THE INFORMATION CONTENT OF THE CASH FLOW STATEMENT: AN EMPIRICAL INVESTIGATION

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ABSTRACT

The general objective of the present study is to investigate and assess the information content of cash flow disclosures as required by the AASB 1026 "Statement of Cash Flows". The information content is measured in terms of the degree of the relationship between cash flow variables and security returns. In examining the information content of cash flows, the objective is to investigate the ability of the cash flow component in predicting future cash flows.

To accomplish the research objective, three hypotheses were proposed. The data to test hypotheses came from companies listed on the Australian Stock Exchange for the period of 1992 to 1997, a subsequent period of the requirement to apply AASB 1026. Results from hypotheses tests, which represent the objective, indicate that three general conclusions can be drawn: data reported in the cash flow statement have information content; disaggregating historical cash flows into three main components and then decomposing three components of cash flows into detailed components improve the association with security returns. In addition, decomposing historical cash flows into three components and detailed components of cash flows have relative information content. This evidence justifies the AASB 1026 requirement for reporting entities to disclose the cash flow statement at the end of a certain period by using the direct approach.

KEY WORDS: Cash Flow, Information Content, AASB 1026

1. INTRODUCTION

In the USA, the emphasis on the role of financial reporting information for decision making made from financial reporting is a critical point. Financial Accounting Standard Board Concept No.1 (FASB No.1) states "financial reporting should provide information to help potential investors, creditors, and others assess the amount, timing, and uncertainty of prospective net cash inflows to the related enterprise" (par.37). The statement also declares that "an enterprise's ability to generate favourable cash flows affects both its ability to pay dividends and interest and the market prices of its securities" (par.39). Consistent with this, the Statement of Financial Accounting Standard (SFAS) No.95 *"Statement of Cash Flows"* states the general purpose of a statement of cash flows is to provide useful information about an entity's activities in generating cash through operations to repay debt, or reinvest to maintain or expand operating capacity; about its financing activities, both debt and equity; and about its investing and spending of cash (par.44-45). The Accounting Standard Board in Australia follows a similar position to that of the USA. According to AASB,

> "The information provided in a statement of cash flows together with other information in the accounts or consolidated accounts may assist in assessing the ability of a company or an economic

entity to: 1) *generate net cash flows in the future ...* (AASB 1026, 1991, par.v, *emphasis added*)".

The determination of the ability of cash flow statements to predict future cash flows is a very critical requirement for determining the utility of the accounting standard AASB 1026. This ability suggests that cash flow disclosure is useful information for the decision making process. Hence, there is a need to determine whether cash flow statements currently being adopted by the accounting profession actually generate more useful "information content". However, there are some reasons to suspect cash flow disclosures may not have information content.

First, there is a conflicting result from previous studies, which indicate cash flow disclosure may not assist users to predict future cash flows. Several studies supported the hypothesis that cash flow statements have information content, while others have failed to support this hypothesis. The main reason for these conflicting results might be that the previous studies use "estimate" measures of cash flow variables (e.g: Ingram and Lee, 1997; Clubb, 1995; Ali and Pope, 1995). Cash flows from operating, investing, and financing activities are measured by simply deriving from and adjusting net income with current and non-current accruals (Neill *et. al.* 1991). For example, Livnat and Zarowin (1990) modified the income statement to estimate the fourteen components of cash flows in order to depict the direct method of cash flows and to accommodate the FASB's recommendation on the indirect method in presenting cash flows. However, Bahson, Miller, and Budge (1996) recently provide evidence of potential deficiencies of estimates of cash flows and suggest evaluating the cash flow statement via the direct method. Bahson *et. al.* argue that the estimation of cash flows relies on a false presumption of articulation between balance sheet and income statement that can generate estimates that are substantially different from actual amounts. Neill *et. al.* (1991) also state:

> "With the recent availability of actual disclosures of operating, investing and financing components of cash flow, additional research opportunities should provide for increased understanding of a wide variety of cash flow effects (p.120)."

Therefore, until the new studies are based on reported rather than estimated measures of cash flows, the previous findings on the information content are still suspect.

In addition to previous empirical evidence on the information content of cash flows, there are two further reasons to suspect that the cash flow statement may not be useful in predicting future cash flows, particularly from the Australian capital market analysis. The following arguments support this assertion:

(1) the cash flow statement is relatively new so that market participants may not yet recognise its relevance and they may still prefer to use the income statement and the balance sheet rather than the cash flow data in their decision making , and

(2) reporting companies generally announce their income prior to the publication of the full set of financial reports so that the income information may disseminate before the cash flow information becomes available to the market.

If this skepticism is valid, then the information provided by the cash flow statement will not be useful. Unfortunately, there is no such study using capital market analysis since AASB 1026 was adopted to answer these doubts. Previous studies do exist, but they were conducted to anticipate the introduction of the cash flow standard before it was amended. Therefore, The main objective of this research is to investigate and assess the information content of cash flow disclosures as required by the AASB 1026. The term information content used in this study is defined as a strong relationship between cash flow data and future cash flows (security returns). This investigation on the information content of cash flow disclosures will give some insights into the use of the disclosure in the Australian environment.

2. INFORMATION CONTENT OF CASH FLOWS

2. 1 Definition of Information Content

The term "information content" has been used extensively in accounting literature. According to Beaver (1981), studies in market research based accounting refer to information content as *the statistical dependency between price and information variables*, since share prices can be viewed as arising from an equilibrium process in which the price depends on the individual's endowments, tastes, beliefs and the stage that occurs. In this framework, cash flows can be viewed as a signal from an information system in which the signal depends upon the state that occurs. If prices and cash flows depend upon common aspects of the state, it is reasonable to expect that a statistical dependency between prices and cash flows will exist. Traditionally, this statistical relationship has been referred to in security price studies as "information content" (Beaver, 1981).

Nonetheless, Beaver (1981) also argued that this form of information content is somewhat of a misnomer in the sense that statistical dependency could arise merely because of a reliance on prices and accounting variables (the informational variable) upon a common set of events. In a certain case, accounting disclosures may have information content and its marginal information content, defined as the extent of the revision of belief (and prices), which it induces, would be zero (Jennings, 1987).

So, in this argument, Beaver (1981) recognises the dual nature of the information content of accounting data such as cash flows. On one side, information content could arise merely due to a reliance of price and accounting data upon a common set of events. This type of information content is regarded as indirect information content. On the other side, information content could arise from a direct causal relationship between price and the disclosure of accounting data. This type of information content is referred to as direct information content (Jennings, 1987).

Watts and Zimmerman (1986) consider the issue of whether an event such as cash flow announcement has a stock price effect at the time of the event as information content. According to them, if stock price changes associated with an event have occurred before the event, the factors influencing stock prices that are associated with that event are already known. This definition is the direct information content as argued by Beaver.

Tests of direct information content of an accounting disclosure require a narrow time period over which share returns are calculated to eliminate the number of confounding signals. The purpose of a shorter-period test is to indicate the accuracy with which timing of disclosure is known. Therefore, tests are to indicate the statistical dependencies between the surprise element of accounting data and the security return distribution (Jennings, 1987). Examples of the direct test of information content on cash flow data are Bernard and Stober (1989) and Wilson (1986, 1987).

Tests of indirect information content of an accounting disclosure are conducted by widening the period of time over which share returns are calculated. The purpose is to capture the net impact of all the signals that influence the security returns during the period over which the accounting number is measured. For instance, the test period is widened to include the year over which cash flows were measured if the variable is annual cash flows. Therefore, the indirect information content is related to the degree of association between cash flow data and security return as the proxy of the market expectation of future cash flows (Jennings, 1987). Examples of this kind of test are Ball and Brown (1968) and Livnat and Zarowin (1990).

In terms of statistical relationships, testing an information content of an event, for example net cash flows, can be depicted as follows:

$$E(R_{jt} \mid NetCF) = E(R_{jt}) \qquad (1\text{-}1)$$

Where:

R_{jt} *is security returns*
NetCF is the net cash flows
$E(R_{jt})$ *is expected value of* R_{jt}
$E(R_{jt} \mid NetCF)$ *is expected value of* R_{jt} *given signal NetCF*

The present study focuses on indirect tests of the information content of cash flow data. In addition, the above general notion and the concept of information content are used as the basis of hypothesis tests. To do these tests, cash flow components are measured over an annual reporting period and returns are calculated for a year. The aim is to test the ability of cash flows to capture the net effect of all of the signals that affect a company's share returns.

2.2 Capital Market Evidence on Information Content of Cash Flows

In Australia, studies that examined the association of cash flows and earnings with security prices have received attention recently. Cotter (1996) used the empirical framework developed by Easton, Harris and Ohlson (1992) and was the first in Australia. Similar to the overseas studies, Cotter employed crude measures of cash data. She compared components of clean surplus accrual earnings with those of total cash flows to assess their relative ability to recognise value relevant events in a timely manner. The study revealed that the association between stock returns and earnings was higher than that with total cash flows. Further, even though cash flows from operations and current accruals were able to recognise value relevant events in a timely manner, cash flows from financing and investing activities were of less value relevance for longer return intervals. Evidence provided by Seng (1996), and Chia, Czernkowski and Loftus (1997) show a result consistent with Cotter's study. In addition, even though Chia *et. al.* used a different approach from that of Cotter (a cross-sectional method, with data for period 1985 to 1990), they found cash flow from operations had information content in relation with stock returns.

These studies are important for the Australian accounting profession because the studies provide evidence after the adoption of AASB 1026 since 1992. In particular, these two studies in Australia provide a lack of support for implementing cash flow statements under AASB 1026. However, there may be some explanations for this deficiency of information content of cash flows. First, Cotter (1986) and Chia *et. al.* (1997) employed crude measures of cash flow definition. Second, the data used in these studies were extracted from financial statements before the introduction of AASB 1026 and thus employed estimated rather than reported measures. Third, the study of Cotter (1996) used a small sample size and Chia *et. al.* (1997) only employed the top 500 companies on the Australian Stock Exchange.

There is extensive US evidence on cash flows. Some studies on this matter have also received attentions in the UK, Australia, and New Zealand. In general, previous studies indicate that cash flow data may have information content and incremental information content, but there is dominant evidence that the information content of earnings is beyond that of cash flows.

The empirical support for the usefulness of cash flow data in predicting future cash flows above must be interpreted with caution in view of limitations and criticisms. First, studies by Rayburn (1986), Bowen *et. al.* (1986 and 1987), Wilson (1986), Charitou and Ketz (1991), and Cotter (1996) treated all firms in one sample. This treatment assumed that small firms behave in the same manner as large companies and vice versa, and thus the relationship between earnings, cash flows and returns is assumed to be homogeneous across firms (Charitou, 1997).

Second, the previous studies illustrated the weak explanatory power of the previous models used and the instability of the earnings and cash flow response coefficients (Charitou, 1997). Collins and Kothari

(1989), and Easton and Zmijewski (1989) demonstrated that the response coefficients can be influenced by firm characteristics, such as firm size, industry classification, capital structure, length of operating cycle, measurement interval, and quality of earnings.

Third, most prior studies use "estimate" measures of cash flow variables (eg: Ingram and Lee, 1997; Clubb, 1995; Ali and Pope, 1995). Cash flows from operating, investing, and financing activities were measured by simply deriving from and adjusting net income with current and non-current accruals (Neill *et. al.*, 1991). For example, Livnat and Zarowin (1990) modified the income statement to estimate the fourteen components of cash flows in order to depict the direct method of the cash flow presentation and to accommodate the FASB's (Financial Accounting Standard Board) recommendation on using the indirect method in presenting cash flow. The use of estimate measures of cash flows is because of unavailability of reported cash flows and because the result of the study is simply to justify the usefulness of the new standard before it was mandated. However, Bahson *et. al.* (1996) show potential deficiencies when using estimates of cash flows. Accordingly, they argue that until the new studies are based on the reported measures of cash flows, the implication of the previous studies on cash flows is still doubtful.

2.3 Hypotheses

The primary objective of the present study is to investigate and assess the information content of cash flow disclosures as required by the AASB 1026 *"Statement of Cash Flows"*. The information content of cash flows is reflected by the particular degree of the relationship between cash flow data and future cash flows, which is measured by security returns as a proxy. Particularly, the current study will investigate the relationship between components of the cash flow statement and security returns.

Given the relevance of cash flow data from operating, financing and investing activities in relation to share prices, three sets of hypotheses are proposed as follows.

H_1: Historical cash flows have information content

The first hypothesis tests the ability of an increase (a decrease) in historical cash flows received during a year to alter market expectation of the future cash flows of firms.

H_2: Total operating, investing and financing cash flows have incremental information content.

The second hypothesis is to test whether or not the aggregate of each of the three components of cash flows adds information to predict future cash flows. Hypothesis two is also a further disaggregation of the historical cash flows in hypothesis one.

H_3: Components of total operating, investing and financing cash flows have incremental information content.

The third hypothesis tests whether each of the detailed components of cash flows provides additional information when other components are constant. This hypothesis is a further disaggregation of three main components of the cash flows in hypothesis two.

3. Research Method

3.1 Data

The target population in this study is all companies listed on the Australian Stock Exchange (ASX) which meet the following criteria:

1. firms must have a June 30 fiscal year,
2. data for firm cash flows must be available in Datadisc files, and

3. yearly data for share prices of the firms must be available in the Bloomberg database.

The first criterion is intended to maintain the similarity of the data events. The second and third criteria respectively are to ensure the consistency of data in calculating the stock returns and the availability of accounting data. Failure to use these criteria may cause overlapping annual return windows and lack of independence of regression residuals across years with the consequence of bias in cross-temporal t-statistics from the year analysis (Ali and Pope, 1995).

3. 2 Definition and Measurement of Variables

In this study, the dependent variable is yearly returns of the companies. The independent variables involve both the aggregate and component of cash flows. Table 1 provides a summary of the variables included in the current study. The security return calculation is defined as the price per share at the end of current year minus the price per share of the previous year plus dividend per share during the year, divided by the price per share of the previous years (Chia *et. al.*, 1997). Mathematically, the equation to calculate security returns (R_{jt}) is:

$$R_{jt} = \frac{(P_{jt} - P_{jt-1}) + D_{jt}}{P_{jt-1}} \qquad (1\text{-}1)$$

Where,

R_{jt} *is the annual return for firm j at the current year (time t)*

P_{jt} *is security price of firm j at the current year (time t)*

P_{jt-1} *is security price of firm j at the previous year (time t-1)*

D_{jt} *is the dividend paid on security j at the current year (time t)*

The components of cash flows are classified as cash flows from operating, investing and financing activities. According to AASB 1026 (paragraph 9),

> *"Cash flows from financing activities include proceeds from issuing equity instruments and outlays to buy back such instruments; proceeds from short-term or long term-term borrowing and repayments of borrowing; and payments of dividends".*
>
> *"Cash flows from investing activities include payments to acquire property, plant and equipment, and proceeds from the sale of such assets payments to acquire equity instruments of other companies, and proceeds from the sale of such instruments; and other equity contributions, for example, acquisition of an ownership interest in a partnership".*
>
> *"Cash flows from operating activities include payments to suppliers and employees for goods and service; and receipts in respect of the provision of goods and services".*

The cash variables in Table 1 are on a per share basis and are scaled by the price at the beginning of the period. This study uses the number of company's outstanding shares at the beginning of the year as a deflator in calculating cash flow per share. According to Christie (1987), this deflator avoids a historical cost bias that is inherent in other deflators such as book value of equity. In addition, scaling by prices avoids spurious correlation due to size and reduces the heteroskedasticity in the data. In practice, among others, Dechow (1994), Ali and Pope (1995), and Charitou and Vafeas (1998) used this deflator in their studies.

Table 1 Variables Used in the Regression Equations

Description	Notations
Independent Variables:	
Operating cash flows	
• Cash received from customers,	Cst_{jt}
• Cash paid to suppliers, employees and others,	Spp_{jt}
• Cash paid for taxes,	Tx_{jt}
• Net cash paid for interest,	Int_{jt}
• Net cash flow from other operating activities,	$Othop_{jt}$
• Aggregate operating cash flows.	$AgOp_{jt}$
Investing cash flows	
• Cash used from new investment in property, plant, and equipment,	$Uinv_{jt}$
• Cash obtained from the sale of investment in property, plant and equipment,	$Obinv_{jt}$
• Cash used for the acquisition of new business,	$Acqb_{jt}$
• Aggregate investing cash flows.	$AgIn_{jt}$
Financing cash flows	
• Cash received from new issuance of debts,	$Obdebt_{jt}$
• Cash used for payment of debts,	$Pdebt_{jt}$
• Cash received from issuing new common and preferred stocks,	$Iseq_{jt}$
• Cash paid for dividend,	Dev_{jt}
• Aggregate financing cash flows.	$AgFin_{jt}$
• Historical cash flows are the sum of aggregate operating, investing, and financing cash flows	$NetCf_{jt}$
Dependent Variables	
• Annual return of a company j at time t	R_{jt}

3. 3. Empirical Design

This study employs three regression models to test three hypotheses identified in the earlier section. The first three models consist of three sets of cash flow components and are designed to address the first objective as reflected in hypotheses.The models proposed in the present study to test the objective of the study are:

$$R_{jt2} = \gamma_0 + \gamma_1 NetCf + w_i \quad (1\text{-}2)$$

$$R_{jt3} = \beta_0 + \beta_1 AgOp + \beta_2 AgFin + \beta_3 AgIn + v_i \quad (1\text{-}3)$$

$$R_{jt4} = \lambda_0 + \lambda_1 Cst + \lambda_2 Spp + \lambda_3 Tx + \lambda_4 Int + \lambda_5 Othop + \lambda_6 Uinv + \lambda_7 Obinv + \lambda_8 Acqb + \lambda_9 Obdebt + \lambda_{10} PDebt + \lambda_{11} Iseq + \lambda_{12} Dev + u_i \quad (1\text{-}4)$$

Where,
λ, γ, and β are estimated parameters,
w, v, and u are random disturbances, and
the other variables are as defined in Table 1-1

4. RESULTS AND DISCUSSIONS

4. 1 Descriptive Statistics

Table 2 provides distributional information and the descriptive statistics for the six years under the study (1992-1997). The Table 2 shows the descriptive statistics for returns, and components of cash flows when cash flows are deflated by market equity of firms.

Table 2: Selected Descriptive Statistics

Statistics	Ri	Netcf	Agop	Agin	Agfin	Cst	Spp	Tx	Int	Othop	Uinv	Obinv	Acqb	Iseq	Obdebt	Pdebt	Dev
Means	0.4358	0.0461	0.1590	0.0061	-0.1187	3.6380	-3.3745	-0.0385	-0.0731	0.0071	-0.3918	0.4803	-0.0865	0.1715	0.3277	-0.5695	-0.0434
Median	0.1295	0.0020	0.0373	-0.0630	0.0110	0.3869	-0.3526	0.0000	0.0000	0.0000	-0.1016	0.0119	0.0000	0.0026	0.0000	-0.0043	0.0000
Std Dev	1.6840	1.7574	2.9278	8.3094	6.8899	40.6857	37.6371	0.6334	1.1725	0.2874	2.5305	7.5813	4.1063	1.9570	6.5709	8.7295	0.5580
Minimum	-22.0000	-23.2775	-25.3040	-252.3990	-334.1760	-0.4774	-1259.5400	-33.3739	-38.5543	-3.9135	-122.5450	-3.5496	-237.3750	-1.2549	-38.1122	-332.2990	-31.1295
Maximum	45.6667	85.0980	145.2461	376.8747	106.0548	1402.8540	0.7606	0.5836	18.7857	7.0552	1.5176	389.0614	0.0869	108.4793	361.0035	6.6137	0.3556

4. 2 Historical Cash Flows

This section presents the results of the test for the first hypothesis. The null hypothesis is that historical cash flows have no information content. No previous studies attempted to test this hypothesis. For the purpose of testing this hypothesis, the significance of the regression coefficients in model 1-2 is interpreted as information content. The paramount issue addressed by this test of information content is whether historical cash flows reflect the information used by investors to price securities, conditional on investors knowing other information. Historical cash flows are measured in terms of an increase or a decrease in the amount of total cash flows in the current year compared to the preceding year. In general the evidence indicates historical cash flows possess strong information content for pooled data. Results from annual cross-sectional data, in general, support the information content of historical cash flows.

Table 3 presents the results of the seven years under study and for the pooled regressions. Table 3 shows that, using pooled data, there is strong evidence to suggest that there is information content in historical cash flows. The null hypothesis is rejected at the 1 % level of significance. In addition, the cross-sectional analysis indicates three of the six years under the study period rejected the hypothesis (1993, 1996 and 1997) while the remaining three failed to reject it. Since AASB 1026 came into effect in 1992, it is reasonable to claim that these would have been transitional years. Therefore, three of five years favour

information content, including the last two consecutive years.

Table 3: Results of Tests of the Information Content of Historical Cash Flows

Year	$\hat{\gamma}_0$[a]	$\hat{\gamma}_1$[a]	Std Error	Adj-R^2	F	N
1992	0.6477	0.0397	0.0962	-0.0021	0.170	394
1993	0.7274	0.9105***	0.1063	0.1357	73.386***	462
1994	0.5543	0.0020	0.0149	-0.0019	0.018	510
1995	-0.1042	0.1056	0.1073	-0.0001	0.968	610
1996	0.4333	0.6960***	0.1383	0.0355	25.338***	663
1997	0.2601	0.4727***	0.1164	0.0223	16.497***	679
Pooled	0.3845	0.5294***	0.0550	0.0269	92.754***	3334

* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

4. 3 Total Operating, Investing and Financing Cash Flows

Hypothesis two examines the incremental information content of the three components of cash flows). The significance of the slope coefficients in equation 1-3 is interpreted as incremental information of the component of cash flows in hypothesis two. Table 4 presents the results for each of the seven years under study and for the pooled seven years.

Table 4 provides F-values for each year under the study. By definition, this value indicates the ability of all independent variables (cash flow components) jointly explains the variation in dependent variables (security returns). In this study, the significance of this value is interpreted to indicate that information communicated by each variable in the equation to the market is not equal. The significance of F-values is also interpreted as the ability of all independent variables jointly in predicting future cash flows (security returns). For example, F-value of the data in 1992 was 6.132 and significant at the 1% level, implying AgOp, AgIn and AgFin together are significantly able to predict future cash flows and these variables individually have different influence on the security returns. In general, F-values for pooled and cross-sectional data in Table 4 are significant at the 10% level.

The estimates of pooled data in Table 4 indicates the coefficients of β_1 (total operating cash flows), β_2 (total investing cash flows) and β_3 (total financing cash flows) are strongly significant from zero at the 1% confidence level, implying the null hypothesis is rejected. Accordingly, total cash flows from each of operating, investing and financing activities have incremental information content.

Table 4: Results of the Second Hypothesis Tests

Variables	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\beta}_0$)	.5853	.6202	.5476	-.1719	.3119	.2477	.3444
Ogop ($\hat{\beta}_1$) (Std. Error)	.2475467* (.1221)	1.01485** (.1068)	.072629 (.1675)	.731139** (.1438)	.985291** (.2226)	.684917** (.1337)	.690026** (.0610)
AgIn ($\hat{\beta}_2$) (Std. Error)	-.029975 (.1130)	-.107177 (.1996)	-.030578 (.1250)	-.099201 (.1084)	.120382 (.1602)	.419144** (.1358)	.341529** (.0589)
AgFin ($\hat{\beta}_3$) (Std. Error)	.038815 (.0942)	.998255*** (.1043)	-.025684 (.1596)	.161520 (.1058)	.884039** (.1413)	.432217** (.1183)	.544960** (.0545)
F-value	6.132***	38.070***	.585	21.252***	27.411***	9.126***	65.593***
Adj-R^2	0.0377	0.1994	-0.0025	0.0906	0.1069	0.0347	0.0553
N	394	462	510	611	663	679	3314

The estimates from annual cross-sectional data are generally consistent with those from pooled data. The data of Table 4 shows that, except in 1994, total operating cash flows have significant coefficients for all the years under the study period. In addition, total financing cash flows do not have significant coefficient only in 1992, 1994, and 1995. In the other three years, this coefficient is significant at the 1% level.

In contrast to the total operating and financing activities, the coefficient of total investing activities is significant for only one yea at the 1% level. In other years, the coefficient of β_2 (total investing cash flows) is not significant even at the 10% level, indicating a lack of incremental information content in these years. It can thus be concluded that the total investing cash flow provides weaker evidence of incremental information content than total operating and financing cash flows.

Of previous studies, those by Garrod and Hadi (1998), Cotter (1996), Livnat and Zarwoin (1990) and Bowen *et. al.* (1987) may provide a comparable result for the present study. To recall, Garrod and Hadi (1998) indicated net cash flows from operating and investing activities possessed incremental information content while financing cash flows did not. Cotter (1996) reported that aggregate operating cash flows was a significant explanator for stock return for short and long return intervals, while the aggregate investing cash flow was a significant for four years but not significant for long interval returns. The aggregate financing cash flow was not significant for all return intervals with the exception of one year partition. In their study, Livnat and Zarowin found that aggregate cash flows from operating and financing activities have incremental information content while aggregate investing does not. Bowen *et. al.* (1987) reported that cash flows from operation and investment jointly have information content. These past studies, however, have used different definitions of cash flows that may cause problems in comparing the results with the present study.

The incremental information content of operating cash flows found in the present study is consistent with results reported by Garrod and Hadi (1998), Cotter (1996), Livnat and Zarwoin (1990) and Bowen *et. al.* (1987). The incremental information content of investing cash flows is consistent with results reported

by only Garrod and Hadi (1998), Cotter (1996) and Bowen *et. al.* (1987). The incremental information content of financing is only consistent with results reported by Livnat and Zarwoin (1990).

4.4 Detailed Components of Cash Flows

The third hypothesis is that the components of the total operating, investing, and financing cash flows have incremental information content. The test of the component of cash flows presented in this section is a detail test of the total operating, investing and financing cash flows. The focus here is to see whether disaggregation still preserves the information characteristics of the variables. This will identify the components that have the most information content. To address hypothesis three, all components of cash flows (Cst, Spp, Tx … Dev) are regressed on security returns. From equation 1-3, $\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_3$, $\hat{\lambda}_4$, and $\hat{\lambda}_5$ are estimated coefficients of disaggregating the total operating cash flows, $\hat{\lambda}_6$, $\hat{\lambda}_7$, and $\hat{\lambda}_8$, represent the estimated coefficient of disaggregating the total investing cash flows, and $\hat{\lambda}_9$, $\hat{\lambda}_{10}$, $\hat{\lambda}_{11}$, and $\hat{\lambda}_{12}$ represent the estimated coefficient of disaggregating the total financing cash flows. Again, the inference for incremental information content is based on significant coefficients from zero. Table 5 presents the results of test.

Table 5 reports F-values of equation 1-3. F-values of all regressions are very strong at the 1% level for both the pooled and annual cross-sectional data. The combination of the significance of the F-values and the higher R^2 for the data of Table 5 compared to similar data in Table 4 suggests that further disaggregation of components of cash flows can be useful in explaining security returns and thus communicates more information.

The cash flow from operations is useful in explaining security returns and communicates more information. The pooled results indicate all components of cash flow (Cst, Spp, Tx … Dev) have incremental information content at the 5% level. Using the 1% level, cash outflows for suppliers (Spp), investment (Uinv), acquisition of new business (Acqb) and cash inflows from debt (Obdebt) no longer have incremental information content. The coefficients of these components are only significant at the 5 % level.

The results of the cross-sectional data are generally consistent with those from pooled data. As shown by Table 5, components of the operating cash flow variables have incremental information content. Cash flows received from the customers (Cst) and paid for suppliers (Spp) are significant for four years: 1993, 1994, 1995 and 1997. While the coefficient of the interest (Int) is not significant at all, the other operating cash (Othop) coefficient is significant for all years, except 1992, under the study. The coefficient of the tax (Tx) is significant for two years (1994 and 1990).

Weak evidence of lack of incremental information content is indicated by the elements of the total investing cash flows. The components of investing cash flows are significant from zero for only one year. The coefficients of cash used for a new investment (Uinv), obtained from the selling assets (Obinv), and used for the acquisition of new business (Acqb) are significant in 1993, 1994, and 1997, respectively.

Table 5: Results of the third Hyhypothesis Tests

Variables [a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\lambda}_0$)	.2595	.5215	.3416	-.2302	.2039	.0297	.2130
Cst ($\hat{\lambda}_1$) (Std. Error)	.119913 (.7.1552)	.526149*** (.1436)	.269499** (.1094)	.497303*** (.1180)	.008690 (.18264)	.540494*** (.1254)	.087733*** (.0301)
Spp ($\hat{\lambda}_2$) (Std. Error)	.143672 (.1651)	.522037*** (.1462)	.251016** (.1106)	.502803*** (.1181)	-.00400 (.1826)	.531473*** (.1250)	.076613** (.0305)
Tx ($\hat{\lambda}_3$) (Std. Error)	2.423976 (1.4988)	1.708643 (1.3926)	-3.49352** (1.5492)	.336866 (.7339)	.269822 (.1.3577)	-2.44234** (1.0619)	2.465465*** (2567)

Int ($\hat{\lambda}_4$) (Std. Error)	-.190341 (.2299)	.420859 (.3585)	-.439671 (.5010)	.276212 (.3635)	.046808 (.5698)	.962375 (.5526)	-.343038*** (.0446)
Othop ($\hat{\lambda}_5$) (Std. Error)	-.127242 (.1830)	.561346** (.2682)	.731999*** (.1813)	.618485** (.1877)	-.702469** (.3392)	.541729*** (.1456)	.247515*** (.0823)
Uinv. ($\hat{\lambda}_6$) (Std. Error)	-.181438 (.1390)	-.493354** (.2221)	.064960 (.0771)	-.085099 (.0740)	.016589 (.1120)	.196109 (.1333)	-.071335** (.0286)
Obinv. ($\hat{\lambda}_7$) (Std. Error)	.047108 (.1260)	-.541080 (.2249)	.118362** (.0584)	-.035273 (.0724)	.072475 (.1059)	.212532 (.1289)	.052991*** (.0163)
Aqcb ($\hat{\lambda}_8$) (Std. Error)	2.749862 (1.8544)	1.022059 (.8791)	.483049 (.5115)	.071345 (.2786)	-.697304 (.6398)	-.886124** (.3503)	-.583850** (.2313)
ObDebt ($\hat{\lambda}_9$) (Std. Error)	-.011568 (.1905)	.223209 (.2141)	.185180** (.0828)	.254690** (.1079)	.024551 (.0816)	.222638 (.1397)	.0550997** (.02424)
PDebt ($\hat{\lambda}_{10}$) (Std. Error)	.030008 (.0893)	.250366 (.2028)	.219009*** (.0787)	.091151 (.1274)	.072608 (.0924)	.093891 (.1653)	.094958*** (.02424)
Iseq ($\hat{\lambda}_{11}$) (Std. Error)	2.019672** (.9683)	1.790981** (.1934)	.753538*** (.1182)	.504416*** (.1243)	1.478259** (.1715)	1.173945** (.1470)	.592651*** (.0469)
Dev ($\hat{\lambda}_{12}$) (Std. Error)	-3.14377*** (-3.247)	-.154858 (1.0123)	2.267256 (.1420)	-.458865 (.5618)	-1.19311 (.6678)	-.128831 (.5871)	-2.726613*** (.2391)
F-value	15.048***	14.423***	8.391***	7.298***	9.090***	10.318***	43.319***
Adj-R^2	.3034	.2598	.1484	.1110	.1389	.1423	.1323
N	388	460	510	606	664	675	3332

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

Similar to the components of the operating cash flows, the components of the financing cash flows of the data provide empirical evidence on incremental information content. The components of debt (Pdebt) and dividend (Dev) payment are significant at the 5% level in 1994 and 1992 respectively. While the cash flows from borrowing (Obdebt) are only significant in 1994 and 1994, the net cash flows from issuing new securities ((Iseq) are strongly significant for all years under the study.

Of the previous studies, only those by Garrod and Hadi (1998) and Livnat and Zarowin (1990) may be comparable to results of the present study. To recall, Garrod and Hadi (1998) indicated that among components of operating cash flows, net cash flows from customers and interest had incremental information content and all components of cash flows from financing and investing activities had no significant impact on the stock returns. Livnat and Zarowin reported that components of operating cash flows were highly correlated with security returns but components of investing cash flows in general were insignificant. In addition, components of financing cash flows were less correlated with security returns than cash flows from operating activities.

Although there are different variables of cash flows employed in the models of the present study compared to previous works, the information content for components of operating and financing cash flows is consistent with the results provided by Livnat and Zarowin (1990). But, in general, it is inconsistent with to results provided by Garrod and Hadi (1998). In addition, the present study has established the information content of the components of cash flows from investing activities. This is in contrast with the findings of Garrod and Hadi (1998) and Livnat and Zarowin (1990).

4.5 Competing Models

As discussed in previous section, there are three sets of cash flows tested: historical cash flows (NetCF), aggregate cash flows from operating, investing and financing activities (AgOp, OgIn and AgFin), and detail components of cash flows (Cst, Spp, Tx, … Dev). Equations 1-1 to 1-3 represents the relationship between cash flows and security returns. This section discusses the best model of these equations.

One criterion for choosing among competing models is to evaluate models from a comparison of mean squared errors (MSE) across the models. The model that yields the lowest mean squared errors is rated as superior. Table 6 presents mean square errors from the estimation of cash flow models used in this study. The pooled data of Table 6 indicates that equation 1-3 has the lowest MSE and equation 1-1 has the highest MSE among the three equations derived from components of cash flow variables. The MSE of annual regression data is also consistent with that of pooled data. This low MSE implies that the model has less dispersion around the true value of a parameter and thus a smaller residual component.

Table 6: Comparison of Mean Square Errors of the Models

Years	Models of Cash Flows		
	1 CF [a]	3 CF [b]	12 CF [c]
1992	2.78615	2.67545	1.60172
1993	2.28235	2.12749	1.96291
1994	1.70997	1.71086	1.41396
1995	0.45984	0.41817	0.24555
1996	1.44619	1.33909	1.31871
1997	.0.66842	0.65997	0.46339
Pooled	1.52504	1.48067	1.08789

4. CONCLUSIONS AND IMPLICATIONS

The general objective of the present study is to assess the information content of cash flow disclosures as required by AASB 1026 “Statement of Cash Flows”. Information content is measured in terms of a statistical relationship between cash flow variables and security returns. There were 3344 firm year observations that were included when using market equity as a deflator. Considering some factors that might influence statistical inferences, the robustness of the above results was also assessed. These factors are pooling of cross-sectional and time series data, outlier, heteroscedasticity, autocorrelation and collinearity. In general the results of hypothesis tests are robust.

With respect to the results of the hypothesis tests, which represent the objective, two conclusions can be drawn. The first conclusion is that cash flow data reported in the cash flow statement have information content. Accordingly, cash flows can be used to predict future cash flows. The second conclusion is that disaggregating historical cash flows into three main components and then decomposing three components of cash flows into detailed components improve the association with security returns.

The finding that cash flows can be used to predict future cash flows should be of major interest to the accounting standard setting body, namely AASB. The AASB states that "the information provided in a statement of cash flows together with other information in the accounts or consolidated accounts may assist in assessing the ability of a company or an economic entity to generate net cash flows in the future ... (AASB 1026, 1991, paragraph v,)". Further, AASB 1026 states the statement of cash flows was designed to meet the demand of the main users of financial statements. The findings of the present study justify AASB 1026s' requirement that reporting entities report their cash inflows and outflows at the end of a certain period. The findings also strongly support the claim made by AASB 1026. The findings of the present study suggest cash flow data are a good indicator of future cash flows.

Another implication for AASB comes from the evidence of the present study that indicate that disaggregating historical cash flows into three main components and then decomposing three components of cash flows into detailed components improves the association with security returns. These components reflect cash flow variables (AgOp, AgIn and AgFin) reported in the cash flow statement under the direct method. Each component (Cst, Spp, Tx … Dev) adds information that is different from information provided by other components, providing a strong justification for the direct method of reporting cash flows of a firm currently adopting AASB 1026.

Further, evidence on information content of cash flows has implications for reporting entities in Australia. Since the accounting policy decisions on financial reporting issues can have potentially severe economic consequences, evidence of the present study may suggest that the benefits of providing cash flow information by reporting entities may exceed the derived costs. The findings may also suggest that reporting entities disclosed their cash flow statements in a timely manner.

Evidence on information content of cash flows also has a potential implication for the principal users of financial statements, namely creditors and investors. The literature in finance and accounting generally suggests that creditors and investors use earnings as a proxy for future cash flow. The finding in the present study, however, suggests that creditors and investors can use not only earnings but also cash flows to predict future cash flows of companies.

As with all studies, there are inherent limitations and extensions of the present study. First, the present study assumes that the relationship between cash flows (cash flows and earnings) and security returns is a linear function. In this study, the author did not attempt to include non-linear models when addressing hypothesis tests because of the difficulty in determining the type of non-linear equations. However, relaxation of the linear assumption may be warranted in future studies. The work by Ali (1994) could be a good starting point.

Second, the present study included only variables of cash flows. These variables, however, provided low adjusted-R^2. Accordingly, these models can be extended by including new independent variables for a further investigation. The author did not try to add other variables in the three models because modelling the relationship between cash flows and security returns was not the purpose of the present study. Instead, the study was intended to examine the information content conveyed by cash flow components.

Third, the current study assumes that firms that meet the criteria to be included in the study are homogeneous regarding firm size, industry classification and time series. This assumption implied that the behaviour of each firm in the study is identical. For example, small firms have identical share price movements to big firms. Accordingly, future studies may consider these firm characteristics.

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