The Usefulness of Direct and Indirect Cash Flow Disclosures

Greg Clinch
Australian Graduate School of Management
University of New South Wales

Baljit Sidhu
Australian Graduate School of Management
University of New South Wales

Samantha Sin
Department of Accounting & Finance
Macquarie University

November 2000

Address all correspondence to Greg Clinch, Australian Graduate School of Management, University of NSW, Sydney NSW, Australia 2052, Tel +612-9931-9363, Fax +612-9662-7621, gregc@agsm.edu.au.

We appreciate helpful comments and suggestions by Mary Barth, Keitha Dunstan, SP Kothari, Maureen McNichols (the editor), Terry Shevlin, an anonymous referee, and workshop participants at the 1998 Australian Graduate School of Management Accounting and Finance Research Camp, the 1999 AAA and AAANZ meetings, Griffith University, Macquarie University, University of Melbourne, Monash University, Nanyang Technological University (Singapore), University of Queensland, Queensland University of Technology, University of Tasmania, University of Technology, Sydney, and University of Western Australia. We also greatly appreciate the research assistance of Anusha Kangatharan.

The Usefulness of Direct and Indirect Cash Flow Disclosures

Abstract

We investigate the ability of disclosed operating cash flow and indirect accruals components to explain annual returns for a sample of Australian firms. Consistent with claims made by accounting standard setters, we find evidence of significant explanatory power for disclosed operating cash flow components beyond aggregate operating cash flows when they also have significant incremental predictive power for future (one year ahead) operating cash flows. Accrual components also have incremental explanatory power for returns. In addition, we find evidence of significant explanatory power for operating cash flow components beyond estimates of the components (based on other financial statement disclosures) for firms with large differences between disclosed and estimated components.

1. Introduction

The aim of our research is to investigate whether operating cash flow disclosures provided by Australian companies convey information that is potentially useful to investors. Since 1992, Australian companies have been required by accounting standard *AASB 1026: Statement of Cash Flows* to list separately the major sources and uses of cash flows from their operating activities. They also are required to provide an indirect reconciliation between net operating cash flows and reported operating profit. Our objective is to investigate the extent to which these disclosures convey information that is relevant to investors.

We are motivated by the debate in various standard setting jurisdictions concerning the most appropriate format for operating cash flow disclosures, particularly by claims regarding the usefulness of directly disclosed components of operating cash flows. For example, the discussion accompanying U.S. accounting standard *SFAS 95: Statement of Cash Flows*, issued in 1987 (see paragraphs 106-121) suggests several rationales for cash flow-related disclosures:

- Components of *both* operating cash flows and accruals provide information useful to financial statement users beyond that provided by aggregate amounts (paragraphs 107-108);

- A likely source of informational value for components of operating cash flows is their usefulness in predicting future operating cash flows (paragraph 107); and,
- Company generated disclosures of operating cash flow components are likely to provide useful information beyond estimates available to financial statement users through the use of accrual components together with additional income statement information (paragraphs 115-118).[1]

Despite concluding that both operating cash flow and accruals components provide potentially important information, *SFAS 95* requires only that operating accruals components be disclosed via an indirect reconciliation between income and net operating cash flows. The direct method of listing operating cash flow components is encouraged, but not required (paragraph 119). This position was adopted in part due to insufficient available evidence for the benefits of the direct approach to justify the increased costs to companies of providing the information.[2] In contrast, Australian accounting standard *AASB 1026* mandates

[1] Sondhi, Sorter and White (1987) provide an example of procedures available to estimate operating cash flow components using only available financial statement information, and argue strongly for the usefulness to investors of these estimates.

[2] Only a small minority of U.S. firms voluntarily report direct operating cash flow disclosures. Rue and Kirk (1996) are able to identify only 259 companies using the direct method during the 1987-1989 period, of over 6,000 companies listed on Compustat. Moreover, 69 of these companies switched to the indirect method by 1989. Similarly, Bahnson, Miller and Budge (1996) report that 97.5% of sample companies in the 1991 Accounting Trends and Techniques publication used the indirect method alone (AICPA, 1992). They cite also (p.10) a 1994 letter from the FASB which reiterates the position taken in SFAS 95, based in part on the lack of available evidence supporting the usefulness of direct cash flow components to investors sufficient to overcome the additional preparation costs borne by firms. Some evidence supporting the indirect method is provided by Rue and Kirk (1996), who find that for their sample of firms, direct cash flow disclosures are not significantly different from estimates made using other available financial

the direct disclosure of operating cash flow components, agreeing (in explanatory paragraph xxvi) that the components provide "a more useful basis for estimating future cash flows".

We exploit the mandated direct operating cash flow information disclosed by Australian firms to provide evidence relevant to this debate.[3] In particular, we investigate the extent to which disclosed direct components of operating cash flows convey information useful beyond the components of operating accruals contained in the indirect reconciliation in explaining share returns. We also explore whether the indirect reconciliation disclosures convey useful (incremental) information.

Based on the discussion in SFAS *95* our investigation focuses on three specific research questions. First, we explore whether directly disclosed components of operating cash flows, and components of accruals disclosed in the indirect reconciliation between earnings and operating cash flows, are associated with contemporaneous share returns. This initial question concerns the extent to

---

statement information, suggesting that the direct cash flow disclosures are redundant. Evidence supporting the direct method is provided by Klammer and Reed (1990), who report, in an experimental setting, lower variability in the size of bank loans granted by bank analysts based on cash flow information presented using the direct method, compared with the indirect method. Additional support for the direct method is provided by survey evidence that indicates a variety of financial statement users prefer the direct method of presenting cash flow disclosures (*e.g.*, Jones, Romano and Smyrnios (1995), Jones and Ratnatunga (1997), Goyal and Freeman (2000)).

[3] There are two factors that make a sample of U.S. companies unsuitable for our research. First, as noted above, only a relatively small number of U.S. firms provide direct operating cash flow disclosures. Second, and more importantly, because of the choice admitted by *SFAS 95*, self-selection concerns would arise regarding our ability to generalize results to a wider population of firms. Wallace, Choudhury and Pendlebury (1997) indicate that, among countries with an accounting standard requiring the presentation of a Statement of Cash Flows, Australia and New Zealand alone mandate the direct method. China has also recently (from 1998) required companies to directly report components of operating cash flows.

which disclosed direct and indirect components reflect information that is summarized in returns, incremental to aggregate operating cash flow and accrual amounts. It relates to whether required direct and indirect component disclosures add explanatory power to the aggregate amounts disclosed, as claimed in *SFAS 95* (paragraphs 107-108). Previous work based on aggregate cash flows and accruals (*e.g.*, Bowen, Burgstahler and Daley (1987), Wilson (1986,1987), Bernard and Stober (1989), Dechow (1994), Guay and Sidhu (2001)) has documented a significant association between returns and aggregate operating cash flows and accruals. Our first question extends this line of research to disclosed *components* of operating cash flows and accruals.

Our results indicate that, for a broad sample of industrial firms, there is no persuasive evidence that disclosed operating cash flow components provide additional explanatory power beyond aggregate net operating cash flows. In contrast, mining companies exhibit significant incremental explanatory power for disclosed cash flow components.[4] We find evidence that for both industrial and mining firms, accruals components disclosed in the indirect reconciliation between operating profit and net operating cash flow convey information, beyond aggregate accruals, that is reflected in returns.

Our second research question investigates whether any additional explanatory power for direct operating cash flow components reflects an ability

[4] As explained in section 3.1, we separately investigate industrial and mining companies due to possibility that their different operating environments may influence the informational role of cash flow and accrual components.

to predict future operating cash flows. Both the U.S. and Australian accounting standards (*SFAS 95* paragraph 107, and *AASB 1026* paragraph xxvi) suggest enhanced predictive ability as a rationale for firms directly reporting operating cash flow components. We investigate whether this rationale is reflected in the association between stock returns and directly disclosed cash flow components. Specifically, we explore whether greater predictive ability with respect to future operating cash flows is associated with greater incremental explanatory power for the disclosed cash flow components. We also extend this inquiry to explore whether incremental explanatory power varies with additional factors related to the divergence between operating and cash flow generating cycles of companies, as might be expected.

Our results indicate that when firms are partitioned into groups based on the ability of cash flow components to predict future operating cash flows, only firms with higher predictive ability exhibit significant explanatory power for cash flow components in explaining stock returns. This result holds for both the industrial and mining sub-samples, suggesting that the different results we report for the first research question are related in part to different average levels of predictive ability between the industrial and mining sub-samples we employ. We find also that identifiable subsets of the industrial firms, based on high current receivables, or payables, exhibit significant explanatory power for directly disclosed cash flow components beyond aggregate operating cash flows.

The final research question we investigate is whether the association between returns and operating cash flow components differs between disclosed components and components estimated using additional information provided in financial statements, as suggested by the discussion in *SFAS 95* (paragraphs 115-118). Sondhi, Sorter and White (1987) and Livnat and Zarowin (1990), among others, have suggested procedures to estimate operating cash flow components using financial statement information, and Livnat and Zarowin (1990) find significant associations with stock returns for some of their estimated components. We extend this research and investigate whether disclosed components of operating cash flows for Australian firms provide additional explanatory power for stock returns, beyond that available from estimated components. Our results indicate that only for firms which exhibit large differences between disclosed and estimated operating cash flow components do the disclosed components incrementally explain returns.

The remainder of the paper is organized as follows. In section 2 we describe the details of our research design. Section 3 describes our sample selection process and several characteristics of the sample firms. Our results are discussed in sections 4, followed by a brief conclusion.

2. Research design

2.1 Primary regression equation

We seek to assess the ability of reported cash flow components to reflect information relevant to investors. We begin by using share return as a summary measure of information relevant to investors that arrives during the return measurement interval (a year), and investigate the ability of cash flow and accruals components of earnings to explain this measure, based on (1):

$$RET_{it} = a_0 + a_1 CFO_{it} + a_2 ACCRUALS_{it} + \upsilon_{it}, \quad (1)$$

where RET_{it} is share return of firm *i* for period *t*, CFO_{it} represents net operating cash flows as disclosed in the *Statement of Cash Flows*, and $ACCRUALS_{it}$ represents net operating accruals as disclosed in the indirect reconciliation statement between operating income and operating cash flows. Both CFO_{it} and $ACCRUALS_{it}$ are deflated by market capitalization at the beginning of the return measurement interval. We include a_0 and υ_{it} to capture the portion of return not explained by *CFO* and *ACCRUALS*.

To assess the ability of disclosed components of operating cash flows to provide further explanatory power, we disaggregate *CFO* into components reported in the direct cash flow statement, such as cash received from customers,

cash paid to suppliers and employees, *etc*. Similarly, disaggregating *ACCRUALS* into components based on the reconciliation between income and net operating cash flow allows us to investigate the additional explanatory power associated with the indirect approach to presenting cash flow information.[5]

2.2 Components of direct and indirect cash flow disclosures

Our investigation focuses on the ability of components of reported cash flows and accruals to explain information contained in returns. This requires a standardized definition of components across firms in our sample, and is complicated by some of our sample firms reporting cash flows and accruals unique to their circumstances, or to their industry's circumstances.[6]

For direct components of operating cash flows we use the following five standardized components, which sum to the disclosed net cash flow from operations (*CFO*):

- *CASHCOLL* – cash collected from customers;
- *CASHSUPP* – cash paid to suppliers and employees;
- *TAXPAID* – income taxes paid;
- *INTPAID* – net interest paid;

[5] An alternative specification of (1), drawing on Ohlson (1995) and Easton and Harris (1991), among others, includes change in *CFO* and *ACCRUALS* as additional right hand side variables. Using this alternative results in many more RHS variables (and reduced degrees of freedom) in our regressions when we decompose *CFO* and *ACCRUALS* into component cash flows and accruals. It also reduces the number of observations available for estimation. Nevertheless, we repeated our analyses including the change variables as an additional right hand side variable with no major effect on the inferences we draw.

- *CASHOTHER* – all other disclosed cash components not included in the above (*e.g.*, dividends received, excise taxes paid, *etc.*).

We employ this classification scheme for two reasons. First, it follows the recommended scheme in *AASB 1026*, resulting in consistent disclosure of the first four components across firm years in our sample.[7] However the fifth component potentially contains a wide variety of different disclosed items depending on the firm and or industry involved. Second, the scheme mirrors that used by Livnat and Zarowin (1990) to estimate cash flow components for U.S. firms.[8] This comparability allows us, in section 2.3, to follow Livnat and Zarowin's approach to obtain estimated components of operating cash flows for our sample of firms, to compare with components disclosed in the *Statement of Cash Flows*.

Our classification scheme for cash flows also provides us with a natural scheme to organize accrual components, by grouping accrual items disclosed in the indirect reconciliation according to the business transactions that generate each direct cash flow component described above. Specifically, we group reported indirect reconciliation items into the following six components:

---

[6] For example, oil and gas mining firms often disclose a line item in their operating cash flows relating to excise taxes levied on production. Non-mining firms rarely disclose this item.

[7] Paragraph 15 of *AASB 1026* requires certain items to be disclosed in the statement of cash flows, including interest received and paid, and income taxes paid. It does not specifically require cash received from customers or cash paid to employees and suppliers to be disclosed. However, the standard's commentary paragraph (xvi) lists these items as examples of operating cash flows. Also, appendix 1 to the standard provides detailed example statements that include these items. As a consequence, essentially all Australian companies report their operating cash flows based on this format.

[8] Livnat and Zarowin (1990) employ this scheme because it corresponds to recommended components outlined in *SFAS 95*.

- *ACCREV* – accruals related to the non-cash component of sales revenue (e.g., change in trade receivables);
- *ACCSUPP* – accruals related to the non-cash components of supplier and employee expenses (e.g., change in inventories and accounts payable);
- *ACCTAX* – accruals related to income tax expense (e.g., change in income taxes payable and deferred tax liabilities / assets);
- *ACCINT* – accruals related to interest revenue and expense (e.g., change in interest receivable and payable);
- *ACCOTHER* – accruals related to other revenues and expenses (e.g., change in accounts relating to non-operating items such as dividends receivable);
- *ACCNONCASH* – non-cash accruals (e.g., depreciation and amortization expense).

The first five accrual components correspond, in order, to the five cash flow components we use (*CASHCOLL, CASHSUPP, TAXPAID, INTPAID*, and *CASHOTHER*). The sixth accrual component, *ACCNONCASH*, represents non-cash accruals that are associated with no operating cash flow item.[9] The six accrual components sum to *ACCRUALS*, the difference between disclosed operating profit and net cash flow from operations.

We use the cash flow and accruals components to decompose *CFO* and *ACCRUALS* in equation (1) and test whether such decomposition increases the

[9] Non-cash accruals typically represent accounting expenses associated with expenditures that are classified as investing rather than operating cash outflows (*e.g.*, depreciation of long-term assets).

explanatory power of the regression. This provides evidence on whether the components convey information beyond aggregate *CFO* and *ACCRUALS*.

2.3 Estimated direct cash flow components

As discussed in the introduction, our third research question involves comparing the ability of reported versus estimated operating cash flow components to explain returns. For this purpose, we follow the approach in Livnat and Zarowin (1990) to obtain estimates of operating cash flow components. In particular, for each of the five cash flow components described in section 2.2, and using the *ACCRUALS* components disclosed in the indirect reconciliation (also defined in section 2.2), we estimate cash flows as follows:

- *CASHCOLL* = sales revenue less *ACCREV*;
- *CASHSUPP* = operating income adjusted for revenues and expenses used in estimating the other four components plus *ACCNONCASH* less *ACCSUPP*;[10]
- *TAXPAID* = income tax expense less *ACCTAX*;
- *INTPAID* = net interest expense less *ACCINT*;
- *CASHOTHER* = other non-operating revenues and expenses (*e.g.* dividend revenue) less *ACCOTHER*.

[10] We use this approach to estimate *CASHSUPP* because during the sample period we use, Australian firms were required to disclose neither cost of goods sold nor all employee expenses. Effectively, our estimate of *CASHSUPP* acts as a "balancing item," determined after the four other cash flow components are estimated. As a consequence, our estimate is likely to include some cash flows unrelated to payments to suppliers and employees. Livnat and Zarowin (1990) faced a similar difficulty, since U.S. firms are not required to disclose all employee-related expenses.

We use these estimates of the five operating cash flow components as potential competitors for the disclosed components in their ability to explain returns.

3. Data and descriptive statistics

3.1 Sample firms and data

The sample was constructed from the 100 largest companies listed on the Australian Stock Exchange (ASX), as measured by market value of equity as of June 30, 1996, and a random sample of 250 firms selected from the remaining ASX-listed firms with market value of equity greater than A$10 million. Of 1,171 companies with June 30, 1996 ASX share prices, 776 meet our market capitalization criterion, indicating that one-third of traded Australian firms have market value of equity less than A$10 million. We exclude foreign-domiciled firms from the sample because they do not follow Australian GAAP. We also exclude firms operating in the financial services sector because their cash flow disclosures differ markedly from other firms.[11] We include a firm in our regression equations for each year it has the data the equations require.[12] We

[11] Appendices 1 and 2 of Australian accounting standard *AASB 1026* provide suggested *Statement of Cash Flow* templates for non-financial and financial institutions respectively. The templates outline different classification schemes for listing components of operating cash flows.

[12] For some firm / year observations, the sum of disclosed operating cash flow components does not equal operating earnings less the sum of disclosed accrual components from the indirect reconciliation. These two amounts should be equal by definition, but can differ due to either rounding errors (since our data are coded to the nearest $0.1m) or errors in the data sources we employ. To minimize the potential for data errors influencing our analysis, we checked all observations where the sum of operating cash flow components differed from operating earnings less the sum of accrual components by greater than five percent of net operating cash flows. We excluded thirteen observations (from an original 661 observations) where the difference did not

select the 100 largest firms to facilitate comparisons with previous research based on, typically larger, U.S. firms, and extend the sample to smaller firms to facilitate generalization of our findings beyond the largest firms.[13] The sample period is 1992-1997.[14] We obtain financial statement data from firms' annual reports to shareholders and market data from the Australian Graduate School of Management's Centre for Research in Finance share price file.

We conduct our analyses on two separate sub-samples – industrial (non-mining) firms and mining firms – due to the possibility that the different operating environments faced by mining and non-mining firms could influence the informational role of cash flow-related disclosures. For example, the use by mining companies of forward contracts to hedge against commodity price movements, and the long-horizon nature of their exploration activities will presumably affect the extent to which cash flow related-disclosures are able to assist in predicting future operating performance. By separating observations into industrial and mining sub-samples, we reduce the possibility that different findings across the sub-samples are masked at the full sample level.[15]

3.2 Descriptive Statistics

represent rounding errors and could not be resolved by reference to original financial statement disclosures.

[13] We repeated our analyses for large and small sub-samples separately with little impact on our results, except that smaller firms exhibit a slightly higher level of significance than large firms.

[14] The requirement for firms to provide a statement of cash flows under *AASB 1026* came into operation for fiscal years ending on or after June 30, 1992.

[15] We are precluded from finer partitions of the data based on industry membership due to sample size constraints.

Table 1, panel A, presents the industry and calendar year breakdowns of the sample firms. It reveals that no single industry dominates our sample, except that diversified industrial companies represent a large fraction of the industrial firms subsample (19 percent of available firm / years), and gold mining companies represent a large fraction of the mining industry subsample (35 percent of available firm / years). Because we select our sample based on June 30, 1996 market value of equity and do not require firms to have available data for all sample years, panel A of table 1 also reveals that the sample size increases over time until 1995, and then declines.[16]

Table 1, panel B, provides summary descriptive statistics for market capitalization, total assets, and sales for our sample firms, and reveals several differences between industrial and mining firms. Although median market capitalizations are similar for industrial and mining firms, median assets and, particularly, sales are greater for industrial firms. This reflects a number of the mining firms having substantial exploration activities, generating lower current sales (and using less assets) relative to market capitalization compared with industrial firms. Each measure also exhibits substantial skewness (*i.e.*, a large mean relative to the median), consistent with the sample containing a small number of very large companies. The skewness in market capitalization also

[16] The number of firms declines after 1995 due largely to mergers. The number of firms is lower prior to 1995 due to: (1) initial public offerings for several firms in our sample over the 1992-1995 period, and (2) the difficulty of obtaining annual reports for some small companies for the early years of our sample period.

appears to vary across industry groups. These industry differences provide some descriptive support for reporting separate industry findings.[17]

Table 2 presents summary descriptive statistics for operating income (*OPINC)*, net cash flow from operations (*CFO*), and net accruals (*ACCRUALS* = *OPINC – CFO*), all deflated by beginning market capitalization. It also provides descriptive statistics for the five components of *CFO* and six components of *ACCRUALS* described in section 2.2.[18] Mean (median) operating income relative to beginning market capitalization for industrial firms is equal to 0.033 (0.070). For mining firms the corresponding measures are 0.021 (0.040). Consistent with non-cash expenses such as depreciation being included in the calculation of operating income, these measures are lower than the corresponding mean (median) net operating cash flows of 0.096 (0.102) and 0.123 (0.108) for industrial and mining firms respectively.

Table 2 reveals also that two components – cash received from customers (*CASHCOLL*) and cash paid to suppliers and employees (*CASHSUPP*) – represent by far the largest reported components of operating cash flows. Mean (median) *CASHCOLL* and *CASHSUPP* equals 2.025 (1.368) and –1.883 (-1.200), respectively, for industrial firms. The corresponding figures for mining

[17] Our descriptive statistics regarding firm size differ somewhat from Barth and Clinch (1998) who follow a similar sample selection process using Australian firms. Specifically, our sample means and medians in table 1, panel B, are larger, for each measure and subsample, than those reported by Barth and Clinch (1998). This reflects: (1) the slightly later time period covered by our sample, and (2) fewer small companies in our sample.

[18] We record cash inflows (outflows) as positive (negative) amounts. Accruals that increase revenues or decrease expenses (decrease revenues or increase expenses) are recorded as positive (negative) amounts.

companies are 0.626 (0.446) for *CASHCOLL* and –0.489 (-0.283) for *CASHSUPP*, indicating that mining companies generally experience cash flow components that are considerably smaller in magnitude (relative to market capitalization) compared with industrial firms. The other three components - taxes paid (*TAXPAID*), net interest paid (*INTPAID*), and other operating cash flows (*CASHOTHER*) - have much smaller means and medians of around three percent or less of beginning market capitalization. The larger standard deviations of *CASHCOLL* and *CASHSUPP* suggest also that these two cash flow components explain most of the total variation in net operating cash flows for both industries. This is confirmed by untabulated regressions of *CFO* on *CASHCOLL* and *CASHSUPP* that generate adjusted R^2 statistics of 0.87 and 0.95 for industrial and mining firms respectively.

In contrast to the cash flow components, table 2 indicates that components of *ACCRUALS* reported in the indirect reconciliation between operating income and cash flows all exhibit means and medians that are relatively small. For both industrial and mining firms, all components except non-cash accruals (*ACCNONCASH*) have means and medians of around two percent or less of beginning market capitalization. The mean (median) *ACCNONCASH* is –0.068 (-0.044) and –0.093 (-0.064) for industrial and mining firms respectively, consistent with the previous observation that it represents the primary difference between mean and median operating income and net operating cash flow for our

sample.[19]

4. Main results

4.1 The explanatory power of reported cash flow and accrual components

Table 3 provides summary statistics from regressions of annual share returns on reported cash flow and accrual components for the industrial and mining firm sub-samples. The regressions use annual returns measured to three months after the fiscal year end, and right hand side variables are deflated by market capitalization at the beginning of the return window.[20] To mitigate potential effects of extreme observations, we exclude observations with absolute R-student values greater than 3.0 (see Belsley, Kuh and Welsch (1980)). To mitigate possible problems associated with heteroskedasticity, we base all test statistics on the estimated White (1980) residual covariance matrix.

Table 3 indicates that only two operating cash flow components - cash collections from customers (*CASHCOLL*) and cash paid to suppliers and employees (*CASHSUPP*) - exhibit statistically strong associations with returns for

[19] All regressions we report are based on firm / years pooled across firms and over time. Untabulated results from estimating regressions for each sample year separately are generally consistent with those we report, though statistical significance is reduced (and sometimes lost) due to the reduction in number of observations. In addition, to assess whether dependence among regression residuals unduly influences our inferences, we estimated correlation coefficients between the monthly returns of firms within each industry listed in table 1, panel A. We re-estimated all of our regressions after excluding firm / years from each industry that exhibit an average correlation coefficient significantly different from zero. None of our inferences are changed using this sub-sample of firms.

[20] We repeated the regressions using annual returns measured to the fiscal year end with little change in our results.

both industrial and mining firms.[21,22] Coefficients on no other operating cash flow components are statistically significant for either industry.[23] Table 3 also indicates that a greater number of accruals components exhibit statistically significant associations with returns than do operating cash flow components. For industrial firms, only other accruals (*ACCOTHER*) and non-cash items (ACCNONCASH) are not significantly associated with returns. For mining companies, only accruals relating to tax (*ACCTAX*) and interest (ACCINT) are not statistically significantly associated with returns. Interestingly, there are several accruals components that are significantly *negatively* associated with returns for our sample. For industrial firms, accruals relating to tax expense (*ACCTAX*) and net interest expense (*ACCINT*) both have negative and significant coefficients. For mining firms, *ACCOTHER* has a negative and significant coefficient. Thus, not all accruals components reflect a positive association

[21] We employ the five percent level as the basis for statements concerning statistical significance, and rely on two-tailed significance levels for coefficient *t* statistics because we make no predictions regarding the sign of coefficients.

[22] Multicollinearity between RHS variables is likely to influence our regressions. In particular, estimated correlation coefficients between *CASHCOLL* and *CASHSUPP* range between –0.90 and -0.99 for the different regression specifications. Correlations between other RHS variables are much smaller, and insignificant in most cases. The effect of the high correlation between *CASHCOLL* and *CASHSUPP* is possible inefficient estimation of individual coefficients, and a resulting lack of power in the *t* statistics associated with each coefficient. However, the effect of multicollinearity on joint equality of coefficient tests is less clear since estimation variances and covariances are inflated and will potentially offset. To mitigate the potential problems due to multicollinearity we re-estimated all our regressions after combining *CASHCOLL* and *CASHSUPP* into a single variable. None of our inferences are affected.

[23] Livnat and Zarowin (1990) report statistically significant associations between cumulative abnormal returns and their estimates of *changes* in *CASHCOLL*, *CASHSUPP*, *INTPAID* and *CASHOTHER*. We repeated the regressions in table 3 based on estimates of operating cash flow components (described in section 2.3), rather than disclosed components, with little change in our results.

between returns and earnings (conditional on other RHS variables included in the regression equation).

The main objective in table 3 is to investigate our first research question - whether *components* of operating cash flows and accruals convey information relevant to investors beyond that provided by aggregate net cash flows (*CFO*) and accruals (*ACCRUALS*). This is achieved by testing for coefficient equality across the five cash flow components and six accrual components respectively. The chi-square statistics and probability values associated with these tests are reported in table 3.[24] They indicate that equality of coefficients across operating cash flow components cannot be rejected at conventional significance levels for industrial firms (p = 0.153), but is rejected for mining firms (p = 0.000). Thus, using the broad industrial classification of firms in table 3, evidence is mixed that directly disclosed operating cash flow components convey information reflected in returns, beyond that provided by the net operating cash flow number.

In contrast, equality of coefficients for accruals components is strongly rejected in both industry sub-samples (p = 0.000 and 0.001 for industrial and mining firms, respectively) indicating incremental explanatory power for disclosures provided by the indirect reconciliation between operating income and net operating cash flows.

[24] The test statistics are chi-square since they employ the estimated White (1980) residual variance-covariance matrix.

4.2 Factors associated with the explanatory power of reported cash flow components

Our second research question investigates whether additional explanatory power for directly disclosed operating cash flow components is associated with the components' ability to predict future operating cash flows, as suggested by the discussion in the U.S. and Australian cash flow accounting standards. To explore this possibility, for each of the industry groups in our sample with at least 30 firm / years of data we regress one-year ahead operating cash flows on reported operating cash flow and accrual components.[25] We then form a dummy variable (for each of the industrial and mining sub-samples) based on whether operating cash flow components provided incremental explanatory power in these regressions or not. We use this dummy variable (*PREDICT*) as an interaction variable with reported cash flow and accrual components and include these as additional RHS variables in our table 3 regressions. The results are reported in table 4.

Of primary interest are the tests concerning equality of coefficients for operating cash flow components. The results indicate that for both industrial and mining firms with low predictive power of reported cash flow components, the components have no statistically reliable explanatory power for returns beyond aggregate operating cash flow (p = 0.874 and 0.184 for the industrial and mining sub-samples, respectively). In contrast, when cash flow components have

[25] We require a minimum of 30 firm / years for each industry to enhance the reliability of industry-specific regressions. Eight of the industries listed in table 1 have sufficient data: building

predictive ability for one year ahead operating cash flows, they also have statistically significant explanatory power beyond aggregate cash flows (p = 0.002 and 0.023 for the industrial and mining sub-samples, respectively). The results are consistent with the discussion in the U.S. and Australian accounting standards concerning the usefulness of cash flow disclosures for predicting future operating cash flows. Moreover, the results suggest that the mixed findings reported in table 3 are likely due, in part, to differences in the overall level of predictive ability between the broad industrial and mining sub-samples.[26]

In addition to the predictive ability of operating cash flow components, it is possible that other factors are associated with the explanatory power of cash flow components for returns. In particular, the informational value of cash flow components is potentially related to deviations between firms' operating and cash generating cycles. When the cycles are similar, operating cash flow components will differ little from accrual-based components of the income statement. However, when the cycles diverge, operating cash flow components are likely to vary considerably from income statement components and potentially provide incrementally useful information to investors.

---

materials, food & household goods, media, miscellaneous industrials, and diversified industrials from the industrial sub-sample, and gold, other metals, and energy from the mining sub-sample.

[26] Consistent with this observation, 43 percent of firm / years for industrial firms in regression 4 are associated with industries with significant predictive power for operating cash flow components compared with 70 percent of firm / years for mining companies.

To explore this possibility, we employ three standard financial analysis ratios to proxy for differences between firms' operating and cash generating cycles:

- *Days receivables* – accounts receivable divided by annual sales (per day).
- *Days inventory* – inventory divided by annual sales (per day).[27]
- *Days payables* – accounts payable divided by annual sales (per day).

We obtain values for each ratio for as many of our firm years that are available from the *Huntley's DatAnalysis* service.[28] We then form dummy variables for each ratio based on whether a particular firm / year's ratio is above or below the overall median for industrial (mining) companies. We code high ratios with dummies set equal to one.[29] We then use the three dummy variables to form interaction variables with *CASHCOLL*, *CASHSUPP*, *ACCREV*, and *ACCSUPP*, and include these as additional right hand side variables in our table 3 regressions of annual returns on cash flow and accruals components.[30,31]

Table 5 reports summary regression statistics resulting from this procedure. We primarily are interested in whether firm partitions based on the efficiency

---

[27] The days inventory ratio is more commonly defined relative to cost of goods sold (COGS), rather than sales. However, for our sample period, Australian firms were not required to disclose COGS, and few did so. Thus, we use the alternative definition based on sales.

[28] *Huntley's DatAnalysis* provides basic financial statement and ratio data for the top 500 Australian companies. Relevant data is not available for a number of our smaller sample firms, particularly in the mining sector.

[29] We also employed dummies based on industry level ratios (*i.e.*, whether a firm belonged to an industry with high or low ratio values) with no change in our inferences.

[30] We do not form interaction variables with other cash flow and accruals components: (1) it is not clear how their association with returns would be linked to the efficiency ratios we study, and (2) to avoid the substantial increase in right hand side variables (and reduction in degrees of freedom) this would entail.

[31] We checked the association between the dummy representing predictive ability of operating cash flow components and the three financial ratio-based dummies. There was no significant

ratio dummy variables associate with the ability of directly reported cash flow components to incrementally explain returns beyond aggregate cash flows and accruals. The probability values from various tests of coefficient equality, reported in table 5, indicate that they do for industrial companies but not for mining companies. In particular, we are able to reject equality of coefficients on cash flow components for various subsets of industrial firms: firms with high values for the receivables turnover or payables turnover ratios. In contrast, for mining firms we are unable to reject equality of cash flow component coefficients for any of the partitions based on dummy variables.[32]

4.3 The explanatory power of reported versus estimated cash flow components

Our third research question relates to the incremental explanatory power (for stock returns) of disclosed operating cash flow components beyond estimates of those components generated from other financial statement information. To investigate this question, we estimate operating cash flow components using the approach outlined in section 2.3, and compare their ability to explain returns with reported cash flow components.

Table 6 provides brief descriptive statistics from a comparison of reported and estimated cash flow components for our sample, and reveals some

---

evidence of an association except for a small negative relation between days inventory and predictive ability. Thus

differences. For example, estimated components appear to be slightly smaller in average magnitude than reported components for both industrial and mining firms. This is particularly the case with *CASHCOLL* and *CASHSUPP* for industrial firms. In addition, the standard deviations for estimated components are generally lower than for reported coefficients, again primarily for *CASHCOLL* and *CASHSUPP*. Finally, table 6 indicates that correlation coefficients between reported and estimated components are very high for *CASHCOLL* and *CASHSUPP* (0.946 and 0.942 respectively for industrial firms; 0.940 and 0.938 for mining firms), but are considerably lower for the other three components of operating cash flows.[33]

To assess whether these differences translate into a different ability to explain returns, we estimate returns regressions that include *ACCRUALS*, estimated cash flow components, and reported cash flow components as right hand side variables. We then test whether estimated and reported cash flow components provide incremental explanatory power in the regressions.[34] These tests reflect whether reported operating cash flow components convey information that is in returns beyond that available from estimated components (and vice versa).

---

[32] It is likely the insignificant results for mining companies is related in part to the large reduction in sample size due to unavailability of the relevant financial ratios for many of the mining company firm years.

[33] Note that, absent data and rounding errors, the correlation between reported and estimated net operating cash flows (*CFO*) will be 1.0 by definition. Table 6 indicates correlation coefficients at this level for both industry sub-samples, increasing our confidence that major data errors have been cleared from our sample.

[34] We employ aggregate *ACCRUALS* in the regressions to simplify presentation of the results. We also performed this analysis allowing *ACCRUALS* to be separated into its components, and also with *ACCRUALS* omitted entirely. The results in both instances were similar to those we report.

Table 7 presents summary statistics from the regressions.[35] Consistent with the high levels of correlation between estimated and reported cash flow components revealed in table 6, few coefficient *t* statistics are statistically significant. To assess the incremental explanatory power associated with reported cash flow components, we test whether their associated coefficients are jointly equal to zero. Table 7 reports the resulting probability levels. For industrial companies, we are unable to reject that coefficients on reported operating cash flow components are jointly equal to zero ($p = 0.529$). Given the results reported in table 3, indicating that cash flow components have no significant additional explanatory power (beyond aggregate net operating cashflow) for industrial firms, this result is not surprising. In contrast, for mining companies, we strongly reject that coefficients on reported cash flow components are jointly equal to zero ($p = 0.000$). For neither industry group are we able to reject equality of coefficients on estimated cash flow components ($p = 0.718$ and 0.316 for industrial and mining companies, respectively), indicating they have no discernible explanatory power incremental to reported cash flow components.

To further investigate the incremental explanatory power of reported over estimated cash flow components, we test whether the magnitude of differences between disclosed and estimated components influences explanatory power. For

[35] The regressions in table 7 exclude reported *CASHOTHER*. This is necessary since *CASHOTHER* is redundant information given the five estimated components and four other reported components. Specifically, absent data and rounding errors, each set of five (estimated and reported) cash flow components sum to the same net operating cash flow, and the ten variables would be linearly dependent. The existence of data and rounding errors means that the variables

each firm in our sample, we calculate the average absolute difference between reported and estimated cash flow components (deflated by beginning market capitalization) and create a dummy variable, *DIFF*, based on whether a firm's average is above or below the median for all industrial or mining firms. We set *DIFF* equal to one for firms with large average absolute differences. We then estimate regressions of annual returns on estimated and reported cash flow components, as in table 7, but also include on the right hand side interaction variables between *DIFF* and all estimated and reported cash flow components. The results are reported in table 8.

Reported probability values from tests of the relevant coefficient restrictions indicate that the explanatory power of reported versus estimated cash flow components does vary with the magnitude of estimation differences. In particular, in both industries, firms with large average absolute differences between reported and estimated cash flow components exhibit significant incremental explanatory power for reported components, beyond estimated components (p = 0.001 and 0.000 for industrial and mining firms, respectively). No such explanatory power is evident for firms with small differences except in the mining sub-sample. Interestingly, the results indicate also that estimated components provide incremental explanatory power for returns when differences between reported and disclosed components are high (p = 0.030 and 0.000 for industrial and mining firms, respectively).

---

are not exactly linearly dependent, but are highly collinear. In effect, there are only nine "free"

5. Conclusions

We investigate three primary questions relating to the usefulness of direct and indirect cash flow disclosures. First, are direct and indirect cash flow components associated with annual returns incremental to aggregate operating cash flows and accruals? Second, is the incremental explanatory power (if any) of operating cash flow components related to an incremental ability to predict future operating cash flows? Third, are reported cash flow components associated with returns incremental to cash flow component estimates based on other financial statement disclosures? We are motivated by commentary in both the relevant U.S. and Australian accounting standards that suggests the answer to each question is yes.

Our results generally support these expectations. Operating cash flow components have incremental explanatory power for returns (beyond aggregate operating cash flows) for both industrial and mining companies when they also have significant incremental predictive ability for future (one year ahead) operating cash flows. Accrual components also have incremental explanatory power for returns. We also find evidence of significant explanatory power for disclosed operating cash flow components beyond estimates of cash flow components (based on other financial statement disclosures) for firms with large differences between disclosed and estimated components. These results indicate

---

cash flow component variables to include on the right hand side of the regressions.

that for identifiable subsets of firms, direct cash flow disclosures mandated for Australian firms convey information that is also reflected in returns, consistent with the claims made by accounting standard setters.

References

American Institute of Certified Public Accountants (AICPA), 1992. *Accounting Trends and Techniques*. 46th edition. Jersey City, NJ: AICPA.

Bahnson, P.R., P.B. Miller and B.P. Budge, 1996. Nonarticulation in cash flow statements and implications for education, research and practice. *Accounting Horizons* 10(4): 1-15.

Barth, M.E. and G. Clinch, 1998. Revalued financial, tangible, and intangible assets: associations with share prices and non market-based value estimates. *Journal of Accounting Research* (forthcoming).

Belsley, D.A., E. Kuh and R.E. Welsch, 1980. *Regression Diagnostics*. New York: Wiley.

Bernard, V. and T. Stober, 1989. The nature and amount of information in cash flow and accruals. *The Accounting Review* 64(4): 624-652.

Biddle, G.C. and G.S. Seow and A.F. Siegel, 1995. Relative versus incremental information content. *Contemporary Accounting Research* 12(1-I): 1-23.

Bowen, R.M., D. Burgstahler and L.A. Daley, 1987. The incremental information content of accrual versus cash flows. *Accounting Review* (October): 723-747.

Dechow, P.M., 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics* 18: 3-42.

Easton, P.D. and T.S. Harris, 1991. Earnings as an explanatory variable for returns. *Journal of Accounting Research* (Spring): 19-36.

Goyal, M.K. and K. Freeman, 2000. A survey on direct and indirect approaches to cashflow reporting. unpublished paper, Monash University, Australia.

Guay, W. and B.K. Sidhu, 2001 (forthcoming). The usefulness of long-term accruals. *Abacus* 37:1.

Jones, S. and J. Ratnatunga, 1997. The decision usefulness of cash-flow statements by Australian reporting entities: Some further evidence. *British Accounting Review* 29: 67-85.

Jones, S., C.A. Romano and K.X. Smyrnios, 1995. An evaluation of the decision usefulness of cash flow statements by Australian reporting entities. *Accounting and Business Research* 25: 115-129.

Klammer, T.P. and S.A. Reed, 1990. Operating cash flow formats: Does format influence decisions? *Journal of Accounting and Public Policy* 9: 217-235.

Livnat, J. and P. Zarowin, 1990. The incremental information content of cash-

flow components. *Journal of Accounting and Economics* 13: 25-46.

Ohlson, J., 1995. Earnings, book values and dividends in security valuation. *Contemporary Accounting Research* 11: 661-687.

Rue, J.C. and F. Kirk, 1996. Settling the Cash Flow Statement Dispute. *National Public Accountant* (June): 17-19, 38-40.

Sondhi, A.C., G.H. Sorter and G.I. White, 1987. Transactional analysis. *Financial Analysts Journal* (September / October): .

Wallace, R.S.O., M.S.I. Choudhury and M. Pendlebury, 1997. Cash flow statements: An international comparison of regulatory positions. *International Journal of Accounting* 32: 1-22.

White, H., 1980. A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica* (May): 817–38.

Wilson, G.P., 1986. The relative information content of accruals and cash flow: combined evidence at the earnings announcement and annual report release date. *Journal of Accounting Research* 24, (Supplement): 165-203.

Wilson, G.P., 1987. The incremental information content of the accrual and funds components of earnings after controlling for earnings. *The Accounting Review* 62: 293-322.

TABLE 1

Descriptive statistics for sample of publicly traded Australian firms from 1992 to 1997.

Panel A: Industry and calendar year sample composition

Industry	1997	1996	1995	1994	1993	1992	Total Obs	Cos
Industrial Firms								
Developers + Contractors	4	5	5	5	4	4	27	5
Building Materials	8	8	8	7	6	4	41	8
Alcohol + Tobacco	2	2	3	3	2	2	14	3
Food + Household Goods	5	6	7	5	6	5	34	8
Chemicals	1	1	1	1	1	1	6	1
Engineering	3	4	5	4	3	3	22	5
Paper + Packaging	3	3	3	3	3	1	16	3
Retail	4	4	6	4	3	2	23	6
Transport	4	5	4	3	3	3	22	5
Media	8	10	12	8	5	3	46	12
Telecommunications	2	3	3	1	2	1	12	3
Healthcare + Biotechnology	5	5	5	3	3	2	23	5
Miscellaneous Industrials	9	10	12	5	6	3	45	12
Diversified Industrials	11	11	12	12	9	8	63	13
Tourism + Leisure	3	4	4	2	2	1	16	4
Total Non-Financial	72	81	90	66	58	43	410	93
Mining Firms								
Gold	10	16	21	12	14	11	84	22
Other Metals	10	11	13	10	8	8	60	13
Diversified Resources	2	2	2	3	3	2	14	3
Energy	13	14	14	14	13	12	80	15
Total Mining	35	43	50	39	38	33	238	53
Total	107	124	140	105	96	76	648	146

TABLE 1 — *continued*

Descriptive statistics for sample of publicly traded Australian firms from 1992 to 1997.

Panel B: Size of sample firms

Variable	Mean	Median	Standard Deviation
Market capitalization			
Industrial firms	1296.4	462.2	2170.1
Mining firms	1651.5	472.4	4657.2
Total assets			
Industrial firms	1969.8	557.7	4114.1
Mining firms	1760.9	394.7	4661.8
Sales			
Industrial firms	1842.3	557.2	3064.4
Mining firms	897.8	181.6	2669.5

Market capitalization is measured at the beginning of each firm-year plus three months, all other variables are as reported in financial statements for each firm-year.

TABLE 2

Summary descriptive statistics for operating income, cash flow from operations, accruals, and components of cash flows and accruals, all deflated by beginning market capitalization. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms (410 firm years)			Mining Firms (238 firm years)		
Variables	Mean	Median	Std. Dev	Mean	Median	Std. Dev
CASHCOLL	2.025	1.368	3.390	0.626	0.446	0.940
CASHSUPP	-1.883	-1.200	3.300	-0.489	-0.283	0.876
TAXPAID	-0.030	-0.026	0.032	-0.013	-0.001	0.020
INTPAID	-0.022	-0.013	0.064	-0.008	-0.001	0.024
CASHOTHER	0.006	0.001	0.026	0.005	0.000	0.031
CFO	0.096	0.102	0.181	0.123	0.108	0.137
ACCREV	0.022	0.010	0.063	0.005	0.001	0.031
ACCSUPP	-0.011	-0.003	0.131	-0.005	-0.000	0.063
ACCTAX	-0.002	0.000	0.027	-0.009	0.000	0.027
ACCINT	-0.005	0.000	0.063	-0.000	0.000	0.006
ACCOTHER	0.000	0.000	0.001	-0.000	0.000	0.001
ACCNONCASH	-0.068	-0.044	0.181	-0.093	-0.064	0.125
ACCRUALS	-0.063	-0.034	0.243	-0.102	-0.071	0.141
OPINC	0.033	0.070	0.330	0.021	0.040	0.129

OPINC = operating income, *CFO* = net cash flows from operations, *ACCRUALS* = *OPINC – CFO*, *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, *CASHOTHER* = other operating cash flows, *ACCREV* = accruals related to sales to customers, *ACCSUPP* = accruals related to supplier and employee expenses, *ACCTAX* = accruals relating to tax expense, *ACCINT* = accruals relating to net interest expense, *ACCOTHER* = accruals relating to other (cash related) expenses, and *ACCNONCASH* = non-cash accruals. The cash flow and accrual components sum to *CFO* and *ACCRUALS* respectively, and are as reported in the annual *Statement of Cash Flows*. All variables are deflated by market capitalization at the beginning of the fiscal year plus three months.

TABLE 3

Summary statistics from regressions of returns on cash flow and accrual components. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms		Mining Firms	
	Coefficient	t statistic	Coefficient	t statistic
Intercept	0.04	1.45	0.05	1.11
CASHCOLL	0.66	4.17	1.91	4.82
CASHSUPP	0.66	4.15	1.91	4.85
TAXPAID	-0.68	-1.13	2.72	1.73
INTPAID	0.30	0.55	3.14	1.77
CASHOTHER	0.61	1.27	-0.96	-1.86
ACCREV	0.80	2.17	1.94	2.74
ACCSUPP	0.37	2.01	1.08	2.97
ACCTAX	-2.60	-2.98	-0.21	-0.16
ACCINT	-1.48	-2.00	1.97	0.51
ACCOTHER	-18.78	-1.51	-18.26	-3.24
ACCNONCASH	0.21	1.10	0.89	4.94
n	398		231	
adjusted R^2	0.171		0.181	
χ^2 tests of coefficient equality:				
All cash flow coefficients are equal (4 degrees of freedom)	6.69 (p = 0.153)		26.48 (p = 0.000)	
All accrual coefficients are equal (5 degrees of freedom)	27.84 (p = 0.000)		19.91 (p = 0.001)	

Returns are twelve-month share returns ending at fiscal year end plus three months, i.e., ($price_t$ + $dividends_t$ – $price_{t-1}$) / $price_{t-1}$. *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, *CASHOTHER* = other operating cash flows, *ACCREV* = accruals related to sales to customers, *ACCSUPP* = accruals related to supplier and employee expenses, *ACCTAX* = accruals relating to tax expense, *ACCINT* = accruals relating to net interest expense, *ACCOTHER* = accruals relating to other (cash related) expenses, and *ACCNONCASH* = non-cash accruals. The cash flow and accrual components sum to *CFO* (net cash flows from operations), and *ACCRUALS* (operating income less *CFO*) respectively, and are as reported in the annual *Statement of Cash Flows*. All right hand side variables are deflated by market capitalization at the beginning of the fiscal year plus three months. *t* statistics and tests of coefficient equality are based on the White-adjusted variance-covariance matrix.

TABLE 4

Summary statistics from regressions of returns on cash flow and accrual components, including interactions based on predictive ability of cash flow components for one year ahead operating cash flows. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms		Mining Firms	
	Coefficient	t statistic	Coefficient	t statistic
Intercept	0.01	0.17	0.08	1.38
CASHCOLL	1.31	2.66	0.14	0.17
CASHSUPP	1.31	2.60	-0.27	-0.27
TAXPAID	0.23	0.16	0.49	0.17
INTPAID	1.15	0.89	-0.03	-0.01
CASHOTHER	0.47	0.27	0.86	0.16
Interactions with *PREDICT*:				
CASHCOLL	-0.65	-1.25	2.00	1.95
CASHSUPP	-0.63	-1.19	2.37	2.06
TAXPAID	-5.30	-2.50	3.35	0.93
INTPAID	-1.40	-0.92	6.82	1.57
CASHOTHER	0.34	0.10	-5.37	-0.90
ACCREV	0.65	0.87	0.47	0.46
ACCSUPP	-0.67	-1.22	0.73	1.78
ACCTAX	0.74	1.01	-1.81	0.99
ACCINT	-1.38	-2.18	6.06	0.86
ACCOTHER	-9.78	-0.64	-5623.63	-5.12
ACCNONCASH	1.24	2.01	1.92	2.24
Interactions with *PREDICT*:				
ACCREV	-0.48	-0.49	3.22	1.42
ACCSUPP	1.68	2.27	0.11	0.10
ACCTAX	-4.67	-1.96	0.99	0.37
ACCINT	0.02	0.02	5.90	0.20
ACCOTHER	388.06	3.99	5592.13	5.09
ACCNONCASH	-1.13	-1.62	-1.07	-1.21
n	190		207	
adjusted R^2	0.285		0.214	

TABLE 4 --- *continued*

Summary statistics from regressions of returns and one year ahead cash flow from operations on cash flow and accrual components, including interactions based on predictive ability of cash flow components for one year ahead operating cash flows. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms	Mining Firms
χ^2 tests of coefficient equality (4 degrees of freedom for cash flow coefficient tests, 5 degrees of freedom for accruals coefficient tests):		
Cash flow coefficients are equal	1.22 (p = 0.874)	6.21 (p = 0.184)
Cash flow plus *PREDICT* interaction coefficients are equal	17.08 (p = 0.002)	11.33 (p = 0.023)
Accruals coefficients are equal	14.75 (p = 0.012)	102.21 (p = 0.000)
Accruals plus *PREDICT* interaction coefficients are equal	73.09 (p = 0.000)	9.37 (p = 0.095)

Returns are twelve-month share returns ending at fiscal year end plus three months, i.e., ($price_t$ + $dividends_t$ – $price_{t-1}$)/ $price_{t-1}$. *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, *CASHOTHER* = other operating cash flows, *ACCREV* = accruals related to sales to customers, *ACCSUPP* = accruals related to supplier and employee expenses, *ACCTAX* = accruals relating to tax expense, *ACCINT* = accruals relating to net interest expense, *ACCOTHER* = accruals relating to other (cash related) expenses, and *ACCNONCASH* = non-cash accruals. The cash flow and accrual components sum to *CFO* (net cash flows from operations), and *ACCRUALS* (operating income less *CFO*) respectively, and are as reported in the annual *Statement of Cash Flows*. The *PREDICT* interactions are based on a dummy variable set equal to one if a firm belongs to an industry where *CFO* components have significant explanatory power for one year ahead *CFO*s. Only industries with at least 30 firm-years are included. All right hand side variables except the dummy are deflated by market capitalization at the beginning of the fiscal year plus three months. *t* statistics and tests of coefficient equality are based on the White-adjusted variance-covariance matrix.

TABLE 5

Summary statistics from regressions of returns on cash flow and accrual components, including interactions based on receivables, payables, and inventory efficiency ratios. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms		Mining Firms	
	Coefficient	t statistic	Coefficient	t statistic
intercept	-0.01	-0.36	-0.16	-2.40
CASHCOLL	1.41	3.57	3.21	4.96
CASHCOLL interactions:				
- Receivables turnover	1.14	3.27	-0.39	-0.88
- Inventory turnover	-0.52	-2.01	-0.99	-1.44
- Payables turnover	-0.53	-1.60	1.77	3.41
CASHSUPP	1.42	3.52	3.14	4.25
CASHSUPP interactions:				
- Receivables turnover	1.23	3.30	-0.32	-0.60
- Inventory turnover	-0.53	-1.98	-1.17	-1.39
- Payables turnover	-0.57	-1.63	1.98	3.33
TAXPAID	0.14	0.17	5.10	2.74
INTPAID	0.34	0.63	4.17	1.48
CASHOTHER	1.61	2.15	2.39	1.42
ACCREV	1.62	2.12	-2.10	-1.14
ACCREV interactions:				
- Receivables turnover	1.39	1.63	4.02	1.38
- Inventory turnover	-2.21	-2.60	0.78	0.28
- Payables turnover	0.78	0.95	3.25	1.35
ACCSUPP	1.55	2.08	-0.84	-0.66
ACCSUPP interactions:				
- Receivables turnover	-0.86	-1.28	-0.43	-0.33
- Inventory turnover	-0.32	-0.55	3.41	2.49
- Payables turnover	-0.67	-1.24	2.83	1.50
ACCTAX	-1.23	-1.19	3.18	1.55
ACCINT	-1.30	-1.98	2.49	0.61
ACCOTHER	-19.14	-1.12	90.20	2.13
ACCNONCASH	0.54	2.39	1.29	3.90
n	324		108	
adjusted R^2	0.283		0.308	

TABLE 5 --- *continued*

Summary statistics from regressions of returns on cash flow and accrual components, including interactions based on receivables, payables, and inventory efficiency ratios. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms	Mining Firms
χ^2 tests of coefficient equality (4 degrees of freedom for cash flow coefficient tests, 5 degrees of freedom for accruals coefficient tests):		
Cash flow coefficients are equal	8.64 (p = 0.071)	3.32 (p = 0.506)
Cash flow plus receivables interaction coefficients are equal	21.88 (p = 0.000)	3.95 (p = 0.413)
Cash flow plus inventory interaction coefficients are equal	5.51 (p = 0.238)	5.25 (p = 0.262)
Cash flow plus payables interaction coefficients are equal	10.59 (p = 0.032)	6.10 (p = 0.192)
Cash flow plus receivables, inventory, and payables interaction coefficients are equal	7.57 (p = 0.109)	5.91 (p = 0.206)
Accruals coefficients are equal	12.88 (p = 0.025)	10.09 (p = 0.073)
Accruals plus receivables interaction coefficients are equal	19.06 (p = 0.002)	9.07 (p = 0.106)
Accruals plus inventory interaction coefficients are equal	13.79 (p = 0.017)	13.48 (p = 0.019)
Accruals plus payables interaction coefficients are equal	20.42 (p = 0.001)	5.58 (p = 0.349)
Accruals plus receivables, inventory, and payables interaction coefficients are equal	16.24 (p = 0.006)	9.60 (p = 0.088)

Returns are twelve-month share returns ending at fiscal year end plus three months, i.e., ($price_t$ + $dividends_t$ – $price_{t-1}$)/ $price_{t-1}$.. *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, *CASHOTHER* = other operating cash flows, *ACCREV* = accruals related to sales to customers, *ACCSUPP* = accruals related to supplier and employee expenses, *ACCTAX* = accruals relating to tax expense, *ACCINT* = accruals relating to net interest expense, *ACCOTHER* = accruals relating to other (cash related) expenses, and *ACCNONCASH* = non-cash accruals. The cash flow and accrual components sum to *CFO* (net cash flows from operations), and *ACCRUALS* (operating income less *CFO*) respectively, and are as reported in the annual *Statement of Cash Flows*. The receivables, inventory, and payables turnover interactions are based on dummy variables using sample median days receivables, days inventory, and days payable ratios respectively, with high values coded as one. All right hand side variables, except for dummy variables, are deflated by market capitalization at the beginning of the fiscal year plus three months. *t* statistics and tests of coefficient equality are based on White-adjusted standard errors.

TABLE 6

Descriptive statistics for reported and estimated components of cash flows.
Sample of publicly traded Australian firms from 1992 to 1997.

Panel A: Industrial Firms (410 firm years)

	Reported Cash Flow Components			Estimated Cash Flow Components			Correlation between reported and estimated
Variables	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	
CASHCOLL	2.025	1.368	3.390	1.934	1.367	3.243	0.946
CASHSUPP	-1.883	-1.200	3.300	-1.791	-1.185	3.150	0.942
TAXPAID	-0.030	-0.026	0.032	-0.031	-0.028	0.039	0.436
INTPAID	-0.022	-0.013	0.064	-0.020	-0.014	0.093	0.316
CASHOTHER	0.006	0.001	0.026	0.004	0.000	0.007	0.164
CFO	0.096	0.102	0.181	0.096	0.102	0.181	1.000

Panel B: Mining Firms (238 firm years)

	Reported Cash Flow Components			Estimated Cash Flow Components			Correlation between reported and estimated
Variables	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	
CASHCOLL	0.626	0.444	0.940	0.576	0.429	0.629	0.940
CASHSUPP	-0.489	-0.283	0.876	-0.433	-0.275	0.550	0.938
TAXPAID	-0.013	-0.001	0.020	-0.015	-0.003	0.027	0.656
INTPAID	-0.008	-0.001	0.024	-0.008	0.000	0.032	0.646
CASHOTHER	0.005	0.000	0.031	0.003	0.000	0.009	0.278
CFO	0.123	0.108	0.137	0.123	0.108	0.136	1.000

CFO = net cash flows from operations, *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, and *CASHOTHER* = other operating cash flows. Reported cash flow components are as reported in the annual *Statement of Cash Flows*. Estimated cash flow components are estimated using the approach from Livnat and Zarowin (1980), and described in section 2.3. All variables are deflated by market capitalization at the beginning of the fiscal year plus three months.

TABLE 7

Summary statistics from regressions of returns on total accruals and cash flow components. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms		Mining Firms	
	Coefficient	t statistic	Coefficient	t statistic
intercept	0.02	0.82	0.04	0.67
ACCRUALS	0.55	4.84	0.98	5.68
Estimated cash flow components:				
CASHCOLL	0.71	1.49	-0.88	-1.57
CASHSUPP	0.71	1.48	-0.95	-1.62
TAXPAID	0.36	0.47	-1.26	-1.44
INTPAID	0.64	1.25	-0.58	-0.83
CASHOTHER	2.91	1.37	2.34	1.07
Reported cash flow components:				
CASHCOLL	0.30	0.73	2.92	5.17
CASHSUPP	0.30	0.73	2.97	5.19
TAXPAID	-0.34	-0.41	4.48	2.84
INTPAID	-0.28	-0.47	3.48	1.99
n	396		231	
adjusted R^2	0.174		0.182	
χ^2 tests of coefficient equality:				
All coefficients on estimated cash flow components are equal (4 degrees of freedom)	2.10 (p = 0.718)		4.74 (p = 0.316)	
All coefficients on reported cash flow components equal zero (4 degrees of freedom)	3.17 (p = 0.529)		30.25 (p = 0.000)	

Returns are twelve-month share returns ending at fiscal year end plus three months, i.e., ($price_t$ + $dividends_t$ – $price_{t-1}$)/ $price_{t-1}$. *ACCRUALS* = *OPINC* – *CFO*, *OPINC* = operating income, *CFO* = net cash flows from operations, *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, and *CASHOTHER* = other operating cash flows. Cash flow components sum to net cash flows from operations. Reported cash flow components are as reported in the annual *Statement of Cash Flows*. Estimated cash flow components are estimated using the approach from Livnat and Zarowin (1990), and described in section 2.3. All right hand side variables are deflated by market capitalization at the beginning of the fiscal year plus three months. *t* statistics and tests of coefficient equality are based on the White-adjusted variance-covariance matrix.

TABLE 8

Summary statistics from regressions of returns on total accruals and cash flow components, including interactions based on the magnitude of differences between reported and estimated cash flow components. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms		Mining Firms	
	Coefficient	t statistic	Coefficient	t statistic
Intercept	0.03	0.92	0.02	0.40
ACCRUALS	0.36	2.83	0.90	5.23
Estimated cash flow components:				
CASHCOLL	1.12	1.56	-1.86	-2.43
CASHSUPP	1.02	1.33	-0.88	-1.43
TAXPAID	1.05	1.08	-1.13	-0.76
INTPAID	1.25	1.57	-2.02	-0.40
CASHOTHER	2.68	1.03	2.59	-0.62
Interactions with *DIFF*:				
CASHCOLL	1.48	1.26	-10.18	-5.45
CASHSUPP	1.57	1.31	-11.33	-6.25
TAXPAID	3.63	2.05	-12.39	-4.09
INTPAID	1.44	1.11	-10.13	-1.88
CASHOTHER	6.59	1.41	-3.49	-0.71
Reported cash flow components:				
CASHCOLL	-0.13	-0.21	3.95	5.25
CASHSUPP	-0.04	-0.06	2.93	4.57
TAXPAID	-1.20	-1.28	4.23	2.16
INTPAID	-0.45	-0.46	5.52	1.17
Interactions with *DIFF*:				
CASHCOLL	-1.89	-1.76	9.54	3.53
CASHSUPP	-1.99	-1.81	10.71	3.84
TAXPAID	1.49	0.83	10.89	1.48
INTPAID	-3.28	-2.39	3.61	0.56
n	396		232	
adjusted R^2	0.216		0.283	

TABLE 8 --- *continued*

Summary statistics from regressions of returns on total accruals and cash flow components, including interactions based on the magnitude of differences between reported and estimated cash flow components. Sample of publicly traded Australian firms from 1992 to 1997.

	Industrial Firms	Mining Firms
χ^2 tests of coefficient equality (4 degrees of freedom for all tests):		
Coefficients on estimated cash flow components are equal	0.61 (p = 0.962)	5.58 (p = 0.233)
Coefficients on reported cash flow components equal zero	4.68 (p = 0.321)	39.07 (p = 0.000)
Coefficients on estimated cash flow components plus associated interaction coefficients are equal	10.75 (p = 0.030)	26.41 (p = 0.000)
Coefficients on reported cash flow components plus associated interaction coefficients equal zero	20.06 (p = 0.001)	307.87 (p = 0.000)

Returns are twelve-month share returns ending at fiscal year end plus three months, i.e., ($price_t$ + $dividends_t$ – $price_{t-1}$) / $price_{t-1}$. *ACCRUALS* = *OPINC* – *CFO*, *OPINC* = operating income, *CFO* = net cash flows from operations, *CASHCOLL* = cash received from customers, *CASHSUPP* = cash paid to suppliers and employees, *TAXPAID* = taxes paid, *INTPAID* = net interest paid, and *CASHOTHER* = other operating cash flows. Cash flow components sum to net cash flows from operations. Reported cash flow components are as reported in the annual *Statement of Cash Flows*. Estimated cash flow components are estimated using the approach from Livnat and Zarowin (1990), and described in section 2.3. *DIFF* is a dummy variable coded equal to one when a firm has high average absolute differences between reported and estimates cash flow components. All right hand side variables, except for dummy variables, are deflated by market capitalization at the beginning of the fiscal year plus three months. *t* statistics and tests of coefficient equality are based on White-adjusted standard errors.