquisition activity is present, the market response to reported CFO is reduced whereas the response to earnings is increased consistent with the complex (and often unclear) reporting of acquisitions on the Statement of Cash Flows. In addition, the presence of large foreign currency adjustments appear to increase the response to RCFO without a change in the response to earnings, consistent with the information of the Statement of Cash Flows clarifying the portion of the adjustment actually affecting the cash of the firm. The occurrence of a disposition seems to have no effect on the valuation of either reported CFO or earnings.

The magnitude of nonarticulation does not seem to signal managers' private information to investors. There is some evidence that as nonarticulation increases, the response to both reported CFO and earnings decreases. The direction of the differences (ECFO>RCFO or RCFO>ECFO) does not seem to affect the valuation of reported CFO or earnings in the present sample.

Regardless of claims that acquisitions, dispositions and foreign currency adjustments are the prevailing contributors to nonarticulating statements, these factors do a poor job in explaining it. Nonarticulation may also occur as a result of shifting amounts between cash flow reporting classifications. The results of this study indicate that CFO is valued above CFI and CFF, giving managers an incentive to

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[35] Copeland, Koller and Murin (1996) Valuation, Measuring and Managing the Value of Companies, p. 352.

manage CFO reporting. This finding suggests an explanation for the occurrence of nonarticulation unrelated to acquisition, disposition or foreign currency adjustment. Results of this study contribute to the literature stream regarding the information content of cash flows by examining another context wherein cash flow information may vary for some firms. With the exception of foreign currency adjustments that clarify cash effects, nonarticulation appears to decrease the information content of reported CFO, an issue the FASB may wish to examine. If reported CFO is misleading its usefulness to investors in assessing the amount and timing of future flows or the quality of reported earnings is lessened. Cash flow reporting procedures under SFAS 95 may need to be unified (direct method only) or clarified to avoid classification ambiguities. FASB has begun this process on an issue by issue basis (tax benefits from exercise of employee stock options). Academics may also need to adjust the way we approach the Statement of Cash Flows in the classroom to better align with the way it is prepared in the public sector.

6. FUTURE RESEARCH

Much research is still to be done in the area of market response to cash flow information. If managers are manipulating cash flow classifications, characteristics of these firms may provide insight at to their motives. For example, will firms overstate reported CFO when earnings are lower than expected or when high earnings with low CFO would draw attention to earnings quality? Are debt covenants or bonus contracts based on operating cash flows inducing managers to shift

classifications? Is nonarticulation as prevalent in firms that report under the direct method?

Recently, the Emerging Issues Task Force of the Financial Accounting Standards Board ruled that the tax benefits from the exercise of employee stock options be reported as operating activities. Prior to the ruling, firms often chose financing or non-cash transactions as the reporting category. Will the change affect the firms' market valuation?

The occurrence of an acquisition seems to reduce reliance on the operating cash flows as a performance measure. Research may be able to ascertain why this occurs and suggest ways to improve the reporting of this event so that investors can better understand the underlying cash flows associated with it.

Finally, since acquisitions, dispositions and foreign currency adjustments explain only a small part of nonarticulation, more research is needed to find out why nonarticulation occurs. Only then can we determine what new information is being provided by the reported cash flow from operations.

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TABLE 1 – Sources of Nonarticulation

Authors	Sources Examined	Major conclusions
Drtina and Largay (1985)	1. Change in reporting entity	1. Balance sheet approach provides erroneous CFO results
	2. Manufactured inventory	2. Depreciation in inventory has no cash impact
	3. Current portion of long-term lease	3. Classification as operating or non-operating may affect computation of CFO
	4. Reclassification of current account	4. Reclassifications may affect short-term (operating) vs. long-term (investing/financing) computations
Huefner, Ketz and Largay (1989)	1. Foreign currency translation	1. Only the portion of the adjustment affecting cash should be reported in the statement of cash flows
		2. Adjustments relating to other accounts do not represent changes in cash
Nurnberg (1993)	1. Classification of interest and dividends	1. These will not affect articulation, however the analysis of of operating flows is contaminated by these investing and financing related transactions
	2. Classification of taxes related to gains/losses of investing/financing activities	2. These will not affect articulation, however the analysis of of operating flows is contaminated by these investing and financing related transactions
Bahnson, Miller and Budge (1996)	1. Reclassification	1. Reclassification between short/long term assets affect estimation of CFO
	2. Issuance of stock for payables	2. Current liabilities not paid with cash affects estimation of CFO
	3. Most nonarticulation was unexplained	3. Companies fail to provide sufficient information to reconcile estimated and reported CFO
Collins and Hribar (1999)	1. Mergers and acquisitions	1. Negatively bias estimates of CFO
	2. Divestitures	2. Positively bias estimates of CFO
	3. Foreign currency adjustments	3. Bias depends on direction of adjustment
	4. Accounting changes Reclassifications	4. While acknowledging that other reasons exist, believe that 1-3 are pervasive factors contributing to nonarticulation

TABLE 2. Summary statistics

Variable	N	Mean	Std. Dev.	Minimum	Median	Maximum
CAR(t)	4985	-0.0387	0.3869	-2.1799	-0.0336	3.4512
ECFO(t)	4985	0.1186	0.2222	-1.4894	0.1024	1.4829
ECFO(t-1)	4985	0.1203	0.2325	-1.4894	0.1051	1.4877
EARN(t)	4985	0.0464	0.1174	-1.2609	0.0601	0.7689
EARN(t-1)	4985	0.0159	0.1170	-1.2705	0.0636	0.8653
RCFO(t)	4985	0.1061	0.1520	-1.1832	0.0902	1.4942
RCFO(t-1)	4985	0.1110	0.1577	-1.1703	0.0934	1.4942
ACQ(t)	4985	0.0283	0.1724	-0.2959	0.0000	9.3730
FCA(t)	4985	0.0002	0.0071	-0.1378	0.0000	0.2028
DSP(t)	4985	-0.0007	0.0549	-1.9442	0.0000	2.0258
CFI(t)	4985	-0.1150	0.3084	-9.7699	-0.0634	2.6951
CFI(t-1)	4985	-0.1268	0.3508	-9.7699	-0.0687	2.6951
CFF(t)	4985	0.0176	0.3097	-2.2676	0.0000	9.6414
CFF(t-1)	4985	0.0237	0.3427	-2.2676	0.0000	9.6414
ACCR(t)	4985	-0.0598	0.1653	-1.8017	-0.0326	1.0493
ACCR(t-1)	4985	-0.0590	0.1645	-1.8017	-0.0334	1.3982
RNA(t)	4985	-0.0125	0.1863	-1.4829	0.0000	1.6069

CAR(t)	Cumulative abnormal returns from April (t) to March (t=1)
ECFO(t)	Estimated cash flows from operations scaled by MVE at beginning of period
EARN(t)	Income before extraordinary items (Compustat #18) scaled by MVE at beginning of period
RCFO(t)	Reported cash flows from operations (Compustat #308) scaled by MVE at beginning of period
ACQ(t)	Acquisitions (Compustat #129) scaled by MVE at beginning of period
FCA(t)	Foreign currency adjustment (Compustat #150) scaled by MVE at beginning of period
DSP(t)	Dispositions (Compustat #66) scaled by MVE at beginning of period
CFI(t)	Cash flows from investing (Compustat #311) scaled by MVE at beginning of period
CFF(t)	Cash flows from financing (Compustat #313) scaled by MVE at beginning of period
ACCR(t)	Accruals (Earnings - RCFO) scaled by MVE at beginning of period
RNA(t)	Relative nonarticulation (RCFO - ECFO) / MVE beginning of period

TABLE 3. Pearson correlation coefficients (p-values)

Variable	CARt	ECFOt	EARNt	RCFOt	ACQt	FCAt	DSPt	CFIt	CFFt	ACCRt	RNAt
CARt	1.0000	0.1132	0.1486	0.1349	0.0351	-0.0369	-0.0179	-0.0027	-0.0326	-0.0186	-0.0250
		<0.0001	<.0001	<0.0001	0.0133	0.0091	0.2053	0.8484	0.0212	0.1902	0.0777
ECFOt		1.0000	0.1453	0.5591	0.0038	0.1110	-0.0088	0.0181	-0.2430	-0.4108	-0.7367
			<0.0001	<0.0001	0.7901	<0.0001	0.5327	0.2861	<.0001	<0.0001	<.0001
EARNt			1.0000	0.2676	0.0213	0.0725	-0.0083	-0.0911	-0.0180	0.4640	0.0449
				<0.0001	0.1336	<0.0001	0.5569	<0.0001	0.2029	<0.0001	0.0015
RCFOt				1.0000	0.0727	-0.0154	-0.0033	-0.3149	-0.1070	-0.7294	0.1488
					<0.0001	0.2772	0.8147	<0.0001	<0.0001	<0.0001	<.0001
ACQt					1.0000	0.0077	-0.0181	-0.5436	0.5075	-0.0517	0.0548
						0.5876	0.2010	<0.0001	<0.0001	0.0003	<.0001
FCAt						1.0000	0.0664	0.0368	0.0012	0.0656	-0.1449
							<.0001	0.0093	0.9343	<0.0001	<.0001
DSPt							1.0000	0.0836	-0.0401	-0.0029	0.0078
								<0.0001	0.0047	0.8402	0.5803
CFIt								1.0000	-0.8295	0.2248	-0.1841
									<0.0001	<0.0001	<.0001
CFFt									1.0000	0.0855	0.1448
										<0.0001	<.0001
ACCRt										1.0000	-0.0473
											0.0008
RNAt											1.0000

CAR(t) Cumulative abnormal returns from April (t) to March (t+1)
ECFO(t) Estimated cash flows from operations scaled by MVE at beginning of period
EARN(t) Income before extraordinary items (Compustat #18) scaled by MVE at beginning of period
RCFO(t) Reported cash flows from operations (Compustat #308) scaled by MVE at beginning of period
ACQ(t) Acquisitions (Compustat #129) scaled by MVE at beginning of period
FCA(t) Foreign currency adjustment (Compustat #150) scaled by MVE at beginning of period
DSP(t) Dispositions (Compustat #66) scaled by MVE at beginning of period
CFI(t) Cash flows from investing (Compustat #311) scaled by MVE at beginning of period
CFF(t) Cash flows from financing (Compustat #313) scaled by MVE at beginning of period
ACCR(t) Accruals (Earnings - RCFO) scaled by MVE at beginning of period
RNA(t) Relative nonarticulation (RCFO - ECFO) / MVE beginning of period

TABLE 4. Regressions of Cumulative Abnormal Returns on Earnings, Estimated Cash Flows and Reported Cash Flows

$$CAR_t = b_0 + b_1 ECFO_t + b_2 ECFO_{t-1} + b_3 Earn_t + b_4 Earn_{t-1} + b_5 RCFO_t + b_6 RCFO_{t-1} + e_t \quad (1)$$

	n	b_0 Intercept	b_1* ECFO	b_3* EARN	b_5* RCFO	Adjusted R^2
1989	384	-0.0355	0.1293	0.6812	0.2237	0.1757
1990	478	-0.0556	0.0068	0.8330	-0.0775	0.1078
1991	489	-0.1659	0.1868	0.5688	0.4564	0.1287
1992	492	-0.0418	0.1003	0.8125	0.5340	0.1452
1993	472	-0.1285	0.1266	0.7988	0.3686	0.1327
1994	475	-0.0276	0.0644	0.6208	0.3307	0.0901
1995	481	-0.0291	0.0028	1.0326	-0.0840	0.0774
1996	489	-0.0109	0.0744	0.5710	0.3949	0.0732
1997	433	0.0351	0.1653	1.4922	0.0438	0.1016
1998	825	-0.1131	0.0721	0.5324	-0.0693	0.0475
Mean		-0.0573	0.0929	0.7943	0.2121	0.1080
Std dev		0.0606	0.0612	0.2902	0.2391	
t		-2.9890	4.8004	8.6560	2.8057	
p		< .01	<.01	<.01	<.05	

		p-value
Ho: b1=b3	Reject	0.0000
Ho: b1=b5	Reject	0.0554
Ho: b3=b5	Reject	0.0012

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients. Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE 5 - Descriptive Statistics for High/Low Nonarticulation Firms

Panel A - Mean Values

Low Nonarticulation Firms

Year	n	CAR	ACQ	FCA	DSP
1989	279	0.0032	0.0141	-0.0003	0.0001
1990	349	-0.0700	0.0149	0.0000	-0.0005
1991	342	-0.1880	0.0095	0.0001	0.0018
1992	375	-0.0097	0.0104	-0.0004	0.0004
1993	364	-0.0745	0.0400	-0.0004	-0.0022
1994	354	-0.0169	0.0122	-0.0003	0.0004
1995	357	-0.0236	0.0191	-0.0001	-0.0053
1996	352	-0.0098	0.0182	-0.0002	-0.0002
1997	317	0.0751	0.0245	-0.0001	0.0016
1998	601	-0.1392	0.0205	-0.0001	-0.0001
Mean		-0.0453	0.0183	-0.0002	-0.0004
std dev		0.0755	0.0089	0.0002	0.0020
t		-1.8991	6.4814	-3.3750	-0.6175

High Nonarticulation Firms

Year	n	CAR	ACQ	FCA	DSP
1989	105	0.0351	0.0847	0.0000	-0.0081
1990	129	-0.0039	0.0297	0.0030	0.0042
1991	147	-0.0429	0.0296	0.0035	-0.0027
1992	117	0.0720	0.0643	0.0011	-0.0055
1993	108	-0.0614	0.0360	0.0007	-0.0167
1994	121	0.0646	0.0670	0.0018	-0.0010
1995	124	0.0940	0.0643	0.0018	-0.0040
1996	137	0.1246	0.0514	0.0011	0.0134
1997	116	0.1291	0.0581	0.0010	0.0022
1998	224	-0.2037	0.0673	0.0030	0.0024
Mean		0.0208	0.0552	0.0017	-0.0016
std dev		0.1024	0.0183	0.0011	0.0080
t		0.6406	9.5383	4.7069	-0.6214

t-test	p-value
Ho:CAR(low)=CAR(high)	0.00432
Ho:ACQ(low)=ACQ(high)	0.00025

t-test	p-value
Ho:FCA(low)=FCA(high)	0.00012
Ho:DSP(low)=DSP(high)	0.32012

Panel B - Number of Firms with Characteristic

Low Nonarticulation Firms

Year	n	ACQ	FCA	DSP
1989	279	103	276	47
1990	349	127	342	65
1991	342	129	338	67
1992	375	146	373	65
1993	364	144	363	60
1994	354	145	353	59
1995	357	147	355	60
1996	352	162	349	57
1997	317	150	312	53
1998	601	328	597	157
Mean		158	366	69
std dev		61.8573	85.8769	31.4925
t		8.0824	13.4700	6.9285

High Nonarticulation Firms

Year	n	ACQ	FCA	DSP
1989	105	58	103	37
1990	129	69	128	51
1991	147	58	146	34
1992	117	62	115	38
1993	108	46	103	18
1994	121	66	117	12
1995	124	72	116	13
1996	137	83	124	14
1997	116	74	103	20
1998	224	153	200	46
Mean		74	126	28
std dev		29.5426	29.3835	14.5682
t		7.9318	13.5064	6.1430

t-test	p-value
Ho:ACQ(low)=ACQ(high)	0.0000
Ho:FCA(low)=FCA(high)	0.0000
Ho:DSP(low)=DSP(high)	0.0006

CAR = Cumulative abnormal return

ACQ = Acquisitions deflated by market value of equity

FCA = Foreign currency adjustmentdeflated by market value of equity

DSP = Dispositions deflated by market value of equity

TABLE 6. Sources of Nonarticulation - Acquisition

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A. D = 1 if acquisition activity, 0 otherwise

		c0	c1*	c3*	c6*	c7	c8*	c9*	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.045	0.1407	0.1994	0.6913	0.0153	0.0829	-0.0747	0.1672
1990	478	-0.0143	0.0256	-0.1481	0.7744	-0.1191	0.1014	0.5365	0.1161
1991	489	-0.2509	0.2054	0.4978	0.4854	0.1910	-0.1413	0.3196	0.1515
1992	492	-0.0481	0.0723	0.6315	0.7193	0.0099	-0.2639	0.3385	0.1443
1993	472	-0.0822	0.1156	0.3846	0.8527	-0.0662	-0.5274	0.6464	0.1642
1994	475	-0.0043	0.0528	0.4501	0.5863	-0.0326	-0.3958	0.1504	0.0963
1995	481	-0.0769	0.0035	-0.0036	0.8789	0.0831	-0.3322	0.9327	0.0843
1996	489	-0.0468	0.0669	0.7733	0.3100	0.0354	-0.5642	0.5636	
1997	433	-0.0196	0.1331	0.2959	1.4195	0.0956	-0.6116	0.0716	0.1057
1998	825	-0.0909	0.0830	0.0065	2.8550	-0.0429	-0.1144	0.6472	0.0543
Mean		-0.0679	0.0899	0.3087	0.9573	0.0170	-0.2767	0.4132	0.1204
Std dev		0.0706	0.0599	0.2965	0.7282	0.0899	0.2565	0.3082	
t		-3.0394	4.7442	3.2928	4.1572	0.5963	-3.4110	4.2392	
p		<.01	<.01	<.01	<.01		<.05	<.01	

Panel B. D = Level of acquisition deflated by market value of equity

		c0	c1*	c3*	c6*	c7	c8*	c9*	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0397	0.1609	0.1815	0.6649	0.1853	-0.0002	0.0023	0.1726
1990	478	-0.0485	0.0021	-0.0609	0.8442	-0.2871	-0.0013	-0.0006	0.1093
1991	489	-0.1681	0.1837	0.4649	0.5668	0.1329	0.0005	-0.0008	0.1215
1992	492	-0.0382	0.0897	0.5473	0.8213	-0.0288	0.0030	-0.0027	0.1417
1993	472	-0.1255	0.1225	0.3498	0.8069	-0.0031	0.0013	-0.0037	0.1271
1994	475	-0.0301	0.0961	0.2718	0.6318	0.3157	-0.0011	0.0014	0.0921
1995	481	-0.0347	0.0385	-0.1291	1.0302	0.1796	0.0013	0.0007	0.0739
1996	489	-0.0127	0.0729	0.3976	0.5597	0.1530	-0.0014	0.0029	0.0865
1997	433	0.0163	0.1363	0.0834	1.3548	0.4903	0.0005	0.0013	0.1201
1998	825	-0.1112	0.0649	-0.0863	0.5280	-0.0522	0.0017	-0.0003	0.0476
Mean		-0.0592	0.0968	0.2020	0.7809	0.1086	0.0004	0.0001	0.1072
Std dev		0.0570	0.0557	0.2426	0.2565	0.2150	0.0014	0.0021	
t		-3.2886	5.4968	2.6331	9.6260	1.5970	0.9403	0.0751	
p		<.01	<.01	<.05	<.01	<.10			

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients.
Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).
CAR = Cumulative abnormal returns
ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.
EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.
RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE 7. Sources of Nonarticulation - Foreign Currency Adjustment

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A. D = 1 if foreign currency adjustment, 0 otherwise

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2

D=1 for nearly all firms therefore RCFO = D*RCFO and equations are not full rank.

Panel B. D = Level of foreign currency adjustment deflated by market value of equity

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0413	0.1615	0.1939	0.7586	-2.3570	0.0029	-0.0076	0.1698
1990	478	-0.0584	-0.0129	-0.0417	0.8214	4.0579	0.0315	-0.0052	0.1058
1991	489	-0.1721	0.2102	0.4668	0.5605	-7.1759	0.0330	0.0194	0.1493
1992	492	-0.0405	0.0990	0.5508	0.8520	-0.5446	0.0112	-0.0026	0.1409
1993	472	-0.1237	0.1003	0.4035	0.8421	7.4845	-0.0038	-0.0035	0.1411
1994	475	-0.0272	0.0661	0.3392	0.6053	-2.0315	0.0185	-0.0022	0.0822
1995	481	-0.0264	0.0141	-0.1218	1.0115	-8.1223	-0.0075	0.0101	0.0790
1996	489	-0.0126	0.0625	0.4092	0.5542	-3.7398	-0.0232	0.0037	0.0685
1997	433	0.0341	0.1734	0.0280	1.4990	-0.1608	0.0114	-0.2033	0.0934
1998	825	-0.1110	0.0740	-0.0683	0.5255	-1.4186	-0.0153	0.0060	0.0440
Mean		-0.0579	0.0948	0.2160	0.8030	-1.4008	0.0059	-0.0185	0.1074
Std dev		0.0608	0.0702	0.2494	0.2927	4.6706	0.0188	0.0654	
t		-3.0142	4.2689	2.7382	8.6763	-0.9484	0.9866	-0.8950	
p		<.01	<.01	<.05	<.01				

Panel C. D = Level of foreign currency adjustment/MVE (no acquisiton firms)

	c0	c1*	c3*	c5*	c7	c8*	c9*	Adj.
	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	-0.0755	0.4283	-0.0358	0.7739	-3.6536	0.0525	0.0284	0.1981
1990	-0.0609	0.0288	0.0392	0.6694	53.0446	0.0517	-0.1021	0.1463
1991	-0.2609	0.2825	0.4604	0.4865	6.0219	0.0522	0.0644	0.1651
1992	Not full rank							
1993	-0.0759	0.1660	0.3565	0.8925	11.1869	-0.0315	-0.0739	0.1220
1994	-0.0051	0.1183	0.3784	0.5846	9.9113	0.0058	-0.0672	0.0831
1995	-0.0970	0.1333	-0.0212	0.7782	-64.5838	0.0029	0.1492	0.1065
1996	-0.0459	-0.0877	0.8467	0.2846	-9.9453	0.1614	-0.1908	0.0762
1997	-0.0219	0.3193	0.1218	1.4922	0.9054	0.1112	-0.4360	0.1245
1998	-0.0919	-0.1163	0.1637	0.3149	-12.0760	-0.0199	0.6489	0.0503
Mean	-0.0817	0.1414	0.2566	0.6974	-1.0210	0.0429	0.0023	0.1191
Std dev	0.0739	0.1826	0.2853	0.3635	30.6063	0.0627	0.2948	
t	-3.3156	2.3233	2.8983	5.7565	-0.1001	2.0547	0.0236	
p	<.01	<.05	<.05	<.01		<.05		

TABLE 7 (cont.) Sources of Nonarticulation - Foreign Currency Adjustment

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel D. D = 1 if foreign currency adjustment > $10,000, 0 otherwise

		c0	c1*	c3*	c6*	c7	c8*	c9*	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0359	0.1243	0.1955	0.6774	-0.0146	0.5769	0.0352	0.1669
1990	478	-0.0865	0.0226	0.0374	0.7263	0.1151	-0.1222	0.5021	0.1524
1991	489	-0.1494	0.1747	0.4354	0.5310	-0.3790	1.4095	1.2046	0.1558
1992	492	-0.0407	0.1120	0.5115	0.8647	-0.1248	0.8117	-1.3116	0.1422
1993	472	-0.1224	0.1031	0.3383	0.8454	-0.0105	1.0133	-1.6731	0.1313
1994	475	-0.0323	0.0742	0.3357	0.5281	0.1913	-0.5412	1.5082	0.1211
1995	481	-0.0332	-0.0227	-0.0704	0.9363	0.0018	0.1800	1.2164	0.0761
1996	489	-0.0138	0.0720	0.4212	0.5543	-0.0886	-0.5993	-0.0596	0.0712
1997	433	0.0455	0.1710	0.0102	1.4398	-0.1682	1.3124	1.4364	1.0380
1998	825	-0.1100	0.0471	-0.0472	0.4903	-0.0020	2.5663	1.8449	0.0543
Mean	Mean	-0.0579	0.0878	0.2168	0.7594	-0.0480	0.6607	0.4704	0.2109
Std dev	Std dev.	0.0584	0.0625	0.2193	0.2869	0.1572	0.9802	1.2127	
t	t	-3.1310	4.4425	3.1257	8.3705	-0.9643	2.1317	1.2265	
p	p	<.01	<.01	<.01	<.01		<.05		

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients.

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE 8. Sources of Nonarticulation - Disposition

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A. D = 1 if disposition activity, 0 otherwise

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adjusted
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0208	0.0870	0.2707	1.0814	-0.0331	-0.3320	-1.4039	0.2232
1990	478	-0.0387	0.0210	-0.1180	0.8755	-0.0500	0.0671	-0.2217	0.1140
1991	489	-0.2028	0.1848	0.5276	0.5259	0.1285	-0.3917	0.4205	0.1307
1992	492	-0.0801	0.0795	0.6499	0.8175	0.1255	-0.8067	-0.0130	0.1509
1993	472	-0.1361	0.1267	0.3032	0.7717	0.0496	1.1421	0.4130	0.1398
1994	475	-0.0264	0.0662	0.2922	0.6018	-0.0061	0.4878	0.8302	0.0892
1995	481	-0.0609	-0.0019	-0.0066	0.8529	0.0829	-0.3946	1.4955	0.0974
1996	489	-0.0659	-0.0125	0.5880	1.2121	0.1077	-1.7706	-1.1171	0.1487
1997	433	0.0143	0.1962	0.1079	1.5103	0.1231	-0.5757	0.1498	0.1186
1998	825	-0.1243	0.0865	-0.0773	0.5827	0.0548	0.0586	0.2503	0.0605
Mean		-0.0742	0.0834	0.2538	0.8832	0.0583	-0.2516	0.0804	0.1273
Std dev		0.0645	0.0712	0.2758	0.3083	0.0675	0.7785	0.8539	
t		-3.6390	3.7037	2.9093	9.0581	2.7308	-1.0219	0.2976	
p		<.01	<.01	<.01	<.01	<.05			

Panel B. D = Level of dispositions deflated by market value of equity

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adjusted
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0265	0.1319	0.1997	0.7901	0.0232	-0.0054	0.0526	0.1897
1990	478	-0.0572	-0.0006	-0.0827	0.9002	0.4011	-0.0044	-0.0343	0.1135
1991	489	-0.1714	0.1993	0.4507	0.5742	-1.2436	-0.0038	-0.0010	0.1233
1992	492	-0.0374	0.0807	0.5791	0.7956	-0.5350	0.0209	-0.0323	0.1488
1993	472	-0.1292	0.0893	0.4017	0.8017	-0.6862	-0.0033	-0.0074	0.1336
1994	475	-0.0287	0.0668	0.3064	0.6051	-2.8516	-0.0412	0.1278	0.0942
1995	481	-0.0382	-0.0009	-0.0681	0.9677	-0.1910	0.0487	-0.0900	0.0846
1996	489	-0.0452	0.0033	0.5746	0.8819	-1.2359	-0.0465	-0.0674	0.1517
1997	433	0.0351	0.1584	0.0756	1.4455	2.8546	-0.0061	-0.0897	0.0988
1998	825	-0.1105	0.0643	-0.0609	0.5318	0.7367	-0.0154	-0.0683	0.0528
Mean		-0.0609	0.0793	0.2376	0.8294	-0.2728	-0.0057	-0.0210	0.1191
Std dev		0.0597	0.0687	0.2625	0.2612	1.4947	0.0273	0.0686	
t		-3.2258	3.6470	2.8626	10.0419	-0.5771	-0.6550	-0.9684	
p		<.01	<.01	<.01	<.01				

TABLE 8 (continued). Sources of Nonarticulation - Disposition

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel C. D = 1 if disposition activity, 0 otherwise (no acquisition firms)

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adjusted
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	224	-0.0185	0.2437	0.1490	0.9275	-0.1972	-0.1116	-1.4718	0.2716
1990	282	-0.0084	-0.0158	-0.0711	0.8254	-0.0578	0.0829	-0.6439	0.1061
1991	302	-0.2487	0.2747	0.4425	0.4735	-0.1030	0.4393	0.5450	0.1653
1992	287	-0.0360	0.1304	0.5776	0.7613	-0.0144	-1.0987	-0.1210	0.1488
1993	282	-0.0958	0.1264	0.3459	0.8735	0.1921	0.6712	-0.2139	0.1100
1994	264	-0.0291	0.1412	0.3578	0.5753	0.2414	0.1458	0.3212	0.1090
1995	261	-0.0774	-0.0260	0.0619	0.6419	-0.1544	0.7684	2.2632	0.0722
1996	245	-0.0996	-0.3380	1.2721	0.8836	0.1858	-0.7398	-1.4228	0.1614
1997	208	-0.0223	0.3263	0.1235	1.4167	0.3095	-0.1328	-0.7770	0.1493
1998	344	-0.0610	-0.0881	0.1004	0.2380	-0.3020	0.9537	1.2531	0.0777
Mean		-0.0697	0.0775	0.3360	0.7617	0.0100	0.0978	-0.0268	0.1371
Std dev		0.0708	0.1992	0.3834	0.3152	0.2089	0.6549	1.1716	
t		-3.1106	1.2300	2.7709	7.6407	0.1514	0.4724	-0.0723	
p		<.01		<.05	<.01				

Panel D. D = Level of dispositions/MVE (no acquisiton firms)

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adjusted
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	224	-0.0301	0.5741	-0.3088	0.9029	0.6314	-0.2360	0.2047	0.2609
1990	282	-0.0159	-0.0325	-0.1166	0.8356	1.0564	0.0100	-0.0228	0.0978
1991	302	-0.2601	0.2935	0.4713	0.4847	0.6510	-0.0045	-0.0225	0.1617
1992	287	-0.0313	0.0744	0.6438	0.7124	0.0926	0.1647	-0.2227	0.1611
1993	282	-0.0887	0.0853	0.4231	0.8773	-0.5671	-0.0017	-0.0046	0.1035
1994	264	-0.0062	0.1223	0.3512	0.5492	-2.6412	-0.0001	0.1046	0.0904
1995	261	-0.0803	-0.0481	0.0533	0.7738	-0.1247	0.1535	-0.1654	0.0672
1996	245	-0.0991	-0.2649	1.1997	0.8952	-1.2901	0.0111	-0.0891	0.1940
1997	208	-0.0211	0.3082	0.1230	1.4513	1.1581	0.0620	0.1062	0.1353
1998	344	-0.0694	-0.0606	0.0831	0.3625	3.7161	-0.0174	-0.2878	0.0794
Mean		-0.0702	0.1052	0.2923	0.7845	0.2683	0.0142	-0.0399	0.1351
Std dev		0.0745	0.2369	0.4292	0.3001	1.6785	0.1099	0.1553	
t		-2.9813	1.4039	2.1539	8.2654	0.5054	0.4073	-0.8135	
p		<.01	<.10	<.05	<.01				

TABLE 8 (continued). Sources of Nonarticulation - Disposition

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel E. D = 1 if disposition > $10,000, 0 otherwise

		c0	c1*	c3*	c5*	c7	c8*	c9*	Adjusted
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	384	-0.0268	0.0853	0.2525	0.7341	0.0091	-0.0368	-0.8905	0.1814
1990	478	-0.0612	0.0029	-0.0666	0.8885	0.1297	-0.2596	-0.6700	0.1058
1991	489	-0.1666	0.1835	0.4810	0.5625	-0.1368	-1.3093	0.0418	0.1299
1992	492	-0.0410	0.0912	0.5536	0.8519	-0.0709	0.0763	-1.4601	0.1458
1993	472	-0.1317	0.1250	0.3729	0.7814	0.1478	-0.1583	0.9329	0.1261
1994	475	-0.0254	0.0609	0.3206	0.6100	-0.2210	2.7328	1.0444	0.0912
1995	481	-0.0265	0.0045	-0.0632	0.9675	-0.0809	0.4936	0.5247	0.0734
1996	489	-0.0356	-0.0095	0.5525	0.8790	-0.1540	-0.3178	-2.2552	0.1308
1997	433	0.0318	0.1927	0.0433	1.4359	0.1672	-0.2510	0.8874	0.1064
1998	825	-0.1042	0.0784	-0.1251	0.5575	-0.1725	0.8537	0.0687	0.0475
Mean	Mean	-0.0587	0.0815	0.2322	0.8268	-0.0382	0.1824	-0.1776	0.1138
Std dev	Std dev.	0.0589	0.0712	0.2658	0.2578	0.1433	1.0586	1.1143	
t	t	-3.1513	3.6206	2.7622	10.1435	-0.8439	0.5447	-0.5040	
p	p	<.01	<.01	<.05	<.01				

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients.

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE 9. Magnitude of nonarticulation

D=1 if abs(nonarticulation/MVE) is greater than 6%

$$CAR_t = d_0 + d_1RCFO_t + d_2RCFO_{t-1} + d_3Earn_t + d_4Earn_{t-1} + d_5D_t + d_6RCFO_t \times D_t + d_7Earn_t \times D_t + d_8RCFO_{t-1} \times D_t + d_9Earn_{t-1} \times D_t + e_t \quad (3)$$

	n	d_0 Intercept	d_1* RCFO	d_3* EARN	d_5 D	d_6* D*RCFO	d_7* D*EARN	Adjusted R^2
1989	384	-0.0488	0.2357	1.3272	0.0376	0.0907	-0.8810	0.1803
1990	478	-0.1144	0.0635	0.9304	0.1778	-0.1489	-0.3946	0.1468
1991	489	-0.2046	0.7614	0.6023	0.1464	-0.3773	0.0003	0.1391
1992	492	-0.0718	0.5067	0.9615	0.1193	0.1569	-0.1263	0.1499
1993	472	-0.1457	0.6619	1.6155	0.0483	-0.5810	-1.6492	0.1735
1994	475	-0.0626	0.2718	0.9369	0.1151	0.1607	-0.4800	0.1012
1995	481	-0.0702	0.1454	0.7821	0.1389	-0.4296	0.3283	0.0938
1996	489	-0.0930	0.9016	1.5796	0.1942	-0.8121	-1.3892	0.1737
1997	433	0.0002	0.1615	1.6970	0.1131	-0.1143	-0.2711	0.1053
1998	825	-0.0721	-0.2614	0.4107	-0.1147	0.4814	0.2802	0.0610
Mean		-0.0883	0.3448	1.0843	0.0976	-0.1574	-0.4583	0.1325
Std Dev		0.0562	0.3571	0.4472	0.0894	0.3947	0.6656	
t		-4.9674	3.0536	7.6678	3.4514	-1.2607	-2.1771	
p		<.01	<.01	<.01	<.01		<.05	

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients.

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = Indicator variable equal to 1 if (RCFO - ECFO)/MVE is greater than 5%

TABLE 10. Nonarticulation portfolios

Comparison of Porfolio 1 (lowest absolute percentage of nonarticulation) with Portfolio 4 (highest absolute percentage of nonarticulation)

Portfolio 1	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	0.0006	1.9800	1.0020	0.1733
1990	118	0.0005	-0.3000	0.3326	0.0546
1991	122	0.0006	1.0489	-0.2426	0.1759
1992	122	0.0007	-0.2320	-1.5967	0.1604
1993	118	0.0007	0.0072	2.7679	0.2925
1994	118	0.0007	1.1154	0.1762	0.0626
1995	120	0.0008	0.4485	2.0855	0.1027
1996	122	0.0010	0.5287	1.5246	0.2007
1997	108	0.0010	0.2030	3.3226	0.1877
1998	205	0.0003	0.4254	1.3249	0.0974
Mean		0.0007	0.5225	1.0697	0.1508

Portfolio 2	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	96	0.0073	0.1846	1.8228	0.1956
1990	118	0.0073	-0.1632	0.7339	0.0594
1991	122	0.0081	0.7494	0.5383	0.1284
1992	122	0.0085	0.7013	2.5993	0.1851
1993	117	0.0076	0.8379	0.5607	0.1912
1994	118	0.0072	-0.4949	1.6334	0.0788
1995	119	0.0071	0.4604	0.6970	0.0754
1996	121	0.0091	1.2563	1.8630	0.2236
1997	107	0.0090	0.3465	1.9674	0.1494
1998	205	0.0071	0.9745	0.9717	0.0934
Mean		0.0078	0.4853	1.3388	0.1380

Portfolio 3	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	0.0306	0.1021	1.2456	0.0959
1990	118	0.0283	0.2781	1.5550	0.2412
1991	122	0.0362	0.5075	1.0320	0.2390
1992	122	0.0267	0.9522	0.7904	0.2815
1993	118	0.0268	0.5765	2.3741	0.2056
1994	119	0.0273	0.5365	0.7303	0.1775
1995	120	0.0279	-0.0277	0.7168	0.0129
1996	122	0.0312	0.5511	1.7206	0.2532
1997	107	0.0313	0.3567	0.5248	0.0613
1998	204	0.0289	-0.1196	-0.4366	0.0865
Mean		0.0295	0.3713	1.0253	0.1655

Portfolio 4	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	0.2440	0.3143	0.4486	0.2266
1990	118	0.2485	-0.0918	0.5100	0.2049
1991	122	0.2933	0.4672	0.5349	0.0856
1992	121	0.2616	0.6273	0.8101	0.3541
1993	117	0.2504	0.2958	0.0601	0.0780
1994	118	0.2293	0.4362	0.4540	0.0930
1995	120	0.2957	-0.2522	1.0929	0.1345
1996	121	0.2686	0.0283	0.1576	0.0304
1997	108	0.2188	0.0862	1.5195	0.1361
1998	205	0.2507	0.3286	0.7617	0.0702
Mean		0.2561	0.2240	0.6349	0.1413

t-tests	p-value
RCFO(1) = RCFO(4)	0.1029
EARN(1) = EARN(4)	0.1824

t-tests	p-value
RCFO(2) = RCFO(4)	0.0959
RCFO(1) = RCFO(3)	0.2942
RCFO(3) = RCFO(4)	0.0715
EARN(2) = EARN(4)	0.0082
EARN(1) = EARN(3)	0.4653
EARN(3) = EARN(4)	0.1454

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

$$\%NA = abs * \frac{(RCFO-ECFO)}{MVE}$$

TABLE 11. Nonarticulation portfolios

Comparison of Porfolio 1 (lowest actual percentage of nonarticulation) with Portfolio 4 (highest actual percentage of nonarticulation)

Portfolio	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	-0.1540	0.2682	0.5690	0.1906
1990	118	-0.1762	0.0857	0.5770	0.0730
1991	122	-0.1951	0.3860	0.7759	0.1025
1992	122	-0.1817	0.8495	0.8251	0.3670
1993	118	-0.1340	0.6466	0.5282	0.1223
1994	118	-0.1286	0.3272	0.4813	0.0870
1995	120	-0.1746	0.1190	1.0400	0.1037
1996	122	-0.1466	0.0504	0.2806	0.0243
1997	108	-0.1493	0.6549	1.2810	0.2787
1998	205	-0.1841	-0.3784	0.2064	0.0326
Mean		-0.1624	0.3009	0.6565	0.1382

Portfolio	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	96	-0.0057	-0.2626	1.5296	0.0637
1990	118	-0.0075	0.0443	0.8965	0.0763
1991	122	-0.0076	1.1815	-0.2266	0.1563
1992	122	-0.0074	-0.0058	2.2833	0.0661
1993	117	-0.0055	0.3975	0.0642	0.0967
1994	118	-0.0062	-0.1147	0.3091	-0.033
1995	119	-0.0073	1.4394	2.6183	
1996	121	-0.0097	1.0627	1.4754	0.1602
1997	107	-0.0084	1.0233	1.2965	0.2241
1998	205	-0.0082	0.4379	0.2605	0.0014
Mean		-0.0074	0.5204	1.0507	0.0903

Portfolio	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	0.0028	1.3956	0.0893	0.2672
1990	118	0.0018	-0.2806	0.1636	0.0072
1991	122	0.0020	0.1369	0.7536	0.0798
1992	122	0.0026	0.2765	-0.9263	0.0886
1993	118	0.0030	0.7804	1.4824	0.2531
1994	119	0.0025	0.6622	1.7692	0.1606
1995	120	0.0020	-0.0814	1.7977	0.0672
1996	122	0.0020	0.6665	1.9883	0.2355
1997	107	0.0022	-0.7239	3.1999	0.0632
1998	204	0.0012	0.3146	1.5063	0.1125
Mean		0.0022	0.3147	1.1824	0.1335

Portfolio	Mean				Adj.
	n	Nonart	RCFO	EARN	R^2
1989	95	0.1200	0.0942	0.8485	0.2428
1990	118	0.0992	-0.2136	1.7240	0.3003
1991	122	0.1337	0.6284	0.5682	0.2011
1992	121	0.1045	0.7255	0.7390	0.2158
1993	117	0.1420	0.2460	0.4537	0.0838
1994	118	0.1274	0.3743	0.8258	0.1522
1995	119	0.1477	-0.5244	0.5922	
1996	121	0.1505	0.3370	1.0080	0.1068
1997	108	0.0998	-0.1700	0.8337	0.0316
1998	205	0.0934	0.0877	1.0898	0.1515
Mean		0.1218	0.1585	0.8683	0.1651

t-tests	p-value
RCFO(1) = RCFO(4)	0.1529
EARN(1) = EARN(4)	0.1314

t-tests	p-value
RCFO(2) = RCFO(4)	0.0959
RCFO(1) = RCFO(3)	0.4767
RCFO(3) = RCFO(4)	0.2046
EARN(2) = EARN(4)	0.2939
EARN(1) = EARN(3)	0.0929
EARN(3) = EARN(4)	0.2304

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

$$\%NA = \frac{(RCFO - ECFO)}{MVE}$$

TABLE 12. Explanatory power of Acquisitions, Foreign Currency Adjustments and Dispositions on Nonarticulation

$$NA_t = g_0 + g_1 ACQEFT_t + g_2 FCA_t + g_3 DSP_t + e_t \quad (5)$$

	n	Intercept	ACQEFT	FCA	DSP	Adjusted R^2
1989	381	8.1792	-0.0481	2.2690 **	0.5164	0.0076
1990	472	4.9417	-0.1174	-9.4459 *	-0.0365	0.5220
1991	488	-28.9857	1.4044 *	-1.7544 *	2.7968	0.1201
1992	487	-17.7478	0.1546	-4.2881 *	-1.0608	0.1104
1993	470	113.1264	-0.0968	-8.9987 *	-0.8117	0.0090
1994	473	24.1056	0.1091	-8.9092 ***	0.0219	0.0017
1995	479	102.2308	0.7322 ***	5.8147	-4.7798	0.0058
1996	485	77.5193	0.1540	-5.0440	-0.6819	-0.0004
1997	430	27.2170	0.0365	-22.9686 **	-0.6045	0.0027
1998	819	-39.2634	-0.1324	-2.9837	4.1388 **	0.0042
Mean		27.1323	0.2196	-5.6309	-0.0501	0.0783
Std dev		53.7549	0.4865	7.8516	2.3724	
t		1.5961	1.4275	-2.2679	-0.0668	
p		<.10	<.10	<.05		
Pooled	4985	23.8599	0.0726	-3.7548	-0.4113	0.0052
sdt err		16.5696	0.0676	0.7072	0.7046	
t		1.4400	1.0700	-5.3100	-0.5800	
p		0.1499	0.2832	<.0001	0.5594	

NAt = Nonarticulation computed as (unscaled) RCFOt - ECFOt

ACQEFTt = Acquisition effect computed as total acquisition (Compustat #129) - change in property, plant and equipment (Compustat #141) – change in goodwill (Compustat #204)

FCAt = Foreign currency adjustment (Compustat #150)

DSPt = Asset disposals (Compustat #66)

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

* significant at <.01

** significant at <.05

*** significant at <.10

TABLE 13. Cash Flow components

$$CAR_t = h_0 + h_1RCFO_t + h_2RCFO_{t-1} + h_3RCFI_t + h_4RCFI_{t-1} + h_5RCFF_t + h_6RCFF_{t-1} + h_7Accr_t + h_8Accr_{t-1} + e_t \quad (6)$$

	n	h_0 Intercept	h_1* RCFO	h_3* RCFI	h_5* RCFF	h_7* ACCR	Adjusted R^2
1989	381	-0.0241	1.3430	0.5060	0.7176	0.5188	0.2132
1990	472	-0.0527	1.0265	0.2560	0.3047	0.8001	0.1199
1991	488	-0.1600	1.2078	0.0901	0.0380	0.5190	0.1234
1992	487	-0.0402	1.3029	-0.2860	-0.2459	0.8605	0.1652
1993	470	-0.1192	1.5801	0.5093	0.4731	0.6383	0.1495
1994	473	-0.0231	1.1842	0.2331	0.1622	0.6352	0.0849
1995	479	-0.0823	1.0248	-0.0634	0.1150	1.0470	0.0849
1996	485	-0.0370	2.1966	1.0013	0.9952	0.7861	0.1560
1997	430	0.0561	1.3812	-0.4070	-0.4863	1.6100	0.1340
1998	819	-0.0946	0.7216	0.3169	0.2310	0.4755	0.0689
Mean		-0.0577	1.2969	0.2156	0.2305	0.7891	0.1300
Std dev		0.0599	0.3941	0.4127	0.4323	0.3393	
t		-3.0486	10.4067	1.6522	1.6857	7.3529	
p		<.01	<.01	<.10	<.10	<.01	

	p-value
Ho: h1 = h3	0.0000
Ho: h1 = h5	0.0000
Ho: h1 = h7	0.0045
Ho: h3 = h5	0.3343
Ho: h3 = h7	0.0122
Ho: h5 = h7	0.0150

*The level and one lag specification allows for the response to be evaluated by examining the coefficient and significance level for just the contemporaneous variable instead of deriving these from the combined levels and changes coefficients. Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

RCFO = Reported cash flow from operations

RCFI = Reported cash flow from investing

RCFF = Reported cash flow from financing

ACCR = Accruals (Earnings - RCFO)

Appendix A: Decomposition of the basic regression equation

This appendix is intended to address two issues that arise relating to the basic regression equation used in this paper. It is composed of contemporaneous levels and one period lag measures of earnings and cash flow components as follows:

$$CAR_t = b_0 + b_1ECFO_t + b_2ECFO_{t-1} + b_3EARN_t + b_4EARN_{t-1} + b_5RCFO_t + b_6RCFO_{t-1} + e_t$$

where

CAR_t = Cumulative abnormal returns

$ECFO_{t\,(t-1)}$ = Cash flow from operations estimated from the income statement and changes in balance sheet items for time period t (t-1) scaled by the market value of equity at the beginning of the period

$EARN_{t(t-1)}$ = Operating earnings (Compustat #18) at t (t-1) scaled by the market value of equity at the beginning of the period

$RCFO_{t\,(t-1)}$ = Cash flow from operations reported on the Statement of Cash Flows for time period t (t-1) scaled by the market value of equity at the beginning of the period

Since each component is a performance measure for the same firm for the same year, two issues often arise. First is the multicollinearity issue. Are the terms too highly correlated to provide information? Second is the question of whether different information is provided by such obviously overlapping variables. Ignoring the prior year lag and residual for ease of exposition, this equation can be restated in terms of its primitive components.

$$CAR_t = b_0 + b_1ECFO_t + b_3EARN_t + b_5RCFO_t$$

$$CAR_t = b_0 + b_1ECFO_t + b_3(RCFO_t + ACCR_t) + b_5RCFO_t$$

$$CAR_t = b_0 + b_1ECFO_t + b_3(ECFO_t + NA_t + ACCR_t) + b_5(ECFO_t + NA_t)$$

$$CAR_t = b_0 + b_1 ECFO_t + b_3(ECFO_t + NA_t + ACCR_t) + b_5(ECFO_t + NA_t)$$

$$CAR_t = b_0 + (b_1 + b_3 + b_5)ECFO_t + (b_3 + b_5)NA_t + b_3 ACCR_t$$

In this final form, it can be seen that the components do contain unique information that may be valued differentially by the market. Assessment of this information is summarized below:

Incremental information content:

- If b_1 is significant, ECFO contains incremental information content given RCFO and EARN.
- If b_3 is significant, EARN contains incremental information content given RCFO and ECFO.
- If b_5 is significant, RCFO contains incremental information content given EARN and ECFO.

Valuation:

- If b_1 is significantly positive (negative), the market response to ECFO is greater (less) than the response to NA.
- If b_5 is significantly positive (negative), the market response to NA is greater (less) than the response to ACCR.
- If $b_1 = 0$ and $b_5 = 0$, then all three components are valued equally (the market response to each of the components is equal to b_3).

Appendix B – Literature Review

1.0 INTRODUCTION

This appendix provides a summary and analysis of the research literature on the information content of operating cash flows as reported on the Statement of Cash Flows, a statement required to be included with the annual reports of public companies for years since 1988. Cash flows are the lifeblood of a company; positive cash flows are necessary for a firm to pay dividends to investors, interest and principal to creditors and wages to employees. The market value of a firm is theorized to be the present value of future cash flows, if so, the ability to predict future cash flows is vastly important to the allocation of resources in the market. Finally, the cash flow statement provides information to help investors assess the quality of a firm's reported earnings.

The provision of information to assist financial statement readers in evaluating the cash flows of a firm is considered by the Financial Accounting Standards Board to be a primary consideration in preparing financial statements. Statement of Financial Accounting Concepts No. 1, Objectives of Financial Reporting by Business Enterprises paragraph number 37 states:

> Financial reporting should provide information to help present and potential investors and creditors and other users in assessing the amounts, timing and uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption , or maturity of securities or loans. The prospects for those cash receipts are affected by an enterprise's ability to generate enough cash to meet its obligations when due and its other cash operating needs, to reinvest in operations, and to pay cash dividends and may also be affected by perceptions of investors and creditors generally about that ability, which affect market prices of the enterprise's securities. Thus, financial reporting should provide information to help investors, creditors, and others to assess the amounts, timing, and uncertainty of prospective net cash inflows to the related enterprise.

White, Sondhi and Fried (1998, p. 88) call the classification of cash flows into their operating, financing and investing components 'essential to the analysis of cash flow data.' In 1988 the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards No. 95 (SFAS 95), "Statement of Cash Flows," implemented to require that management supply investors and other statement users with information relating to each classification to assist in assessing the amount, timing and uncertainty of future cash flows. In addition, the Emerging Issues Task Force of the Financial Accounting Standards Board has recently discussed cash flow reporting classification issues regarding the proper presentation of tax benefits from the exercise of employee stock options.

Recognizing the theoretical importance of cash flow information, accounting researchers have attempted to measure its economic importance, if any. Pre-SFAS 95 studies utilized estimates of cash flow but these studies resulted in inconsistent conclusions regarding the value relevance of cash flows. Recent (post SFAS 95) studies generally conclude that cash flow from operations (CFO) contain information beyond that obtained from accrual earnings. They also suggest that the information content of CFO may be contextual. For example, when earnings are highly transitory cash flows may provide a clearer picture of a firm's performance. In contrast, in the event of a change in business entity due to acquisition operating cash flows may be less informative.

Cash flow information is of interest to investors, creditors, employees as well as most other stakeholders of a firm. This paper attempts to summarize and evaluate recent studies regarding the information contained in operating cash flows. Section 2 examines incremental information content studies for both the average market effect of reported

cash flow from operations and contexts in which CFO might be more or less informative. Section 3 examines reasons that reported cash flow information might differ from estimates derived from other financial statement information making reported CFO more or less informative. An overview of research findings is given in section 4. Section 5 concludes with a discussion of issues related to this line of research.

1.1 Issues

Specific issues to be addressed by examining the empirical evidence to date include:

1. On average, does reported CFO yield incremental information content in the presence of reported earnings?
2. Does the incremental information content of reported CFO differ systematically for firms with differing characteristics?

1.2 Methods

Many studies of the information content of CFO apply linear regression methodology to examine the relation between CFO and returns. Most measure the association over 12 month time periods although a few are event studies. The linear studies resulted in inconsistent conclusions as to the value of cash flow information, possibly because researchers had to rely on estimates of cash flow values prior to 1988. Another possibility is that the association is non-linear, that is, the response to CFO may differ for some firms.

A few pre-SFAS 95 studies examined contexts wherein cash flow measures might exhibit differential information content by allowing for nonlinear relations.

Unfortunately, different model specifications have resulted in conflicting conclusions for non-linear studies as well.

In the decade since SFAS 95 has required firms to include a statement of cash flows in their annual reports, a few attempts have been made confirm earlier studies using reported CFO information and additional contexts. Generally, the results indicate that reported CFO provides incremental information given accrual earnings. As predicted by the FASB, the Statement of Cash Flows appears to provide information that is used by investors to assess the amount and timing of cash flows. The results as to contexts wherein the information content may differ is less conclusive.

2.0 INFORMATION CONTENT OF CASH FLOWS

Section 2.1 provides an overview of pre-SFAS 95 cash flow studies. Section 2.2 summarizes the generally accepted accounting principles with regard to reporting of cash flows and section 2.3 examines the empirical evidence regarding the incremental information content of cash flows as reported on the Statement of Cash Flows.

2.1 Pre-SFAS 95 Studies

Long before cash flow information was required by SFAS 95, researchers attempted to assess the value-relevance of cash flows. Dechow (1994) examined various cash flow measures to determine how they measured up to accrual earnings. She concluded that accrual earnings are the preferred performance measure because of the

ability to alleviate timing and matching problems inherent in cash flows.[36] Other relative information content studies confirm these results.[37]

Studies of the incremental information content of CFO produced mixed results when studies used pre-SFAS 95 cash flow data. These studies employed measures of CFO derived from working capital statements provided by firms prior to SFAS 95. For example, Bowen, Burgstahler and Daley (1987) adjust working capital from operations (WCFO) for changes in non-cash working capital accounts and find evidence that unexpected cash flows provide information with respect to unexpected returns while controlling for unexpected accruals. Rayburn (1986) finds a significant association between CFO (defined as earnings before extraordinary items adjusted for depreciation, changes in deferred taxes and working capital changes) and returns after controlling for accrual adjustments over a 20-year period. Wilson (1986) examines returns around the annual report date and concludes that CFO (WCFO plus changes in working capital except for cash, marketable securities and short-term debt) and total accruals provide information incremental to earnings and each other. Bernard and Stober (1989) could not replicate Wilson's results outside of his sample period.[38]

Pheiffer and Elgers (1999) recognized that the specification of most returns/earnings component studies used only the change specification for independent variables. This would imply that each component follows a random walk pattern. Following this methodology, they regressed size-adjusted returns on changes in CFO and

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[36] Dechow (1994) describes how accruals mitigate the timing and matching problems (p. 4) and empirically tests the association of accrual earnings/cash flows and returns.

[37] Moehrle, Reynolds-Moehrle, and Wallace (2000) find this result for an average of firms however, in a sub-sample of loss firms, operating cash flows dominated earnings measures.

[38] See also Ball and Brown (1968), Beaver, Griffin and Landsman (1982) and Bowen, Burgstahler and Daley (1986). Neill, Schaefer, Bahnson and Bradbury (1991) provide a comprehensive review of early cash flow studies.

current and noncurrent accruals. The results suggested that response coefficients for CFO and current accruals are significantly larger than that of noncurrent accruals but are indistinguishable from one another. Demonstrating that earnings components exhibit mean reversion tendencies, they re-estimate the equation using contemporaneous and one-year lagged levels for CFO, current accruals and noncurrent accruals. The results are indicative of mean reversion (lagged coefficients were smaller and of opposite sign) and the coefficients on all three components were statistically different from one another with the coefficient for CFO being larger than that of current accruals. The authors conclude that one of the problems with past results is the failure to allow the response coefficients to vary from year to year. Panel A of Table 1 summarizes a sample of pre-SFAS 95 linear studies.

[Insert Appendix B, Table 1 about here]

Results from contextual studies of cash flows are no more consistent than are linear results. Ali (1994) finds that given earnings, small changes in CFO have incremental information content whereas large changes are not informative. He speculates that this result occurs because large changes are expected to be less persistent. Pfeiffer, Elger, Lo and Rees (1998) replicate Ali using an alternative measure of market expectation and find incremental information content for both moderate and large unexpected CFO.[39] Panel B of Table 1 summarizes these pre-SFAS 95 non-linear studies.

[39] The PELR (1998) expectation model uses the variables' historical auto- and cross-correlation structures. This study relies on estimates of cash flow information.

2.2 SFAS 95 – The Statement of Cash Flows

Since July 1988, the Financial Accounting Standards Board has required firms to provide a Statement of Cash Flows with their annual reports, eliminating the need to estimate cash flows. The statement classifies cash inflows and outflows by category: operating, investing and financing. SFAS 95 defines operating, investing and financing activities as (paragraphs 21, 15 and 18 respectively):

> Operating activities generally involve producing and delivering goods and providing services. Cash flow from operating activities are generally the cash effects of transactions and other events that enter into the determination of net income.
>
> Investing activities include making and collecting loans and acquiring and disposing of debt or equity instruments and property, plant, and equipment and other productive assets, that is, assets held for or used in the production of goods or services by the enterprise (other than materials that are part of the enterprise's inventory).
>
> Financing activities include obtaining resources from owners and providing them with a return on, and a return of, their investment; borrowing money and repaying amounts borrowed, or otherwise settling the obligation; and obtaining and paying for other resources obtained from creditors on long-term credit.

In the event that a cash flow has characteristics of more than one classification, the transaction should be classified with regard to the more predominant activity. Taxes paid, regardless of related activity, are considered operating as are interest and dividends received and interest paid. Dividends paid are considered financing outflows.

The operating section of the Statement of Cash Flows may be prepared using either the direct or indirect method of reporting. The direct method details sources of operating cash inflows (customers, interest, etc.) and outflows (inventory, wages, taxes, etc.) and is preferred by the FASB. In practice, however, only about 3 percent of

reporting firms use the direct method.[40] The indirect method begins with operating income and adjusts for changes in balance sheet accounts. Although the results should be the same, there is some evidence that the direct method provides more useful CFO information.[41]

As with any additional reporting, this preparation of the Statement of Cash Flows requires firms to expend additional resources to provide the information. Arguably, the information provided could be estimated from other financial statement data. The assumption is that the required data would assist investors in assessing the timing and amounts of future cash flows implying value added. Whether reported cash flows are actually valued by the market is an empirical question.

2.3 Empirical Evidence – Post-SFAS 95 Studies

The studies in this section attempt to evaluate the information in cash flow values as reported on the Statement of Cash Flows. Table 2 summarizes the studies and their results.

[Insert Appendix B, Table 2 about here]

Livnat and Zarowin (1990)

In light of the newly required Statement of Cash Flows, Livnat and Zarowin (1990) sought to determine whether the cash flow classifications, as required by SFAS 95, could better explain returns than did net income alone. Cash flows from operating, investing and financing activities were estimated for 434 calendar year-end firms with

[40] Accounting Trends and Techniques (New York: American Institute of CPAs, 1996) indicates that 97.5 percent of their surveyed firms use the indirect method.
[41] Krishnan and Largay (1997) examine the two reporting methods.

available monthly returns on CRSP for 1974 - 1986.[42] The (unadjusted) R^2 for the regression of returns on accruals, and aggregate operating, financing, and investing cash flows was .116 compared to .081 for net income alone. Further breakdowns of cash flow components improved the R^2 to .248. These results suggest that details of cash flow information are value-relevant to investors.

Livnat and Zarowin also examined cash flow classifications to see if they were differentially associated with annual returns as predicted by theoretical models. The results indicate that aggregate CFO is positively and significantly associated with returns (coefficient of 2.17, p-value of 5.86) whereas aggregate CFF is not significantly associated (.041, p-value 1.64), consistent with irrelevance theories in the finance literature.[43] Aggregate CFI, although significant (-0.048, p-value 2.40), exhibits a lower response than that of CFO. Accruals are also significantly associated with returns (.159, p-value 3.79) consistent with their stated purpose of mitigating timing differences associated with cash flows. Although their focus was not on incremental information content, their results provide evidence that CFO as reported on the statement of cash flows might be expected to contain incremental information content given accruals.

Cheng, Liu and Schaefer (hereafter CLS) (1997b)

Possibly the first to evaluate the information content of operating cash flows as reported on the Statement of Cash Flows, Cheng, Liu and Schaefer (1997b) investigate the association between reported CFO and stock returns after controlling for earnings. Their sample includes 3,982 firm years from 1988 to 1993 obtained from Compustat PC

[42] Although SFAS 95 had been implemented, only one year of reported data was available so estimates of the reporting classifications were used in the study.
[43] Miller and Modigliani (1961) discuss the irrelevance of financing method and dividend policy to valuation.

PLUS.[44] They test for incremental information content by estimating the following equations:[45]

$$CAR_t = b_0 + b_1\Delta EARN_t + b_2 EARN_t + b_3\Delta RCFO_t + b_4 RCFO_t + e_t \quad (1)$$

$$CAR_t = b_0 + b_1\Delta EARN_t + b_2 EARN_t + b_3\Delta ECFO_t + b_4 ECFO_{t-} + e_t \quad (2)$$

$$CAR_t = b_0 + b_1\Delta EARN_t + b_2 EARN_t + b_3\Delta ECFO_t + b_4 ECFO_t + b_5\Delta RCFO_t + b_6 RCFO_t + e_t \quad (3)$$

where

CAR_t = cumulative abnormal returns for 12 months from April of year t to March of year t+1

$EARN_t$ = income before extraordinary items (Compustat #18) scaled by beginning market value of equity.

$RCFO_t$ = reported CFO_t (Compustat #308) scaled by beginning market value of equity.

$ECFO_t$ = estimated CFO_t scaled by beginning market value of equity.[46]

Δ(Variable) = change in variable from t-1 to t

The results of these regressions suggest that CFO as reported in the Statement of Cash Flows contains information incremental to accrual earnings (equation 1) as does estimated CFO (equation 2). In addition, when both reported and estimated values are included with earnings (equation 3), the coefficient on estimated CFO is no longer significantly different from zero. They conclude that reported CFO is valued by market participants, even after controlling for earnings and estimates of cash flow. The authors

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[44] Other sample requirements include listing on the NYSE or ASE exchanges and December 31 year-end.
[45] Variable names are changed from the original for consistency. Firm subscripts are omitted.
[46] Computation of estimate includes summing income before extraordinary items, depreciation and amortization, extraordinary items and discontinued operations, deferred taxes, equity method earnings, gains and losses on long-term asset sales and other operating items less the changes in receivables,

suggest that the failure of estimates to exhibit incremental information content may imply that the errors in estimation reduce the estimate's usefulness to investors.

Collins and Hribar (1999)

In an effort to determine how errors in estimating accruals affect empirical research, Collins and Hribar (1999) obtain Compustat information for NYSE/AMX firms for 1988-1997 and compare the values of accruals as measured by the traditional balance sheet approach (total accrual equals changes in working capital accounts plus depreciation/amortization) with accruals measured in a more direct approach (earnings before extraordinary items less reported cash flow from operations). They find that the two measures of accruals (CFO) are very different.

Regressing returns on operating cash flows (as reported) and total accruals the find that both contain incremental information content. Decomposing total accruals into its discretionary and non-discretionary components and re-estimating the regression, they continue to find that CFO provides incremental information and that CFO is valued differentially than discretionary accruals. The authors conclude that earlier studies of earnings components were significantly biased due to their measures of accruals and CFO.

Thomas and Cushing (2000)

Explaining how cross-sectional studies bias the estimate of the incremental information content of operating cash flows toward zero by requiring the coefficient for all firms to be equal, Thomas and Cushing (2000) compare cross-sectional results with firm-specific results for 1,568 firms over 10 years (1988-1997). As the market response

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inventories and other current assets plus the changes in income taxes payable and other current assets. The same estimation method was used in Ali (1994).

to CFO should be related to its persistence, they first test this in a firm-specific regression of earnings at t+1 on contemporaneous earnings and CFO. While (on average) the coefficient for CFO was positive, indicating that CFO is more persistent than accruals, 37 percent of the observations had CFO coefficients less than zero. The implication of this result is that the response coefficient for CFO seems to vary by firm.

Regressing returns on earnings and reported cash flow from operations in yearly cross-sections, cash flow did not exhibit incremental information content, in fact, it had a mean coefficient of .005 (p-value .922). Taking a firm-specific approach, the authors isolate the portion of CFO that is orthogonal to earnings and estimate a second regression of returns on earnings and 'pure' CFO for each firm over ten years. This results in a mean coefficient for CFO of .552 (p-value < .001). They conclude that cross-sectional studies that do not allow for firm-specific coefficients to differ present CFO responses which are negatively biased.

Cheng, Liu and Schaefer (1996)

In a follow-up to their study on the average effect of cash flows on market returns, CLS evaluate the presence of transitory earnings as a context wherein reported cash flows may exhibit increased incremental information content relative to earnings. They use two proxies for transitory earnings, change in earnings scaled by beginning-of-period price as in Ali (1994) and the earnings-to-price ratio used by Ali and Zarowin (1992).

Based upon a sample of 5,120 firm-years (1988 – 1992)[47] they confirm their previous linear results (CLS 1997b) that both earnings and reported CFO contain incremental information content while controlling for the other. Conditioning the

[47] As in CLS (1997b), they again choose NYSE or ASE firms but allow for any fiscal year end.

information content of earnings and cash flow on earnings permanence, they test their hypothesis with the following regression equation:

$$CAR_t = b_0 + b_1\Delta EARN_t + b_2 EARN_t + b_3\Delta RCFO_t + b_4 RCFO_t + b_5\Delta EARN_t \times D_t + b_6 EARN_t \times D_t + b_7\Delta RCFO_t \times D_t + b_8 RCFO_t \times D_t + e_t \quad (4)$$

where

CAR_t = cumulative abnormal returns for 12 months

Δ(Variable) = change in variable from t-1 to t

D_t = indicator variable equal to 0 when $|\Delta EARN_t|$ (Earnings/Price) is less than its cross-sectional median, otherwise $D_t = 1$.[48]

Other variables are as defined previously.

Results regarding RCFO are dependent upon which measure of earnings permanence is used. When permanence is defined as $|\Delta EARN_t|$ both earnings and CFO display incremental information content, however, when the alternate proxy (Earnings/Price) is used, the coefficient on CFO is not significant. This implies that for firms with relatively permanent earnings, CFO does not yield additional information. Mean interaction terms for earnings are significant and negative for both proxies; they are significant and positive for CFO. These results lead CLS to conclude that earnings measures are less informative, whereas CFO is increasingly so, when earnings are largely transitory.

Cheng, Liu and Schaefer (1997a)

Accruals are adjustments made to accounting records to correct revenue matching problems inherent with cash transactions. Accrual adjustments may also represent transitory earnings making accrual earnings less informative than cash flow information. Due to the potentially conflicting effects of accruals on the information content of

[48] $|\Delta EARN_t|$ and (Earnings/Price) are measures of earnings permanence. That is, if $D_t = 1$ earnings are predominately transitory.

earnings and cash flow from operations, Cheng, Liu and Schaefer (1997a) examine the affect of magnitude and sign of accruals on the incremental information content of these performance measures.

Two alternate proxies for accruals, $|\Delta EARN_t - \Delta RCFO_t|$ deflated by beginning market value of equity and the relative rank of the absolute value of accruals, are used to condition the regression of abnormal returns upon changes in earnings and CFO as follows:[49]

$$CAR_t = b_0 + b_1\Delta EARN_t + b_2\Delta RCFO_t + b_3\Delta EARN_t \times D_t + b_4\Delta RCFO_t \times D_t + e_t \quad (5)$$

where

D_t = indicator variable equal to 0 when accrual measure is less than its cross-sectional median, otherwise $D_t = 1$.

Other variables are as defined previously.

The results of these tests indicate that when accruals are large, earnings are less informative and the incremental information content of reported CFO increases. With respect to sign, CFO provides incremental information content primarily in the presence of large, negative accruals. It appears the average effects of CFO are driven by firms with highly transitory earnings, since large, negative accruals are generally not persistent.

3.0 (NON)ARTICULATION OF CFO BETWEEN FINANCIAL STATEMENTS

The studies reviewed in section 3.1 focus on potential reasons that estimated CFO is often not equal to CFO reported on the statement of cash flows. The failure of some firms to provide articulated financial statements might represent another context wherein

[49] Contrary to their two previous studies that use both level and change specifications, this study employs only changes. Another difference between this study and CLS 1996 includes the use of 6,553 firm-years (1988 – 1993).

the information content of reported CFO differs for some firms. Section 3.2 summarizes empirical evidence regarding the magnitude of these differences and the impact of this nonarticulation on research studies.

3.1 Potential Causes of Nonarticulation

With the exception of CLS's (1996, 1997a and 1997b) use of reported cash flow data, prior incremental information content studies assumed that cash flows could be derived from other sources using simple models.[50] Now that firms are required to present a Statement of Cash Flows, researchers are concluding that methods used to estimate cash flows for prior studies do not, in many cases, reflect the amount reported by the firms.

Drtina and Largay (1985) discuss the problems in calculating cash flow from operations using information provided in the (previously required) Statement of Changes in Financial Position. The first problem they note is in classifying items as operating vs. non-operating. Specific examples of this problem include determining whether dividends and interest on short-term debt (investments) are financing (investing) or operating items. Reporting of depreciation expenses when inventories are manufactured, the method of calculating the current portion of long-term leases, the reclassification of current/non-current accounts, and changes in reporting entities also affect the computation of cash flow from operations from other financial data.

Huefner, Ketz and Largay (1989) discuss how foreign currency translation affects the Statement of Cash Flows. They explain that while translation adjustments are a

[50] Other studies that employ reported CFO include Dechow (1994) which uses reported CFO in examining the relative information content of CFO and earnings. She finds that earnings consistently outperform CFO measures. A 1999 working paper by Collins and Collins and Hribar also use reported CFO to examine errors in estimating accruals.

function of current and historical exchange rates applied to assets, liabilities and equities of foreign entities, only the portion affecting cash should be reported on the statement of cash flows. Proper presentation of the foreign entity's cash transactions might well result in a cash flow statement that does not articulate with changes in balance sheet accounts (numerical examples are provided by the authors).

Nurnberg (1993) finds that SFAS 95 allows for inconsistencies in cash flow statements. These inconsistencies result in reported operating, financing and investing cash flows that are not necessarily reflective of those activities. Specific problems he cites include the classification of interest and dividends received, as well as taxes paid, as operating regardless of the type of transaction generating the cash flow. He also finds that the requirements for the disclosure of noncash financing and investing transactions to be ambiguous. That is, although the FASB requires that these be disclosed, the disclosure need not be in the cash flow statement.

3.2 Empirical evidence

Bahnson, Miller and Budge (1996)

The accuracy of CFO proxies used in prior information content studies can be assessed using SFAS 95's mandated disclosure of CFO. Bahnson, Miller and Budge (1996) examined 9,757 firm years reported under SFAS 95 and found that for approximately 75 percent of the sample, reported CFO did not agree with an independent calculation of CFO based on prior models. Extrapolating from their Exhibit 2, more than 55 percent of their sample firms had deviations of over ten percent, that is, relatively large differences between reported and estimated values. Examining a small sample in

greater detail, they found that these differences were not explained in notes to financial statements.

Collins and Hribar (1999)

Bahnson, Miller and Budge (1999) results with regard to incidences of nonarticulation are confirmed by Collins and Hribar (1999). Their study examines errors in estimating accruals by comparing the balance sheet approach to estimating accruals (CFO) to the more direct approach of determining accruals by adjusting operating earnings for reported CFO. They find that when the balance sheet approach is used, the values determined for accruals (CFO) are misstated in excess of ten percent of earnings before extraordinary items in 78% of their sample of 14,266 firm-years ranging from 1988 to 1997.[51] Their results suggest that the balance sheet approach used in prior studies introduces a negative (positive) bias to CFO (accruals).

Partitioning the sample by firms with mergers/acquisitions, divestitures or foreign operations, they find that these non-operating transactions can have significant effects on the accrual/CFO estimates derived using the balance sheet approach. The authors find that these transactions affect a large number of Compustat firms each year.[52]

4.0 OVERVIEW OF THE FINDINGS

This section provides an overview of the results of CFO information content studies reviewed in this paper. It is intended to address the two issues stated in section 1.1, that is, does reported CFO yield incremental information content given earnings, and

[51] Sample firms are NYSE/AMEX firms with Compustat data available for 1988 through 1997. Extreme outliers are deemed to be the top and bottom 1 percent of each independent variable.
[52] In their sample, 14-27% of firms had merger/acquisition activity, 9-15% had divestitures, and 18-21% had foreign subsidiaries.

does this information differ systematically for firms with differing characteristics. Results of pre-SFAS 95 studies proved to be inconsistent, possibly due to the use of estimates for cash flow data. More recent studies, which use cash flow data reported on the Statement of Cash Flows should yield more reliable results with respect to the information provided by cash flows. Table 2 categorizes each study by the regression method used to obtain the results.

[Insert Table 2 about here]

4.1 Average Results – Linear Studies

With the exception of Thomas and Cushing (2000), the cross-sectional regressions all resulted in finding that CFO provides incremental information content given accruals or earnings. Although Thomas and Cushing did not find this result for their cross-sectional test, they do find it in their firm-specific test. The Financial Accounting Standards Board implemented the requirement for a statement of cash flows to provide users with additional financial information. It appears that the market does place value on this information as evidenced by the incremental information provided by this measure.

4.2 Conditional Results – Contextual Studies

The evidence from Cheng, Liu and Schaefer (1996 and 1997a) suggests that the information content of CFO may be conditional upon the permanence of earnings as well as the size and the sign of the change in accruals. Large negative accruals are often indicative of transitory transactions, which means that both papers could be classified as conditioning on earnings persistence using different proxies. As returns are a function of

future cash flows, earnings that will not recur should not add value. In the presence of transitory earnings figures, investors appear to find operating cash flows a better indicator of future flows.

5.0 DISCUSSION

This section presents additional issues to consider in evaluating prior studies and in designing future research on the information content of cash flow disclosures.

5.1 Measurement of Cash Flows

The quality of the results of studies that employ estimates of cash flows are obviously dependent on the accuracy of their chosen proxies. Since 1988 it is possible to obtain cash flow data directly from statements prepared by firms. This data is often referred to as 'true' cash flow, however, caution must be exercised in making this assumption. As with earnings, managers may have an incentive to manage cash flow reporting. Some evidence that operating cash flows are valued differently than financing and investing flows has been provided (Livnat and Zarowin, 1990). If reported CFO is not an accurate measure of CFO, due to manipulation or ambiguities in classification, this assumption will continue to distort empirical research in this area.

5.2 Power of the Tests

Reported cash flow data has only been available since 1988. Due to the potential problems related to cross-sectional dependencies, researchers cannot pool firm-years for large sample results. They must rely on the average results of individual year cross-sections, leaving them with limited degrees of freedom. For example, results in Cheng, Liu and Schaefer (1996) were based on only three degrees of freedom, their 1997 study

on four. The most recent studies include ten years of data. Moving to firm-specific tests yields no more power; no firm has more than ten years of reported data.

5.3 Sample Selection and Outliers

Most of the studies reviewed are consistent in using samples of large firms (typically NYSE/AMX firms) and obtaining data from Compustat and CRSP. The time periods vary in length but due to data availability, all take place from 1988 to the mid-1990s.

The definition of outliers varies dramatically. Hopefully valuable information is not being arbitrarily discarded. Cheng, Liu and Schaefer (1996, 1997a, and 1997b) define an observation as an outlier when "the level or change in earnings, cash flow from operations, or the *estimated* cash flow from operations (all scaled by beginning market value) is not between +1.5 and –1.5." No apparent limit is set for returns. Collins and Hribar (1999) omit the top and bottom one percent of each (deflated) variable. Moehrle et. al (2000) remove observations exceeding 8 standard deviations from the median (318 firm-years), then winsorize observations between 4 and 8 standard deviations (96 to 139 observations depending on the variable) to 4 standard deviations from the median. Assumingly, Thomas and Cushing (200) do not delete any observations as being outliers. How outliers are defined might affect the results of the tests by excluding data unnecessarily or including unusually influential observations.

5.4 Research Methods

With all information content studies, a problematic question is "when did the market get the information?" Is cash flow information released when the annual report is released? Is there a lag in time over which the market responds to cash flow information?

Identifying the appropriate time to measure the response is difficult in any returns test. Wilson (1986) attempted an event study centered around the earnings announcement and financial statement release dates. His results could not be replicated except for his 1981 – 1982 time frame (Bernard and Stober, 1989). Most other studies have opted for association studies, almost exclusively using returns for 12 months beginning with the fourth month after the end of the fiscal year. Although this period would most likely capture the majority of the response, it also includes many other (possibly confounding) events.

Another concern regarding most information content studies is the choice of cross-sectional verses firm specific regressions. Most of the aforementioned studies employ cross-sectional methods forcing the response coefficients to be constant for all firms. Thomas and Cushing (2000) give evidence that this assumption does not hold for firms' operating cash flow responses.

6.0 CONCLUSIONS

Whether cash flows provide information to investors has been a recurring question, one that has not been answered conclusively by existing research. This appendix has reviewed studies and discussed some of the problems encountered by those researchers who have tried to answer this question. Much work is still to be done in this area. In this section I will discuss some final conclusions and discuss directions for future research.

It is intuitively appealing to conclude that cash flow from operations are valued by market participants. This information assists investors in assessing the quality of

reported earnings. Most of the studies confirm this result. Some authors, however, argue that average results are driven by firms with particular characteristics such as large accrual adjustments. It is possible that the response to cash flows does vary by industry, profit or loss position or other, yet untested attributes.

The response to reported operating cash flow information may be affected by investors' inability to articulate reported information with changes in balance sheet accounts. This may be due to events such as acquisitions or foreign investment. Incidences of nonarticulation are frequent and of economically significant magnitudes.

A problem encountered in past studies is the limited availability of reported cash flow data. Since SFAS 95 went into effect in 1988, each year expands the information set and allows for increased statistical power. This problem will be solved with time.

APPENDIX B, TABLE 1
PRE-SFAS 95 CASH FLOW INFORMATION CONTENT STUDIES

Panel A - Linear Studies:

Authors	Years Examined	Length of Return Holding Period	Major conclusions
Beaver, Griffin, and Landsman (1982)	1977-1978	12 months	Weak evidence that cash flow (net income plus depreciation) contains incremental information content.
Rayburn (1986)	1963-1982	12 months	CFO (earnings before extraordinary items adjusted for depreciation, changes in deferred taxes and working capital changes) and aggregate accruals possess incremental information content. Current accruals have greater information content than noncurrent accruals.
Wilson (1986)	1981-1982	2 days around earnings announcement plus 9 days around financial statement release.	Cash and total accruals have incremental information content beyond earnings.
Bowen, Burgstahler, and Daley (1987)	1972-1981	12 months	Cash flow variables have incremental content over earnings, while WCFO does not. Cash flow defined as 1. WCO adjusted for changes in non-cash working capital and 2. (1) above adjusted for investment activity.
Bernard and Stober (1989)	1977-1984	9 days	Wilson's (1986) results not robust over larger time frame.
Livnat and Zarowin (1990)	1974-1986*	12 months	Financing and operating cash flow components are differentially associated with returns, investing cash flows are not.
Pheiffer and Elgers (1999) (1999)	1979-1996*	12 months	CFO exhibits a stronger response coefficient than does current or noncurrent accruals.

APPENDIX B, TABLE 1 (continued)
PRE-SFAS 95 CASH FLOW INFORMATION CONTENT STUDIES

Panel B – Contextual Studies:

Authors	Years Examined	Length of Return Holding Period	Major conclusions
Ali (1994)	1974-1988	12 months	Small changes in CFO have incremental information content given earnings, large changes do not.
Pheiffer, Elgers, Lo and Rees (1998)	1980-1996*	12 months	Incremental information content found for moderate and large unexpected CFO given earnings.

* Although SFAS 95 went into effect in 1988, the authors continued to estimate operating cash flows.

APPENDIX B, TABLE 2
POST-SFAS 95 CASH FLOW INFORMATION CONTENT STUDIES

Panel A - Linear Studies:

Authors	Years Examined	Length of Return Holding Period	Major conclusions
Cheng, Liu and Schaefer (1997b)	1988-1993	12 months	Reported CFO contains incremental information content given earnings as does estimated CFO. Estimated CFO has no iic given reported CFO and earnings.
Cheng, Liu and Schaefer (1996)	1988-1992	12 months	Reported CFO contains incremental information content given earnings.
Cheng, Liu and Schaefer (1997a)	1988-1993	12 months	Reported CFO contains incremental information content given earnings.
Collins and Hribar (1999)	1988-1997	12 months	Reported CFO contains incremental information content given discretionary and non-discretionary accruals. CFO is valued differently than discretionary accruals.
Thomas and Cushing (2000)	1988-1997	12 months	In cross-sectional regressions, reported CFO did not exhibit incremental information content given earnings. Allowing for firm-specific coefficients, CFO contains incremental information content.

APPENDIX B, TABLE 2 (continued)
POST-SFAS 95 CASH FLOW INFORMATION CONTENT STUDIES

Panel B – Contextual Studies:

Authors	Years Examined	Length of Return Holding Period	Major conclusions
Cheng, Liu and Schaefer (1996)	1988-1992	12 months	When earnings are largely transitory, CFO has a greater impact on returns. The impact of earnings is decreased.
Cheng, Liu and Schaefer (1997a)	1988-1993	12 months	When accruals are large, information content of CFO increases, earnings less informative. Information in CFO is seen primarily when accruals are large and negative.

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Appendix C: Replication and extension of Cheng, Liu and Schaefer (1997b)

Results of this study differed from thoses of Cheng, Liu and Schaefer (1997b) in that estimated cash flow from operations (ECFO) retained its significance in the presence of reported cash flow from operations (RCFO). The following discussion and tables detail my attempts to confirm or refute the prior results.

I began by replicating the CLS study as closely as possible. I collected accounting data for 1988 through 1993 using the 1998 Compustat Industrial Annual Tape, which contains 20 years of firm data.[53] I deleted firms with fiscal years other than 12/31 and kept only firms trading on the NYSE or ASE as in CLS. I next removed firm-year observations coded by Compustat as missing data. Failure to do so would cause SAS to read these codes as numerical data and contaminate the results. Although this step is not mentioned in CLS, I assume that they also took this precaution. A comparison of resulting observations follow:

Present Study					Cheng, Liu and Schaefer (1997b)
Year	Total Compustat	Merged CRSP	W/O Outliers	Final	Final
1989	603	409	384	381	676
1990	668	495	478	472	773
1991	662	525	489	488	783
1992	654	528	492	487	855
1993	617	501	472	470	895
Total	3,204	2,458	2,315	2,298	3,982

[53] CLS (1997b) collect data using 1994 Compustat PC PLUS.

Note that the present study has 1,684 fewer observations for the 1988-1993 period than does CLS. One reason for this is that the present study has more variables, therefore more observations were removed for missing data pertaining to these other variables. CLS state (p. 7) that they delete only 133 observations due to "level or change in earnings, cash flow from operations, or the *estimated* cash flow from operations (all scaled by beginning market value) is not between +1.5 and –1.5." Applying their definition of outlier (I also require the level for t-1 to fall within this range), I delete 143 observations reducing the sample to 2,315 firm years. Finally, 17 additional observations are removed due to influential observation tests related to other equations in the present study. The final sample is 2,298 firm-year observations.

Table C1 presents the results reported by CLS (1997b). Earnings and ECFO are significant at traditional levels; ECFO is not.[54] Results obtained with the current sample are reported in Tables C2. ECFO is significantly positive ($p < .05$) contrary to the prior results.

[Insert Tables C1 and C2 about here]

Extending the time period through 1998, i.e. increasing from five annual observations to ten, I continue to find that ECFO exhibits incremental information content given reported CFO and earnings ($p<.01$). This result was obtained using a levels and changes specification as in CLS, clearly supporting the results in the body of the paper (Table 4) which employs a level and one period lag specification. I conclude that contrary to previously reported results, both ECFO and RCFO contain incremental information in the presence of earnings.

[Insert Table C3 about here]

[54] CLS use a one-tailed test and four degrees of freedom for the five annual observations. Successive iterations will be evaluated similarly.

TABLE C1 - Original results presented in CLS (1997b)

CLS (1989-1993) - NYSE/ASE firms, Outliers defined as +/- 1.5

Panel A - Descriptive Statistics

	n	Mean	High	Median	Low
CAR	3982	-0.021	3.493	-0.037	-1.672
ECFO (Estimated cash flow from operations)*	3982	0.158	1.468	0.137	-1.192
EARN (Income from operations)*	3982	0.029	0.706	0.062	-1.469
RCFO (Reported cash flow from operations)*	3982	0.149	1.346	0.133	-1.283

*scaled by market value of equity at beginning of period

Panel B - Pearson correlations

	CAR	ECFO	RCFO	EARN
CAR	1.00	0.17	0.21	0.06
ECFO		1.00	0.74	0.12
RCFO			1.00	0.23
EARN				1.00

Panel C - Regression Results

Year	n	Intercept	ECFO + chECFO	EARN + chEARN	RCFO + chRCFO	Adj. R^2
1989	676	-0.068	0.128	0.661	0.395	0.19
1990	773	-0.093	-0.011	0.338	0.245	0.06
1991	783	-0.117	0.296	0.153	0.203	0.06
1992	855	-0.090	0.106	0.569	0.493	0.14
1993	895	-0.062	-0.060	0.433	0.503	0.16
Mean		-0.086	0.092	0.431	0.368	0.13
std dev		0.022	0.139	0.199	0.139	
t		-8.7637	1.48122	4.84871	5.93022	
p(one tailed)		< 0.01		< 0.01	< 0.01	
Pooled						
Mean	3982	-0.088	0.054	0.422	0.403	0.12
t		-11.127	1.320	10.266	7.402	
p		< 0.01		< 0.01	< 0.01	

Cutoff values for mean one-tailed t-test at four degrees of freedom are 3.747 (.01 level), 2.132 (.05 level) and 1.533 (.10 level)

TABLE C2 -Replication of CLS (1997b)

CLS (1989-1993) - NYSE/ASE firms, Outliers defined as +/- 1.5

Panel A - Descriptive Statistics

	n	Mean	High	Median	Low
CAR	2298	-0.0519	3.4512	-0.0519	-1.8729
ECFO* (Estimated cash flow from operations)	2298	0.1351	1.4829	0.1136	-1.4811
EARN* (Earnings)	2298	0.1290	0.7057	0.0616	-1.2609
RCFO* (Reported cash flow from operations)	2298	0.1603	1.2582	0.1035	-1.0465

*scaled by market value of equity at beginning of period

Panel B - Pearson correlations

	CAR	ECFO	RCFO	EARN
CAR	1.0000	0.1490	0.1673	0.1400
ECFO		1.0000	0.5556	0.1026
RCFO			1.0000	0.2307
EARN				1.0000

Panel C - Regression Results

Year	n	Intercept	ECFO	chECFO	EARN	chEARN	RCFO	chRCFO	Adj. R^2
1989	384	-0.0355	0.0792	0.0501	-0.2554	0.9366	0.5346	-0.3110	0.1757
1990	478	-0.0556	-0.0026	0.0094	-0.0998	0.9328	0.1796	-0.2571	0.1078
1991	489	-0.1659	0.0538	0.1331	-0.8118	1.1806	0.2258	0.2306	0.1287
1992	492	-0.0418	0.1251	-0.0248	0.1495	0.6630	0.3291	0.2049	0.1452
1993	472	-0.1285	0.1382	-0.0116	-0.1141	0.9129	0.4086	-0.0400	0.1327
Mean		-0.0855	0.0787	0.0312	-0.1863	0.9252	0.3355	-0.0345	0.1380
std dev		0.0583	0.0568	0.0636	0.2790	0.1832	0.1426	0.2518	
t		-3.2752	3.0976	1.0982	-1.4935	11.2895	5.2607	-0.3065	

Year	n	Intercept	ECFO + chECFO	EARN + chEARN	RCFO + chRCFO
1989	384	-0.0355	0.1293	0.6812	0.2236
1990	478	-0.0556	0.0068	0.8330	-0.0775
1991	874	-0.1659	0.1869	0.5688	0.4564
1992	492	-0.0418	0.1003	0.8125	0.5340
1993	472	-0.1285	0.1266	0.7988	0.3686
Mean		-0.0855	0.1100	0.7389	0.3010
std dev		0.0583	0.0658	0.1119	0.2410
t		-3.2752	3.7388	14.7590	2.7933
p		<.05	<.05	<.01	<.05

Cutoff values for mean one-tailed t-test at four degrees of freedom are 3.747 (.01 level), 2.132 (.05 level) and 1.533 (.10 level)

TABLE C3 -Extension of CLS (1997b) through 1998

CLS (1989-1998) - NYSE/ASE firms, Outliers defined as +/- 1.5

Panel A - Descriptive Statistics

	n	Mean	High	Median	Low
CAR (Cumulated abnormal returns)	4985	-0.0387	3.4512	-0.0336	-2.1799
ECFO (Estimated cash flow from operations)	4985	0.1186	1.4829	0.1024	-1.4894
EARN (Earnings)	4985	0.0464	0.7689	0.0601	-1.2609
RCFO (Reported cash flow from operations)	4985	0.1061	1.4942	0.0902	-1.1632

*scaled by market value of equity at beginning of period

Panel B - Regression Results

Year	n	Intercept	ECFO	chECFO	EARN	chEARN	RCFO	chRCFO	Adj. R
1989	384	-0.0355	0.0792	0.0501	-0.2554	0.9366	0.5346	-0.3110	0.1757
1990	478	-0.0556	-0.0026	0.0094	-0.0998	0.9328	0.1796	-0.2571	0.1078
1991	489	-0.1659	0.0538	0.1331	-0.6118	1.1806	0.2258	0.2306	0.1287
1992	492	-0.0418	0.1251	-0.0248	0.1495	0.6630	0.3291	0.2049	0.1452
1993	472	-0.1285	0.1382	-0.0116	-0.1141	0.9129	0.4086	-0.0400	0.1327
1994	475	-0.0276	0.1684	-0.1041	-0.0250	0.6458	0.1327	0.1980	0.0910
1995	481	-0.0291	0.1107	-0.1078	-0.0311	1.0636	0.1401	-0.2241	0.0774
1996	489	-0.0109	0.0098	0.0646	0.1488	0.4222	0.2715	0.1234	0.0732
1997	433	0.0351	0.0620	0.1033	0.9230	0.5692	0.0079	0.0359	0.1016
1998	825	-0.1131	0.1416	-0.0695	-0.7213	1.2537	-0.1384	0.0691	0.0475
Mean		-0.0573	0.0886	0.0043	-0.0637	0.8580	0.2092	0.0030	0.1081
std dev		0.0606	0.0577	0.0837	0.4522	0.2737	0.1935	0.2028	
t		-2.9890	4.8546	0.1614	-0.4456	9.9145	3.4178	0.0463	

Year	n	Intercept	ECFO + chECFO	EARN + chEARN	RCFO + chRCFO
1989	384	-0.0355	0.1293	0.6812	0.2236
1990	478	-0.0556	0.0068	0.8330	-0.0775
1991	874	-0.1659	0.1869	0.5688	0.4564
1992	492	-0.0418	0.1003	0.8125	0.5340
1993	472	-0.1285	0.1266	0.7988	0.3686
1994	475	-0.0276	0.0643	0.6208	0.3307
1995	481	-0.0291	0.0029	1.0325	-0.0840
1996	489	-0.0109	0.0744	0.5710	0.3949
1997	433	0.0351	0.1653	1.4922	0.0438
1998	825	-0.1131	0.0721	0.5324	-0.0693
Mean		-0.0573	0.0929	0.7943	0.2121
std dev		0.0606	0.0612	0.2902	0.2391
t		-2.9890	4.8004	8.6561	2.8056
p		<.01	<.01	<.01	<.05

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CAR = Cumulative abnormal returns

Appendix D: Sensitivity tests

Prior research has suggested that the information content of operating cash flows is sensitive to a) the level of accruals and b) the degree of changes in operating cash flows from one period to the next. Following are the results of re-estimations of equations 1, 2 and 3 with observations partitioned on the above factors.

TABLE D1 - Equation 1 partitioned by high/low accruals

$$CAR_t = b_0 + b_1 ECFO_t + b_2 ECFO_{t-1} + b_3 Earn_t + b_4 Earn_{t-1} + b_5 RCFO_t + b_6 RCFO_{t-1} + e_t$$

Panel A - Low accruals

	n	b0 Intercept	b1 ECFO	b3 EARN	b5 RCFO	Adjusted R^2
1989	192	-0.0339	0.1101	0.5550	0.3060	0.2700
1990	239	-0.1487	-0.1593	0.4902	0.3953	0.0800
1991	244	-0.2583	0.4123	0.3707	0.4128	0.1587
1992	246	-0.0328	0.1847	0.5410	0.4546	0.1245
1993	236	-0.1178	0.1813	0.9108	0.2984	0.1524
1994	238	-0.1021	0.0195	0.3792	0.7803	0.1437
1995	241	-0.0780	-0.0630	0.7208	0.1004	0.0817
1996	245	-0.0530	0.0015	0.3884	0.7925	0.1840
1997	216	0.0162	0.5936	2.2152	-0.2200	0.2738
1998	413	-0.1786	0.0984	0.7719	0.4953	0.1153
Mean		-0.0987	0.1379	0.7343	0.3816	0.1584
Std dev		0.0810	0.2238	0.5510	0.2983	
t		-3.8551	1.9489	4.2141	4.0449	
p		<.01	<.05	<.01	<.01	

Panel B - High accruals

	n	b0 Intercept	b1 ECFO	b3 EARN	b5 RCFO	Adjusted R^2
1989	192	-0.0717	0.0561	0.9028	0.1888	0.0316
1990	239	-0.0774	-0.0320	1.7624	-0.2186	0.1889
1991	245	-0.1583	0.0250	1.4953	0.2369	0.1443
1992	246	-0.1360	-0.0708	3.0348	0.3512	0.2427
1993	236	-0.1517	0.0643	1.1456	0.0967	0.0620
1994	237	-0.0290	0.1239	1.1134	-0.4845	0.0689
1995	240	-0.0248	-0.0151	1.4697	-0.3600	0.0849
1996	244	-0.0638	0.0016	1.2376	-0.9550	0.0618
1997	217	0.0778	0.0847	0.5893	-0.4579	-0.0093
1998	412	-0.1161	0.1436	0.1007	-0.7674	0.0381
Mean		-0.0751	0.0381	1.2852	-0.2370	0.0914
Std dev		0.0716	0.0689	0.7783	0.4454	
t		-3.3090	1.7489	5.2217	-1.6824	
p		<.01	<.10	<.01	<.10	

t-test	p-value
Ho: RCFO(low)=RCFO(high)	0.0046
Ho: EARN(low)=EARN(high)	0.0761

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE D2 - Equation 2 - acquisition dummy

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low accruals

		c0	c1	c3	c5	c7	c8	c9	Adjusted
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0114	0.1837	0.1510	0.7098	-0.0609	0.1992	-0.4671	0.2572
1990	239	-0.1324	-0.1429	0.5316	0.3540	-0.0912	-0.4892	1.0907	0.1179
1991	244	-0.2737	0.5360	0.3140	0.3318	0.1838	-0.2972	0.4330	0.1593
1992	246	-0.0139	0.1494	0.4864	0.5024	-0.0756	-0.1838	0.2110	0.1287
1993	236	-0.08	0.1762	0.2641	0.9801	-0.0748	-0.3785	0.4896	0.1735
1994	238	-0.0965	-0.0439	0.9858	0.6372	0.0084	-0.6490	-0.0801	0.1734
1995	241	-0.1067	-0.0760	0.3396	0.4443	0.0987	-0.8930	1.4620	0.1004
1996	245	-0.0715	0.0238	0.9811	0.3193	0.0074	-0.3143	0.1409	0.1727
1997	216	0.0228	0.5943	-0.2210	2.1345	-0.0265	-0.0372	0.6606	0.2590
1998	413	-0.1188	0.0951	0.4232	0.7063	-0.1547	0.2592	0.0318	0.1337
Mean		-0.0882	0.1496	0.4256	0.7120	-0.0185	-0.2784	0.3972	0.1678
Std dev		0.0829	0.2453	0.3616	0.5420	0.0990	0.3583	0.5679	
t		-3.3663	1.9280	3.7218	4.1542	-0.5923	-2.4569	2.2120	
p		<.01	<.05	<.01	<.01		<.05	<.05	

Panel B - High accruals

		c0	c1	c3	c5	c7	c8	c9	Adjusted
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.1149	0.0507	-0.0758	1.2242	0.0967	0.9918	-0.0946	0.0417
1990	239	-0.0778	0.0211	-0.8290	2.7414	-0.0337	1.2834	-1.4166	0.2600
1991	246	-0.3255	-0.0362	0.5008	1.3350	0.2710	-0.1204	0.4921	0.2401
1992	246	-0.3006	-0.0531	-0.1336	5.2005	0.2781	0.9085	-2.3386	0.3416
1993	236	-0.1047	0.0520	0.1866	1.2619	-0.0505	-0.9200	0.1753	0.1042
1994	237	0.0478	0.1384	-0.2255	0.4204	-0.1433	-0.2319	2.1074	0.0958
1995	240	-0.0733	-0.0347	-0.0993	1.4043	0.0923	0.8706	-0.0578	0.1171
1996	244	-0.0808	-0.0077	-0.4769	0.6929	0.0235	-0.5257	1.1316	0.0609
1997	217	0.0007	0.0785	0.0556	0.4462	0.1154	-1.3757	0.2970	0.0135
1998	412	-0.1423	0.1434	-0.6006	-0.1669	0.0298	-0.6538	0.7025	0.0399
Mean		-0.1171	0.0352	-0.1698	1.4560	0.0679	0.0227	0.0998	0.1315
Std dev		0.1173	0.0704	0.3888	1.5308	0.1340	0.9262	1.2456	
t		-3.1591	1.5835	-1.3810	3.0077	1.6037	0.0774	0.2534	
p		<.01	<.10		<.01	<.10			

t-test	p-value
Ho: RCFO(low)=RCFO(high)	0.0083
Ho: EARN(low)=EARN(high)	0.1087

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = indicator variable equal to 1 if firm has acquisition activity; 0 otherwise.

TABLE D3 - Equation 2 - acquisition level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low accruals

		c0	c1	c3	c5	c7	c8	c9	Adjusted
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0340	0.2352	0.1378	0.5716	0.2254	0.0006	-0.0006	0.2671
1990	239	-0.1358	-0.1508	0.4202	0.4405	-0.5679	-0.0010	0.0002	0.1002
1991	244	-0.2615	0.4266	0.4092	0.3586	-0.0499	0.0005	-0.0001	0.1442
1992	246	-0.0351	0.1494	0.5049	0.5205	-0.0385	0.0022	-0.0010	0.1091
1993	236	-0.1076	0.1901	0.2530	0.9497	-0.0098	0.0002	-0.0017	0.1379
1994	238	-0.1001	0.0824	0.6587	0.3998	0.2733	-0.0006	0.0025	0.1380
1995	241	-0.0874	-0.0796	0.1080	0.7092	0.1407	0.0008	-0.0003	0.0737
1996	245	-0.0544	-0.0051	0.8081	0.3740	0.0850	-0.0016	0.0032	0.1696
1997	216	0.0089	0.4221	-0.0604	2.0569	0.0478	0.0010	0.0009	0.2729
1998	413	-0.1853	0.0615	0.5284	0.7678	0.0592	0.0008	-0.0006	0.1138
Mean		-0.0992	0.1332	0.3768	0.7149	0.0165	0.0003	0.0003	0.1527
Std dev		0.0798	0.1933	0.2674	0.5094	0.2315	0.0011	0.0015	
t		-3.9307	2.1789	4.4555	4.4381	0.2258	0.8353	0.5124	
p		<.01	<.05	<.01	<.01				

Panel B - High accruals

		c0	c1	c3	c5	c7	c8	c9	Adjusted
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0662	0.0555	0.0896	0.9199	-0.2859	0.0589	0.0386	0.0330
1990	239	-0.0792	-0.0434	-0.2430	1.9271	-0.2978	0.0324	-0.0147	0.1805
1991	245	-0.1576	0.0222	0.2730	1.4836	-0.0309	0.0125	0.0014	0.1291
1992	246	-0.1248	-0.0711	0.3969	2.9994	-0.5592	-0.0112	0.0217	0.2392
1993	236	-0.1501	0.0657	0.0668	1.1630	0.3724	0.0279	-0.0422	0.0554
1994	237	-0.0334	0.1367	-0.6855	1.2644	0.3434	0.0348	-0.0399	0.0700
1995	240	-0.0297	0.0317	-0.3978	1.4206	0.2224	-0.0037	0.0060	0.0700
1996	244	-0.0701	0.0057	-0.9584	1.1871	0.1179	-0.0218	0.0344	0.0536
1997	217	0.0426	0.1263	-0.4374	0.5329	0.9104	0.0192	-0.0176	0.0348
1998	412	-0.1115	0.1507	-0.8569	0.1528	-0.3319	-0.0024	0.0050	0.0450
Mean		-0.0780	0.0480	-0.2753	1.3051	0.0461	0.0147	-0.0007	0.0911
Std dev		0.0614	0.0747	0.4735	0.7754	0.4374	0.0247	0.0281	
t		-4.0180	2.0329	-1.8382	5.3226	0.3332	1.8746	-0.0822	
p		<.01	<.05	<.05	<.01		<.05		

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.0046
Ho:EARN(low)=EARN(high)	0.0622

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = level of acquisition activity

TABLE D4 - Equation 2 - foreign currency adjustment level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0446	0.1759	0.2433	0.6516	-2.4686	-0.0065	-0.0346	0.2587
1990	239	-0.1474	-0.1483	0.3871	0.4888	16.0542	-0.0060	0.0117	0.0749
1991	244	-0.2550	0.4271	0.3942	0.3785	3.2413	-0.0080	0.0602	0.1487
1992	246	-0.0310	0.1802	0.4718	0.5491	-0.6384	0.0132	0.0008	0.1107
1993	236	-0.0760	0.1163	0.4972	0.8576	17.6775	-0.0233	0.0418	0.1755
1994	238	-0.1035	0.0038	0.8166	0.3519	-4.6882	0.0631	-0.0360	0.1293
1995	241	-0.0743	-0.0685	0.0601	0.7266	9.3643	-0.0457	0.0658	0.0695
1996	245	-0.0634	-0.0311	0.8372	0.3393	-8.7042	-0.0122	-0.0370	0.1808
1997	216	0.0168	0.6301	-0.2678	2.2340	11.5545	0.0167	-0.1640	0.2585
1998	413	-0.1798	0.0633	0.5473	0.7684	-5.9664	0.0905	0.0868	0.1109
Mean		-0.0958	0.1349	0.3987	0.7346	3.5426	0.0082	-0.0005	0.1518
Std dev		0.0793	0.2371	0.3312	0.5574	9.5235	0.0407	0.0731	
t		-3.8234	1.7986	3.8068	4.1678	1.1763	0.6362	-0.0195	
p		<.01	<.10	<.01	<.01				

Panel A - High accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0744	0.063	0.1486	0.8961	4.4323	0.0121	-0.0012	0.0179
1990	239	-0.0782	-0.0477	-0.1995	1.7406	2.5974	0.0072	-0.0054	0.1793
1991	245	-0.1667	0.098	0.2733	1.3421	-6.8443	0.0253	0.0073	0.1731
1992	246	-0.1366	-0.0671	0.3925	3.1464	4.7965	0.0927	-0.0073	0.2488
1993	236	-0.1554	0.0568	-0.0462	1.1714	1.6731	-0.3859	0.0049	0.0954
1994	237	-0.0274	0.1296	-0.4728	1.0888	-0.8393	0.0225	-0.0081	0.0495
1995	240	-0.0092	0.0367	-0.2691	1.3497	-8.8322	0.1668	0.0085	0.0956
1996	244	-0.0656	-0.0005	-0.9809	1.2317	1.4491	0.3627	-0.0004	0.0522
1997	217	0.0822	0.0896	-0.463	0.5551	9.6262	0.7824	-0.8341	-0.0249
1998	412	-0.1129	0.1627	-0.8133	0.1166	-1.0356	0.1031	-0.0076	0.0379
Mean		-0.0744	0.0521	-0.2430	1.2639	0.7023	0.1189	-0.0843	0.0925
Std dev		0.0757	0.0738	0.4517	0.8013	5.4636	0.2981	0.2635	
t		-3.1108	2.2318	-1.7016	4.9877	0.4065	1.2613	-1.0121	
p		<.01	<.05	<.10	<.01				

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.0050
Ho:EARN(low)=EARN(high)	0.0870

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = level of foreign currency adjustment scaled by beginning market value of equity.

TABLE D5 - Equation 2 - disposition dummy

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*CFO	D*EARN	R^2
1989	192	-0.0595	0.1479	0.4410	0.6707	0.1738	-0.8185	-0.6304	0.2991
1990	239	-0.1505	-0.1677	0.4784	0.5466	-0.0081	-0.4094	-0.8963	0.0837
1991	244	-0.2350	0.4085	0.7980	0.3415	-0.1870	0.1667	0.0066	0.1479
1992	246	-0.0522	0.1967	0.5205	0.5474	0.2123	-1.6105	0.2752	0.1189
1993	236	-0.1281	0.2091	0.1733	0.8274	0.1903	1.1723	0.8757	0.1734
1994	238	-0.1125	0.0302	0.7929	0.3536	0.2809	-0.8296	3.1342	0.1533
1995	241	-0.1282	-0.0249	0.3189	0.4325	0.2528	-1.2583	1.9326	0.1209
1996	245	-0.0610	-0.1878	0.8461	1.2127	-0.0441	-0.1327	-1.5209	0.2467
1997	216	-0.0097	0.5224	-0.0250	2.0183	0.3122	-0.5494	1.6600	0.2996
1998	413	-0.1741	0.0894	0.4999	0.7224	-0.1906	0.5511	0.4887	0.1113
Mean		-0.1041	0.1260	0.4827	0.7723	0.1315	-0.4744	0.5596	0.1826
Std dev		0.0671	0.2414	0.2982	0.5406	0.1707	0.8215	1.4804	
t		-4.9085	1.6515	5.1192	4.5179	2.4346	-1.8260	1.1954	
p		<.01	<.10	<.01	<.01	<.05	<.10		

Panel B - High accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*CFO	D*EARN	R^2
1989	192	-0.0646	-0.0473	0.0035	1.8779	0.0200	1.4450	-2.2675	0.1384
1990	239	-0.0541	0.0013	-0.4210	1.7039	-0.0498	0.4490	-0.2166	0.1949
1991	245	-0.2785	0.0102	0.3666	1.6302	0.2654	-0.7424	1.5596	0.2142
1992	246	-0.3522	0.0251	0.2902	5.2256	0.3916	0.0527	-3.9866	0.3626
1993	236	-0.1766	0.0472	0.1713	1.2712	0.0542	-1.4524	0.1433	0.0524
1994	237	-0.0219	0.1376	-0.4363	1.0255	-0.0222	-0.3858	0.8730	0.0725
1995	240	-0.0682	-0.0445	-0.4586	1.4112	0.1252	6.2413	-4.1197	0.1045
1996	244	-0.1277	-0.0639	-0.5529	1.5207	0.1630	-4.7085	4.9722	0.1605
1997	217	0.0566	0.1310	-0.8757	0.7973	0.0594	2.4765	-2.5812	0.0039
1998	412	-0.1759	0.1598	-1.2109	0.8324	0.1161	0.2699	-1.1113	0.0616
Mean		-0.1263	0.0357	-0.2924	1.7296	0.1123	0.3665	-0.6735	0.1366
Std dev		0.1229	0.0818	0.4944	1.2815	0.1347	2.8107	2.7759	
t		-3.2501	1.3786	-1.8703	4.2681	2.6365	0.4124	-0.7672	
		<.01		<.05	<.01	<.05			

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.0007
Ho:EARN(low)=EARN(high)	0.0367

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = indicator variable equal to 1 if firm has disposition activity; 0 otherwise.

TABLE D6 - Equation 2 - disposition level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0325	0.0757	0.3069	0.6272	-0.4000	0.0279	0.0968	0.2633
1990	239	-0.1533	-0.1669	0.4085	0.5586	0.1472	-0.0083	-0.0301	0.0847
1991	244	-0.2549	0.4053	0.4246	0.3740	0.9543	-0.0165	-0.0018	0.1432
1992	246	-0.0281	0.1638	0.5008	0.5548	3.1453	-0.0198	0.1025	0.1255
1993	236	-0.1031	0.1153	0.2937	0.9618	-0.4326	-0.0236	0.0066	0.1596
1994	238	-0.1029	0.0288	0.7381	0.3556	-3.3733	-0.0495	0.1858	0.1482
1995	241	-0.0875	-0.0371	0.1258	0.6899	1.7383	-0.0213	0.1746	0.0905
1996	245	-0.0792	-0.1143	0.9463	0.7031	1.0342	-0.0329	-0.0377	0.2473
1997	216	-0.0018	0.5720	-0.1045	2.1168	4.1448	-0.0086	-0.1266	0.2741
1998	413	-0.1762	0.0973	0.5205	0.7637	5.4643	0.0019	-0.0468	0.1195
Mean		-0.1020	0.1140	0.4161	0.7706	1.2423	-0.0151	0.0323	0.1656
Std dev		0.0764	0.2261	0.2954	0.5057	2.5440	0.0207	0.1028	
t		-4.2179	1.5945	4.4545	4.8185	1.5441	-2.3007	0.9950	
p		<.01	<.10	<.01	<.01	<.10	<.05		

Panel B - High accruals

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Int.	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0663	0.0883	-0.0674	1.3885	1.6237	-0.0290	0.0308	0.0967
1990	239	-0.0724	-0.0319	-0.3070	1.6729	1.5206	-0.2279	0.0970	0.1860
1991	245	-0.1685	0.1341	0.2478	1.3743	-7.6938	0.9505	-1.7286	0.1899
1992	246	-0.1498	-0.0677	0.3935	3.4441	0.4927	0.1589	0.2194	0.2401
1993	236	-0.1526	0.0481	0.1171	1.1321	-0.1538	0.0046	-0.0079	0.0437
1994	237	-0.0271	0.1291	-0.4755	1.0974	-3.3615	-0.5130	0.5263	0.0555
1995	240	-0.0291	-0.0377	-0.3680	1.3391	-0.7363	0.0446	-0.0675	0.0747
1996	244	-0.0803	-0.0008	-0.6389	1.3101	-2.3565	-0.1807	0.0587	0.1486
1997	217	0.0864	0.1009	-0.5836	0.5056	6.9634	0.1840	0.0101	-0.0117
1998	412	-0.1134	0.1482	-0.7071	-0.0223	-0.0861	-0.1336	0.2488	0.0486
Mean		-0.0773	0.0511	-0.2389	1.3242	-0.3788	0.0258	-0.0613	0.1072
Std dev		0.0763	0.0802	0.3899	0.8941	3.7840	0.3836	0.6107	
t		-3.2058	2.0139	-1.9376	4.6836	-0.3165	0.2130	-0.3174	
p		<.01	<.05	<.05	<.01				

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.00153
Ho:EARN(low)=EARN(high)	0.08722

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = Level of disposition scaled by the market value of equity at the beginning of the period.

TABLE D7 - Equation 3 - magnitude of nonarticulation

$$CAR_t = d_0 + d_1RCFO_t + d_2RCFO_{t-1} + d_3Earn_t + d_4Earn_{t-1} + d_5D_t + d_6RCFO_t \times D_t + d_7Earn_t \times D_t + d_8RCFO_{t-1} \times D_t + d_9Earn_{t-1} \times D_t + e_t \quad (3)$$

Panel A - Low accruals

	n	d0 Intercept	d1 RCFO	d3 EARN	d5 D	d6 D*RCFO	d7 D*EARN	Adjusted R^2
1989	192	-0.0914	0.3371	1.1066	0.1241	0.0092	-0.5945	0.2883
1990	239	-0.1566	0.1695	0.7339	0.1425	-0.1566	-0.3627	0.0832
1991	244	-0.3049	1.0201	0.4466	0.2448	-0.8575	0.0810	0.1650
1992	246	-0.1131	0.6684	0.3860	0.2126	-0.1356	0.3787	0.1407
1993	236	-0.2038	1.0807	1.4663	0.1540	-1.0399	-1.4320	0.2227
1994	238	-0.1184	0.5763	0.7624	0.0223	0.4881	-0.5485	0.1465
1995	241	-0.0945	-0.0900	1.4366	0.1109	-0.1565	-1.0993	0.0976
1996	245	-0.1403	1.0612	1.3042	0.2579	-0.8131	-1.0218	0.2448
1997	216	-0.0188	0.0556	2.5289	0.1337	0.2144	-0.6461	0.2699
1998	413	-0.1388	0.5282	1.0428	-0.1708	0.2208	-0.5341	0.1213
Mean		-0.1381	0.5407	1.1214	0.1232	-0.2227	-0.5779	0.1780
Std dev		0.0759	0.4246	0.6249	0.1243	0.5145	0.5377	
t		-5.7540	4.0272	5.6751	3.1335	-1.3686	-3.3992	
p		<.01	<.01	<.01	<.01		<.01	

Panel B - High accruals

	n	d0 Intercept	d1 RCFO	d3 EARN	d5 D	d6 D*RCFO	d7 D*EARN	Adjusted R^2
1989	192	-0.0223	0.1071	2.0445	-0.1256	-0.3858	-0.9953	0.0739
1990	239	-0.1317	-0.3879	2.5825	0.1714	0.2944	-1.7310	0.2151
1991	245	-0.1774	-0.4749	1.9820	0.1027	1.4394	-0.9709	0.1346
1992	246	-0.1587	-0.1314	4.3503	0.0892	1.5192	-2.6735	0.2730
1993	236	-0.1677	0.0084	2.3516	0.0235	-0.0201	-2.1168	0.0963
1994	237	-0.0477	-0.0638	1.0855	0.0974	-0.1180	-0.3822	0.0678
1995	240	-0.0141	1.2795	-0.0857	-0.2192	-2.4280	3.6292	0.2147
1996	244	-0.0959	1.4062	1.7456	0.1237	-2.9510	-1.6072	0.1704
1997	217	0.1210	0.4782	-0.5081	-0.1659	-1.4920	1.8931	0.0114
1998	412	-0.0596	-0.1774	0.6207	-0.1901	0.9250	0.8638	0.1014
Mean		-0.0754	0.2044	1.6169	-0.0093	-0.3217	-0.4091	0.1359
Std dev		0.0917	0.6554	1.4129	0.1490	1.5377	1.9753	
t		-2.6016	0.9862	3.6189	-0.1971	-0.6616	-0.6549	
p		<.05		<.01				

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.1184
Ho:EARN(low)=EARN(high)	0.2162

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

Accruals are considered high if abs(EARN-RCFO)/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = 1 if nonarticulation/MVE is greater than 5 percent.

TABLE D8 - Equation 1 partitioned by high/low changes in RCFO

$$CAR_t = b_0 + b_1 ECFO_t + b_2 ECFO_{t-1} + b_3 Earn_t + b_4 Earn_{t-1} + b_5 RCFO_t + b_6 RCFO_{t-1} + e_t$$

Panel A - Low changes in CFO

	n	b_0 Intercept	b_1 ECFO	b_3 EARN	b_5 RCFO	Adjusted R^2
1989	192	-0.0206	0.0475	0.5987	0.1324	0.1205
1990	239	-0.1100	0.0172	1.1992	-0.3945	0.1643
1991	244	-0.1586	0.0231	0.6586	0.2850	0.0548
1992	246	-0.0652	-0.0211	0.5734	0.4441	0.0886
1993	236	-0.1642	0.1206	0.9398	0.1761	0.0841
1994	238	-0.0770	-0.0915	0.6145	-0.0098	0.0567
1995	241	-0.0129	0.0274	1.0206	-0.2188	0.0602
1996	245	-0.0195	0.2880	0.1821	-0.2503	0.0459
1997	216	0.0353	-0.6373	1.7584	0.3723	0.0827
1998	413	-0.1768	0.1345	0.1162	-0.5417	0.0033
Mean		-0.0770	-0.0092	0.7662	-0.0005	0.0761
Std dev		0.0735	0.2435	0.4865	0.3375	
t		-3.3094	-0.1190	4.9798	-0.0049	
p		<.01		<.01		

Panel B - High changes in CFO

	n	b_0 Intercept	b_1 ECFO	b_3 EARN	b_5 RCFO	Adjusted R^2
1989	192	-0.0583	0.1508	0.9375	0.2929	0.2174
1990	239	-0.0382	0.0032	0.6405	0.0106	0.0616
1991	245	-0.2061	0.6715	0.6390	0.2383	0.1563
1992	246	-0.0590	0.0897	1.2005	0.7348	0.2195
1993	236	-0.1166	0.1121	0.8580	0.4848	0.1473
1994	237	-0.0218	0.1230	0.7553	0.4258	0.1006
1995	240	-0.0570	-0.0870	1.0410	0.1155	0.0817
1996	244	-0.0377	-0.1539	1.2551	0.7348	0.2365
1997	217	0.0264	0.3269	1.4399	0.0247	0.1764
1998	412	-0.0948	0.0267	0.9746	0.1368	0.1447
Mean		-0.0663	0.1263	0.9741	0.3199	0.1542
Std dev		0.0626	0.2330	0.2662	0.2684	
t		-3.3496	1.7139	11.5705	3.7695	
p		<.01	<.10	<.01	<.01	

t-test	p-value
Ho:RCFO(low)=RCFO(high)	0.0108
Ho:EARN(low)=EARN(hihg)	0.1175

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is considered high if RCFO/beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

TABLE D9 - Equation 2 - Acquisition Dummy

Panel A - Low CFO

	n	Intercept	ECFO	RCFO	EARN	DA	D*RCFO	D*EARN	Adj. R^2
1989	192	-0.0479	0.0554	-0.2176	1.0140	0.0571	0.8592	-0.9239	0.1261
1990	239	-0.0899	0.0247	-0.8714	1.3103	-0.0789	1.1120	0.2121	0.1834
1991	244	-0.3406	0.0537	0.3234	0.5763	0.3397	-0.8973	0.4579	0.1531
1992	246	0.0007	-0.1069	0.2644	0.5466	-0.2071	0.5635	-0.5478	0.1152
1993	236	-0.1364	0.0874	0.3638	0.8708	-0.0830	-0.9641	0.8210	0.0920
1994	238	-0.1064	-0.0863	-0.0266	1.0034	0.0458	-0.4587	-0.1239	0.0744
1995	241	-0.1200	0.0076	-0.4037	0.6813	0.1295	0.6640	1.4110	0.0890
1996	245	-0.0031	0.2750	0.2317	-0.1840	-0.0735	-0.5389	0.6340	0.0540
1997	216	0.0266	-0.6255	0.6200	1.6641	0.0571	-0.8677	0.5386	0.0787
1998	413	-0.1792	0.1186	-0.6370	0.0218	-0.0068	0.7346	0.5107	0.0032
Mean		-0.0996	-0.0196	-0.0353	0.7505	0.0180	0.0207	0.2990	0.0969
Std dev		0.1077	0.2381	0.4840	0.5555	0.1487	0.8338	0.6789	
t		-2.9264	-0.2607	-0.2306	4.2724	0.3826	0.0784	1.3927	
p		<.01			<.01			<.10	

Panel B - High CFO

	n	Intercept	ECFO	RCFO	EARN	DA	D*RCFO	D*EARN	Adj. R^2
1989	192	-0.0582	0.1485	0.3030	0.8335	0.0146	0.0065	0.7606	0.2046
1990	239	-0.0173	0.0046	0.2295	0.4914	-0.0548	-0.9465	0.5908	0.1131
1991	245	-0.2082	0.5992	0.1337	0.5022	-0.0621	1.0304	0.7135	0.1674
1992	246	-0.1163	-0.0060	1.1860	1.0615	0.1131	-1.2890	1.2805	0.2553
1993	236	-0.0310	0.0985	0.2719	0.9232	-0.1018	-0.1983	0.7407	0.1953
1994	237	0.0348	0.1086	0.6419	0.1184	-0.0996	-0.5214	0.6910	0.1296
1995	240	-0.0642	-0.0837	0.0775	0.9416	-0.0195	-0.1936	0.5794	0.0833
1996	244	-0.1191	-0.1587	1.2754	0.9033	0.0796	-0.6332	1.0696	0.2582
1997	217	-0.0959	0.2808	0.4232	1.3454	0.1708	-0.9405	0.2680	0.1950
1998	412	-0.1261	0.0908	0.5703	0.6998	0.0514	-1.3094	0.1291	0.1653
Mean		-0.0802	0.1083	0.5112	0.8020	0.0092	-0.5195	0.6823	0.1767
Std dev		0.0682	0.2121	0.4188	0.3450	0.0930	0.7120	0.3358	
t		-3.7148	1.6144	3.8606	7.3512	0.3118	-2.3074	6.4248	
		<.05	<.10	<.01	<.01		<.10	<.05	

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

DA = indicator variable equal to 1 if firm has acquisition activity; 0 otherwise.

TABLE D10 - Equation 2 - acquisition level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	193	-0.0387	0.0210	-1.2326	0.5083	0.5906	0.0009	0.0142	0.0476
1990	240	-0.1070	0.1779	0.3529	0.6300	1.6642	-0.0227	0.0353	0.1156
1991	245	-0.0854	0.0556	0.9997	0.5845	-0.3442	0.0046	0.0003	0.0611
1992	247	-0.0948	0.1163	1.5126	0.9665	0.0388	0.0047	-0.0074	0.1051
1993	236	-0.1411	0.1267	0.1906	0.8556	0.3139	-0.0103	-0.0044	0.0730
1994	238	-0.0345	0.1291	-0.1948	0.5699	0.2419	0.0076	-0.0096	0.0370
1995	241	-0.0385	0.0286	-0.2542	0.8490	0.1417	0.0023	0.0010	0.0105
1996	246	0.0048	0.0926	-0.0333	0.6322	0.1136	-0.0083	-0.0121	-0.0019
1997	216	-0.0121	-0.5103	0.2807	1.7822	1.0063	0.0062	0.0108	0.1368
1998	415	-0.1803	0.1110	-0.5740	0.0753	0.0025	0.0015	0.0004	-0.0018
Mean		-0.0728	0.0349	0.1048	0.7454	0.3769	-0.0014	0.0029	0.0583
Std dev		0.0592	0.1976	0.7724	0.4390	0.5793	0.0095	0.0141	
t		-3.8864	0.5577	0.4289	5.3686	2.0576	-0.4473	0.6376	
p		<.01			<.01	<.05			

Panel B - High changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	193	-0.0009	0.2548	0.0747	0.7511	0.1299	0.0002	-0.0011	0.2890
1990	239	-0.0170	-0.1190	-0.0372	1.0698	-0.4393	-0.0016	-0.0010	0.1481
1991	245	-0.2236	0.3745	0.4194	0.5648	0.3787	0.0007	-0.0013	0.1634
1992	247	-0.0030	0.0503	0.5300	0.7446	-0.2812	0.0032	-0.0021	0.1578
1993	236	-0.1153	0.1656	0.4451	0.8258	-0.0081	0.0006	-0.0023	0.1258
1994	237	-0.0504	0.0530	0.4872	0.8734	0.2635	0.0001	0.0004	0.1116
1995	240	-0.0371	-0.0595	0.0060	1.0600	0.1763	0.0004	-0.0017	0.0946
1996	246	-0.0720	-0.0405	0.8791	0.4722	0.1770	-0.0027	0.0068	0.1476
1997	216	0.0398	0.2368	0.0947	1.3204	-0.9253	0.0035	0.0054	0.2158
1998	414	-0.0964	0.0239	0.2087	1.1583	-0.3396	0.0025	-0.0083	0.1544
Mean		-0.0576	0.0940	0.3108	0.8840	-0.0868	0.0007	-0.0005	0.1608
Std dev		0.0748	0.1583	0.2904	0.2673	0.4028	0.0020	0.0042	
t		-2.4336	1.8774	3.3844	10.4569	-0.6815	1.1082	-0.3922	
p		<.05	<.05	<.01	<.01				

t-test	p-values
Ho:RCFO(low)=RCFO(high)	0.1982
Ho:EARN(low)=EARN(high)	0.1668

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = level of acquisition activity scaled by the market value of equity at the beginning of the period.

TABLE D11 - Equation 2 - foreign currency adjustment level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0178	0.0084	0.0952	0.5639	1.8949	0.0675	-0.0417	0.1061
1990	239	-0.1232	0.0074	-0.3594	1.1483	14.1057	0.0105	0.0677	0.1754
1991	244	-0.1776	0.0333	0.3137	0.6526	-9.9743	0.0293	0.0517	0.1360
1992	246	-0.0655	-0.0078	0.4473	0.6425	-1.0261	0.0215	-0.0038	0.0754
1993	236	-0.1705	0.1119	0.0824	0.9652	-10.1909	-0.6265	0.1147	0.1004
1994	238	-0.0774	-0.1023	0.0073	0.6090	-0.2529	0.0427	-0.0498	0.0409
1995	241	-0.0095	0.0781	-0.1845	0.9719	-12.3958	0.4116	0.0149	0.1004
1996	245	-0.0288	0.2627	-0.2028	0.1579	1.5466	0.0403	-0.5143	0.0316
1997	216	0.0366	-0.6309	0.3704	1.7714	0.3345	0.0510	-0.1442	0.0614
1998	413	-0.1716	0.0717	-0.4898	0.0957	1.8598	0.0182	0.0439	-0.0012
Mean		-0.0805	-0.0168	0.0080	0.7578	-1.4099	0.0066	-0.0461	0.0826
Std dev		0.0769	0.2356	0.3154	0.4889	7.7943	0.2525	0.1798	
t		-3.3109	-0.2248	0.0800	4.9020	-0.5720	0.0828	-0.8108	
p		<.01			<.01				

Panel B - High changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.059	0.2874	0.0911	1.0912	-6.1371	-0.0092	-0.0149	0.2164
1990	239	-0.0384	0.0039	0.0089	0.6441	-1.7287	-0.0378	0.0024	0.0455
1991	245	-0.2071	0.6759	0.2323	0.6636	6.4719	0.1636	0.1077	0.1446
1992	246	-0.0623	0.0819	0.7825	1.1824	8.2064	-0.0025	0.0007	0.2190
1993	236	-0.1128	0.0858	0.5816	1.0643	11.5463	-0.0103	-0.0134	0.1719
1994	237	-0.0174	0.1242	0.4504	0.6706	-1.3308	-0.2781	0.0023	0.0928
1995	240	-0.0509	-0.0898	0.0499	1.0468	2.5491	-0.0192	0.0264	0.0635
1996	244	-0.0369	-0.1757	0.7488	1.2088	-5.6862	-0.0431	0.0108	0.2327
1997	217	0.0257	0.3263	0.0266	1.4419	7.1811	0.3747	-0.3697	0.1606
1998	412	-0.0982	0.0922	0.1891	0.9949	-3.8897	-0.0477	-0.0159	0.1457
Mean		-0.0657	0.1412	0.3161	1.0009	1.7182	0.0090	-0.0264	0.1493
Std dev		0.0631	0.2412	0.3011	0.2657	6.3331	0.1666	0.1260	
t		-3.2954	1.8516	3.3197	11.9141	0.8580	0.1716	-0.6617	
p		<.01	<.05	<.01	<.01				

t-test	p-values
Ho:RCFO(low)=RCFO(high)	0.0150
Ho:EARN(low)=EARN(high)	0.0803

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = level of foreign currency adjustment scaled by beginning market value of equity.

TABLE D12 - Equation 2 - disposition dummy

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*CFO	D*EARN	R^2
1989	193	-0.0190	0.0314	-0.8903	2.4961	0.0061	-2.7929	-2.5279	0.1801
1990	240	-0.0922	0.1362	0.3725	0.6572	0.0074	6.8677	0.3545	0.1238
1991	245	-0.1757	0.1008	0.7564	0.5066	0.1400	6.7518	0.1660	0.1195
1992	247	-0.2452	0.0248	2.7933	0.9726	0.2856	-4.1923	0.5153	0.2170
1993	236	-0.1837	0.0716	0.2351	1.0436	0.0964	-0.0216	0.0418	0.0855
1994	238	-0.0060	0.1185	-0.1216	0.5496	-0.0951	1.4670	2.1477	0.0669
1995	241	-0.0635	-0.0058	-0.2589	0.9352	0.1101	7.1103	-2.7264	0.0397
1996	246	-0.0587	0.0366	0.1241	1.2479	0.0856	-2.2701	-0.8785	0.0685
1997	216	0.0305	-0.6267	0.3740	1.7118	0.1303	-0.8511	1.0778	0.0766
1998	415	-0.1882	0.0772	-0.5394	0.2013	0.0968	0.4318	-0.6322	0.0186
Mean		-0.1002	-0.0035	0.2845	1.0322	0.0863	1.2501	-0.2462	0.0996
Std dev		0.0926	0.2235	1.0044	0.6671	0.1005	4.2331	1.5123	
t		-3.4219	-0.0501	0.8958	4.8933	2.7164	0.9338	-0.5148	
p		<.01			<.01	<.05			

Panel B - High changes in CFO

		c0	c1	c3	c5	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*CFO	D*EARN	R^2
1989	193	0.0006	0.2062	0.2139	0.8474	-0.0949	-0.3337	-0.5578	0.3063
1990	239	-0.0271	-0.1116	-0.0891	1.1264	-0.0673	0.1643	-0.7032	0.1418
1991	245	-0.2091	0.3722	0.4067	0.5531	-0.0787	-0.2006	0.2392	0.1618
1992	247	-0.0097	0.1001	0.4786	0.7983	-0.0051	-0.4445	-0.1045	0.1547
1993	236	-0.1140	0.1475	0.3368	0.6868	0.0759	0.9187	1.2179	0.1550
1994	237	-0.1058	0.0040	0.7470	0.8746	0.4796	-0.1168	-2.8458	0.1693
1995	240	-0.0728	-0.1262	0.2910	0.7134	-0.1036	-1.0247	1.6212	0.1350
1996	246	-0.1120	-0.2503	1.0912	1.2053	0.1298	-0.1067	-2.7477	0.2742
1997	216	-0.0410	0.4209	0.2433	1.5793	0.1697	0.0744	0.3852	0.2333
1998	414	-0.1246	0.0879	0.2314	1.0853	0.0690	-0.0345	-0.2605	0.1478
Mean		-0.0816	0.0851	0.3951	0.9470	0.0574	-0.1104	-0.3756	0.1879
Std dev		0.0644	0.2151	0.3244	0.3041	0.1775	0.4922	1.4697	
t		-4.0065	1.2507	3.8518	9.8461	1.0231	-0.7094	-0.8082	
		<.01		<.01	<.01				

t-test	p-values
Ho:RCFO(low)=RCFO(high)	0.37009
Ho:EARN(low)=EARN(high)	0.34744

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = indicator variable equal to 1 if firm has disposition activity; 0 otherwise.

TABLE D13 - Equation 2 - disposition level

$$CAR_t = c_0+c_1ECFO_t+c_2ECFO_{t-1}+c_3RCFO_t+c_4RCFO_{t-1}+c_5EARN_t+c_6EARN_{t-1}+ c_7D_t+c_8RCFO_t*D_t+c_9EARN_t*D_t+c_{10}RCFO_{t-1}*D_t+c_{11}EARN_{t-1}*D_t+e_t \quad (2)$$

Panel A - Low changes in CFO

		c0	c1	c3	c6	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	193	-0.0477	0.0206	-0.6115	1.2234	-1.2100	0.1324	-0.0467	0.1051
1990	240	-0.0966	0.1407	0.4094	0.6537	1.8011	0.1142	0.7095	0.1330
1991	245	-0.1000	0.1844	0.6921	0.5322	-8.9788	1.8507	-8.1591	0.1696
1992	247	-0.0952	0.1150	1.5815	0.9032	-4.7614	0.0929	-0.5076	0.0970
1993	236	-0.1489	0.0600	0.2010	0.9645	0.1765	0.0006	0.0157	0.0717
1994	238	-0.0351	0.1274	-0.1372	0.5226	-2.1561	0.1323	0.1204	0.0496
1995	241	-0.0328	-0.0189	-0.2276	0.8719	4.9739	0.1302	-0.0369	0.0166
1996	246	-0.0087	0.0718	0.0817	0.6483	-1.1652	-0.0669	0.0222	0.0704
1997	216	0.0348	-0.5925	0.3312	1.7828	-3.6006	-0.0277	0.1133	0.0606
1998	415	-0.1747	0.1005	-0.5762	0.1289	2.7520	0.0388	-0.0377	0.0033
Mean		-0.0705	0.0209	0.1744	0.8232	-1.2169	0.2398	-0.7807	0.0777
Std dev		0.0643	0.2235	0.6478	0.4504	4.0070	0.5706	2.6092	
t		-3.4641	0.2957	0.8515	5.7787	-0.9603	1.3286	-0.9462	
p		<.01			<.01				

Panel B - High changes in CFO

		c0	c1	c3	c6	c7	c8	c9	Adj.
	n	Intercept	ECFO	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	193	0.0340	0.2288	0.1427	0.7535	2.7864	-0.0475	0.0970	0.2912
1990	239	-0.0418	-0.1358	-0.0400	1.1767	0.3595	-0.0154	-0.0421	0.1543
1991	245	-0.2173	0.3938	0.4126	0.5668	1.1610	0.0026	-0.0062	0.1653
1992	247	-0.0054	0.0270	0.5470	0.7670	0.4834	0.1278	0.0274	0.1728
1993	236	-0.1123	0.1831	0.4735	0.6761	-3.4040	-0.0004	0.0839	0.1488
1994	237	-0.0488	-0.0423	0.5725	0.8626	-3.0245	-0.0182	-0.0180	0.1084
1995	240	-0.0517	-0.1304	0.1394	0.9446	-0.2263	0.0773	-0.1127	0.1167
1996	246	-0.1161	-0.2821	1.1131	1.2311	0.7308	-0.0031	-0.0326	0.2835
1997	216	0.0234	0.3258	0.1101	1.3608	3.1011	0.0632	-0.0160	0.1923
1998	414	-0.0834	0.1247	0.0866	1.0293	-3.1773	0.0355	-0.6957	0.1897
Mean		-0.0619	0.0693	0.3558	0.9369	-0.1210	0.0222	-0.0715	0.1823
Std dev		0.0749	0.2191	0.3425	0.2593	2.3655	0.0532	0.2276	
t		-2.6166	0.9994	3.2845	11.4231	-0.1617	1.3181	-0.9934	
		<.05		<.01	<.01				

t-test	p-values
Ho:RCFO(low)=RCFO(high)	0.2019
Ho:EARN(low)=EARN(high)	0.2280

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = level of disposition activity scaled by beginning market value of equity.

TABLE D14 - Equation 3 - magnitude of nonarticulation

$$CAR_t = d_0 + d_1RCFO_t + d_2RCFO_{t-1} + d_3Earn_t + d_4Earn_{t-1} + d_5D_t + d_6RCFO_t \times D_t + d_7Earn_t \times D_t + d_8RCFO_{t-1} \times D_t + d_9Earn_{t-1} \times D_t + e_t \quad (3)$$

Panel A - Low changes in CFO

		d0	d1	d3	d5	d6	d7	Adj.
	n	Intercept	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0210	0.2556	0.8048	0.0089	-0.2426	-0.1652	0.1056
1990	239	-0.1998	-0.2542	1.0688	0.1963	0.0854	-0.3715	0.2343
1991	244	-0.1835	-0.0095	1.7294	0.0603	0.2580	-1.2684	0.1036
1992	246	-0.0762	0.3681	0.4976	0.0323	0.5098	0.1582	0.0804
1993	236	-0.1899	0.4385	1.6097	0.1363	-0.7588	-1.6620	0.1164
1994	238	-0.1198	0.0062	1.7055	0.1573	0.2996	-1.6347	0.1246
1995	241	-0.0371	0.4175	0.0362	0.2030	-0.6273	2.5077	0.1423
1996	245	-0.0973	0.4336	3.1837	0.2492	-1.1440	-3.3100	0.2153
1997	216	-0.0091	0.2729	1.7965	0.1637	-1.0343	-0.1229	0.0865
1998	413	-0.1473	-1.1848	0.2050	-0.0936	1.0357	0.1307	0.0222
Mean		-0.1081	0.0744	1.2637	0.1114	-0.1619	-0.5738	0.1231
Std dev		0.0715	0.4992	0.9408	0.1062	0.7181	1.5354	
t		-4.7804	0.4712	4.2479	3.3172	-0.7127	-1.1818	
p		<.01		<.01	<.01			

Panel B - High change in CFO

		d0	d1	d3	d5	d6	d7	Adj.
	n	Intercept	RCFO	EARN	D	D*RCFO	D*EARN	R^2
1989	192	-0.0717	0.3277	1.5851	0.0724	0.0109	-1.5846	0.2300
1990	239	-0.0719	-0.0007	0.9521	0.1223	-0.0557	-0.5129	0.0786
1991	245	-0.2646	0.8027	0.3368	0.2723	-0.3728	0.6653	0.1692
1992	246	-0.0893	-0.0004	2.6520	0.1509	0.6459	-1.7225	0.2754
1993	236	-0.1355	0.7745	2.4089	0.0001	-0.4523	-2.3771	0.2297
1994	237	-0.0138	0.3415	0.3926	0.0285	0.2641	1.0684	0.1245
1995	240	-0.0987	-0.1419	1.6491	0.1671	0.1032	-0.9071	0.0988
1996	244	-0.0622	0.8567	1.1967	0.0598	-0.4803	-0.1264	0.2367
1997	217	0.0037	-0.3426	1.6619	0.0012	0.8577	-0.1176	0.1801
1998	412	-0.0689	0.2169	1.1768	-0.1185	0.2645	-0.1489	0.1629
Mean		-0.0873	0.2834	1.4012	0.0756	0.0785	-0.5763	0.1786
Std dev		0.0738	0.4194	0.7592	0.1087	0.4496	1.0816	
t		-3.7401	2.1370	5.8365	2.2000	0.5523	-1.6850	
p		<.01	<.05	<.01	<.05		<.10	

t-test	p-values
Ho:RCFO(low)=RCFO(high)	0.1580
Ho:EARN(low)=EARN(high)	0.3791

Cutoff values for mean one-tailed t-test at nine degrees of freedom are 2.821 (.01 level), 1.833 (.05) and 1.383 (.10).

CFO is high if the change in RCFO from t-1 to t, scaled by beginning market value of equity is above the median.

CAR = Cumulative abnormal returns

ECFO = Estimated cash flow from operations scaled by the market value of equity at the beginning of the period.

EARN = Operating earnings (Compustat # 18) scaled by the market value of equity at the beginning of the period.

RCFO = Reported cash flow from operations scaled by the market value of equity at the beginning of the period.

D = indicator variable equal to 1 relative nonarticulation is greater than 5 percent; 0 otherwise.