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, two objectives are then developed: to investigate the ability of the cash flow component in predicting future cash flows, and to compare the ability of cash flows and earnings in predicting future cash flows.

There are some reasons underlying the present study. First, several studies supported the hypothesis that cash flow statements have information content, while others have failed to advocate this hypothesis. Second, both income and cash flow statements are mutually exclusive or mutually inclusive statements. Third, the cash flow statement is relatively new so that market participants may not recognise it yet and may still prefer to use the income statement and the balance sheet rather than the cash flow data in their decision making. Finally, reporting entities 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.

To accomplish these two objectives, eleven hypotheses were proposed: five hypotheses for the first objective and six hypotheses for the second objective. In addition, based on the eleven hypotheses, six equations reflecting the relationship between security returns and cash flow variables, and cash flows plus earnings were developed. The data to test eleven 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 first 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 (*AgOp, OgIn and AgFin)* into detailed components (*(Cst, Spp, Tx, ... Dev)* 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. The findings also suggest that creditors and investors can use not only earnings but also cash flows to predict future cash flows of companies. Evidence from the present study may also suggest that the benefits of providing cash flow information by reporting entities may exceed the costs derived from its provisions and that reporting entities disclosed their cash flow statements in a timely manner.

General results from hypothesis tests reflecting the second objective indicate that cash flows have information content more than that provided by earnings alone and that cash flows have relative information content, given earnings alone. This finding suggests that the cash flow statement and the income statement provide mutually exclusive information. This finding refutes results of previous studies from the USA and UK that indicated cash flow data had less information value than that conveyed by earnings. This evidence may suggest that data reported in the cash flow statement can be a main source of information for decision making, separated from the income statement.

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DECLARATION

This dissertation contains the original academic work of the author except as stated in the dissertation. It contains no material that has been submitted for examination or award of any degree in any university.

Hadri Kusuma

TABLE OF CONTENTS

CHAPTER 4: RESEARCH METHODOLOGY

CHAPTER 5: RESULTS OF TESTING INFORMATION CONTENT OF CASH FLOWS

CHAPTER 6: RESULTS OF TESTING INFORMATION CONTENT OF CASH FLOWS AND EARNINGS

LIST OF TABLES

ABBREVIATIONS

Notations		Description
AARF	=	Australian Accounting Research Foundation
AAS	=	Australian Accounting Standard
AASB	=	Australian Accounting Standard Board
Acqb	=	Cash used for the acquisition of new business
AgFin	=	Aggregate financing cash flows
AgIn	=	Aggregate investing cash flows
AgOp	=	Aggregate operating cash flows
ASRB	=	Accounting Standard Reviews Board
ASX	=	Australian Stock Exchange
Cst	=	Cash received from customers
Dev	=	Cash paid for dividend
E	=	Earnings
ED	=	Exposure Draft
FASB	=	Financial Accounting Standard Board
GPFR	=	General Purpose Financial Reports
Int	=	Net cash paid for interest
IRS	=	Internal Revenue Service
Iseq	=	Cash received from issuing new common and preferred stocks
MM	=	Modigliani and Miller
NCSC	=	National Companies and Securities Commission
NetCf	=	Historical cash flows
Obdebt	=	Cash received from new issuance of debts
Obinv	=	Cash obtained from the sale of investment in property, plant and equipment
Othop	=	Net cash flow from other operating activities
Pdebt	=	Cash used for payment of debts
Rjt	=	Annual return of a company j at time t
SAC	=	Statement of Accounting Concept
SCF	=	Statement of Cash Flows
SFAS	=	Statement of Financial Accounting Standard
Spp	=	Cash paid to suppliers, employees and others
Tx	=	Cash paid for taxes
Uinv	=	Cash used from new investment in property, plant, and equipment

CHAPTER 1

INTRODUCTION

1.1 The Importance of the Cash Flow Statement

Accounting is a language of business. It is a system that measures business activities, processes information of activities into reports, and communicates the results to decision-makers. The key products of an accounting information system are financial statements, the documents that report the organisational business in monetary amounts (Harrison and Horngren, 1995).

Financial statements, as a main form of communication between reporting entities and users of financial information, are not without purpose. Statement of Accounting Concept 2 (SAC 2) issued by the Australian Accounting Standard Board (AASB) states that the general purpose of financial reports is to meet the information needs common to users who are unable to command the preparation of reports so as to satisfy, specially, all of their information needs (SAC 2, par.5). Further, in paragraph 43, SAC 2 states the purpose of financial reporting is to provide information useful to users for making and evaluating decisions about the allocation of scarce resources. Similarly in the USA, Financial Accounting Standard Board Concept No.1 (FASB No.1) states:

> Many people base economic decisions on their relationships to and their knowledge about business enterprises ... General Purpose Financial reporting is directed toward the common interest of various potential users in the ability of an enterprise to generate favourable cash flows (FASB, 1978, par.4028-4029).

In general, three forms of financial statements are provided by the reporting

entity as part of the financial reporting process. These are the balance sheet, income statement, and statement of cash flows. The balance sheet, also referred to as the statement of financial position, lists all the assets, liabilities, and stockholder equity of a reporting entity for a specific date, normally the end of a month, or a year. The income statement or earnings statement presents a summary of the revenues and expenses of a reporting entity for a specific period of time such as one month or one year. The statement of cash flows, the focus of this dissertation, reports the amount of cash coming in and the amount of cash going out. In other words, the cash flow statement is a summary of cash receipts and cash payments for a specific period (Harrison and Horngren, 1995).

The cash flow statement in its present form is a relatively new one. In most countries including the USA, Australia and New Zealand it has superseded the "funds statement", which was often called *The Statement of Sources and Application of Funds*. The funds statement was a mandatory statement before the introduction of the statement of cash flows. The statement of funds, however, raised some issues due to its inappropriate definitions. Firms had difficulty in computing funds since funds can be defined as working capital, cash or cash plus cash equivalent. Ketz and Largay III, (1987), for example, questioned the meaning of the term "operation" in the financial statement: how firms treat events or transactions as either operating or non-operating in the income statement. Further issues are associated with the form and the content of the funds statement, and with the method of calculations, which involves both direct and indirect approaches (Clark, 1983; Swanson and Vangermeersch, 1981; and Ketz and Kochanek, 1983).

The emphasis on cash instead of funds seems to be the result of changes in business environment reporting that has shown accrual-based accounting to be inadequate in providing cash flow information. Many companies appeared to have healthy balance sheets but failed, since they could not generate sufficient cash flows to meet their financial obligations. One such failure was the bankruptcy of Hooker Corporation in Australia. As Flanagan and Whittred (1992) demonstrated, none of the traditional accounting ratios indicated forewarnings of Hooker's impending problem prior to its bankruptcy. However, a careful analysis of Hooker's cash flows suggested that considerable caution was warranted: that is, Hooker was unable to generate cash flows from operations. According to Zega (1988), many firms that have declared bankruptcy might have still survived if their financial statements had been designed in such a way as to forewarn business of cash flow problems.

Unlike the situation in other countries such as South Africa and New Zealand, the cash flow statement took a long time in coming to Australia. The need to prepare cash flow statements in this country might be for several reasons. However, the major force was because the Australian Stock Exchange (ASX) gave formal recognition to the development of accounting standards in the USA and UK, where accounting professions emphasised the greater regulatory attention on the liquidity and solvency of companies. Public pressure, due to firm collapses and the volatility of stock markets in the 1980s, was also a serious consideration in adopting cash flow standards. In response to these pressures, the AASB and the Australian Accounting Research Foundation (AARF) issued exposure draft ED52 *"Statement of Cash Flows"* for public comment in 1990. A majority of the companies preparing public

submissions on ED52 advocated a cash flow standard. The AARF then issued cash flow standard "AASB 1026" in December 1991. According to the AARF, all public companies were required to comply with this new standard by no later than June, 1992. With the adoption of this cash flow standard the AARF simultaneously withdrew the accounting standard for the fund statement of AAS 12.

The release of AASB 1026 as guidance for cash flow reporting seems to conform well with SAC 2 "*Objectives of General Purpose Financial Reports*" (GPFR) and SAC 3 *"Qualitative Characteristics of Financial Information"*. Paragraph 45 of the SAC 2 states GPFR "shall disclose information relevant to the assessment of performance, financial position and financing and investing ...". This directive is followed by the discussion in paragraphs 29 to 40 about the type of information relevant to various user groups of financial information, including the information of cash flow data. SAC 3 emphasises the need for reliable cash flow data to make decisions about the allocation of scare resources.

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*)".

However, until empirical evidence is provided, this claim by the Australian accounting profession about the usefulness of cash flow information in predicting future cash flows is still unsupported. The present study addresses this issue.

1. 2 Statement of the Problem

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 (Garrod and Hadi, 1998; Cotter, 1996; Livnat and Zarowin, 1990; and Bowen *et. al.,* 1987). 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.

Second, previous studies are also concerned with the comparison between cash flow and earnings data to predict or generate future cash flows. The concern stems from the AASB contention that the cash flow statement should be read with

other statements, particularly, the balance sheet and income statement. Unlike the balance sheet, the income statement has been the focus of attention by many researchers for many years. Dechow (1994) argued that earnings is the summary measure of a firm's performance that resulted from the accrual basis of accounting. Earnings is an important measure since it has been used by a wide range of users as the summary of firm performance. For example, it is utilised in debt covenants and by investors and creditors for the purpose of their investing and financing decisions. Also it is well documented that earnings has information content (e.g: Ball and Brown, 1968; Board and Day, 1989; and Charitou and Ketz, 1990).

Meanwhile, cash flow data have received serious attention in the last decade because the cash flow figure, like earnings, is expected to have ability in predicting future cash flows. Previous studies provide evidence consistent with this expectation (e.g: Ali and Pope, 1995 and Wilson, 1987). Thus, if both income and cash flow statements have information content, the question arises as to whether or not these two statements are mutually exclusive or inclusive. If the two statements are mutually inclusive, the information conveyed by cash flow statement (earnings statement) should be incremental to the information provided by earnings statement (cash flow statement). On the other hand, if both statements provide mutually exclusive information, then cash flow data (earnings figures) should have relative information to earnings figures (cash flow data) and thus both statements provide different information. Previous studies, however, emphasised the incremental rather than relative information content. This suggests empirical evidence on this matter is needed to fill this gap.

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. First, compared to the other financial reports, the cash flow statement is relatively new so that market participants may not yet recognise its relevance. The market participants may also prefer to use the income statement and the balance sheet rather than the cash flow data in their decision making because of their familiarity. Second, reporting companies generally announce their income prior to the publication of the full set of financial reports. For example, companies listed in the Australian Stock Exchange are recommended to publish their quarterly and semiannual income. This period of income information may disseminate before the cash flow information, which is reported at the end of the fiscal year, becomes available to the market. If these two suspicions are 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.

1. 3 Objectives of the Study

A review of the cash flow literature reveals that studies of the information content of cash flows or funds flows were carried out before the cash flow statement was mandated. The main objective of this research is to investigate and assess the

information content of cash flow disclosures as required by the AASB 1026 *"Statement of Cash Flows"*. 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.

In the light of the primary objective, the current study attempts to accomplish two specific objectives. These are:

(1) to investigate the ability of the cash flow component in predicting future cash flows, and

(2) to compare the ability of cash flows and earnings in predicting future cash flows.

In assessing the nature of the relationship between cash flows and security prices as stated in the first specific objective, the current study examines incremental information content of components of cash flows. The tests will address the issue of whether a change in a certain component of cash flows has association with security prices. In addition, the current study investigates the relative information content of cash flow components, given earnings. This test addresses the issue of whether a change in cash flow components has the same relationship with security prices as that in earnings.

1.4 Significance of the Study

Interest in the information content of cash flow data stems from three key

parties: accounting policy makers, preparers, and users of the cash flow statement and this section describes how these parties may use the results of this study.

First, the analysis on the nature of the relationship between cash flow components and security prices will lead to a comprehensive understanding of the components of cash flow statements that contribute most in predicting future cash flows. The findings of the present study will be an important reference for the Australian accounting profession in evaluating AASB 1026 introduced in 1992.

Second, this study is critical to many external groups, namely, creditors and investors including share analysts. For example, creditors and investors generally want to know the amount of money that will be spent for their investments and received in returns. Before making decisions for new investments, these groups of users usually query information with regard to the amount and timing of expected cash flows. The amount and timing of cash to be spent are much easier to estimate than that to be received in both certainty and uncertainty situations, but, the amount and timing of cash receipts can be estimated, assessed and analysed. The new statement of cash flows was designed to meet these demands. Therefore, this study is expected to have significant implications for primary users of the statement in assessing a company's ability to generate positive future cash flows (AASB 1026, 1991).

Third, because the accounting policy decisions on financial reporting issues can have potentially severe economic consequences, evidence on the information content of cash flow data may provide useful information for reporting entities. It may suggest that:

(1) the costs of providing cash flow information may not exceed the benefits derived from its provisions, and

(2) the cash flow statements provided by entities are not lacking in the characteristic of desired information, namely timeliness.

Lastly, the results of this study have potential implications for accounting and finance literature. The information content of cash flow data may suggest that future cash flows not only can be predicted by earnings but also by cash flows themselves. In addition, a finding that the financing components of cash flows possess information content, for example, would help to explain capital structure theory (as explained in chapter 4).

1. 5 Overview of the Dissertation

The reminder of this dissertation is organised as follows. The next chapter reviews the literature relating to cash flow accounting. The review includes the history and rationale for cash flow reporting in Australia, features of AASB 1026, and the usefulness of cash flow reporting from the sampling or selected survey methods.

Chapter three discusses the ability of the cash flow data to predict future cash flows, which is referred to as information content of cash flow data. The discussion includes the definition of information content and its extension of incremental and relative information content. Evidence from previous studies on the information content of cash flows is also presented.

Chapter four develops the hypotheses and discusses statistical models

employed to test the hypotheses. Chapter four discusses variable definitions, data collection method, and sample selection. Chapter four describes the data and its criteria. The last section of chapter four describes the factors that may influence the robustness of hypothesis tests.

Chapter five provides descriptive statistics of the data. Chapter five also presents the empirical results of the hypothesis tests on cash flow components as described in chapter four. Selecting the best models and test of robustness of the findings are also discussed in this chapter.

Chapter six mainly reports the empirical results of the hypothesis tests on cash flow components plus earnings. Like chapter five, selecting the finest model and testing the robustness of the findings are also discussed in this chapter.

Finally, chapter seven presents the development of the thesis in addressing the general purpose of the study. In this chapter the conclusions and their implications are presented. Finally, this chapter also discusses the limitations and recommendations for future research of the study.

CHAPTER 2

CASH FLOW STATEMENT: AN OVERVIEW

The purpose of this chapter is to review the literature relating to cash flow reporting and its usefulness in decision making. This review will provide the necessary background and framework for discussion to be conducted in chapters three through seven. The review consists of six sections. The first section describes the history of the development of cash flow reporting in Australia. The second section discusses the rationale for cash flow statements. A discussion about selected features of the AASB 1026 follows in section three. Section four discusses two methods of presenting cash flows. Results on the usefulness of cash flow reporting from studies using the sampling survey methods is discussed in section five, followed by the conclusion in section six.

2.1 History of the Cash Flow Statement in Australia

A cash flow statement is the statement that classifies cash receipts and cash disbursements according to whether they result from operating, investing or financing activities. In Australia, it replaces the funds flow statement of ASRB 1007 "Financial Reporting of Sources and Applications of Fund" and is regulated in Australian Accounting Standard Board 1026 "Statement of Cash Flow (AASB 1026). The purpose of this section is to describe the process of issuing cash flows standard in Australia.

The cash flow statement had a long gestation period in Australia. According

to Sims and Cantrick-Brooks (1992) the development of cash flow reporting in Australia involved five phases. The first phase was called the creation stage, from October 1967 to March 1983. This phase commenced in 1967 when the Australian accounting standard setters released the Society Bulletin No.10 "Critical Evaluation of the Role of Fund Reporting in Financial and Management Accounting". This release was then followed by a Discussion Paper "The Funds Statement in 1979 and Exposure Draft (ED) 16 "Statement of Sources and Application of Funds' in August 1980. The accounting community supported this effort of promulgation of the accounting standard and criticised the ED16. In March 1983 the Australian accounting profession officially issued AAS12 "Statement of Sources and Application of Funds", which was significantly different from the concepts of funds statement in ED16. This new statement defined the concept of funds as *cash and cash equivalent.*

The reissue stage, from March 1984 to March 1985, was the second phase in the promulgation of cash flow reporting. This phase effectively commenced with the issue of AAS15 "Disclosure of Operating Revenue" in March 1984. The issuance of AAS15 was not preceded by the exposure draft for three reasons: many non-listed firms were already reporting the operating revenue voluntarily and even the Australian Stock Exchange required its members to disclose operating revenues; there was no support on the disclosure from AAS16 "Financial Reporting by Segments"; and the members of standard setters (AARF) saw the exposure draft as unnecessary. Since AAS15 was significantly different from the AAS12 particularly for calculating and presenting funds from operations, AAS12 was reissued in order to be consistent

and in conformity with AAS15 in March 1985.

The third stage identified by Sims and Cantrick-Brooks (1992) was the approval phase, commencing from October 1985 to June 1986. This stage involved the statutory approval of both AAS15 and AAS12. In October 1985 the standard setters issued ASRB Release 403 "Disclosure of Revenue" and sought public opinions on the possibility of AAS15 becoming an approved accounting standard. The majority of public submissions, however, rejected the proposed disclosure of revenues. Unfortunately, in March 1986 the Ministerial Council approved ASRB 1004 "Disclosures of Operating Revenue, which was similar to ASRB Release 403.

Also during this stage, AAS12 was submitted to the ASRB for approval. The ASRB in March 1986 issued ED 27 "Statement of Sources and Applications of Funds" and sought public opinion on the document. The majority of public submissions did not agree that AAS12 should become the approved standard. However, the Ministerial Council approved ASRB 1007 "Statement of Sources and Applications of Funds in June 1986, which conformed with ASRB 1004, even though ASRB 1007 was not consistent with its original AAS.

The fourth stage involved the revision and reissue of AAS12. This phase commenced with a crucial debate on the cash flow statement, as the National Companies and Securities Commission (NCSC) Schedule 7 Working Party designed the cash flow statement to be included in Schedule 7 of the Companies Regulations and the Companies Code. On one side, the accounting bodies through the AARF lobbied intensely against this draft because this Australian accounting body was adopting the AAS12 and did not see the need for a new standard. They also did not

want to see the lawmakers taking over the accounting standard setting process. On other side, the ASRB supported the NCSC for cash flow reporting. At the end, the Governor General Law did not proclaim the amendment that required a cash flow statement and deleted the paragraphs and clauses from the Companies Code.

The debate concerning the need for a cash flow statement, however, continued between the two competing bodies: the AARF and ASRB. As a compromise these accounting bodies jointly issued ASRB Release 410/ED37 "Proposed Amendment of Accounting Standard AAS12 and Approved Accounting Standard ASRB 1007 to require Disclosure of Cash Flows from Operations". Submissions from the accounting society, however, rejected the proposal for inclusion of cash flow data in the existing funds statement, because fund and cash flow statements are incompatible concepts. Meanwhile the accounting society also showed the need for a revision of AAS12 to make it compatible with the previous version of AAS12. In June 1987 the AAS12 was revised and reissued with changes that closed the gap between the two standards (AAS12 and ASRB 1007).

The last phase in the development of the cash flow statement is the replacement stage. Debate on the concept of cash flows continues in this phase. ED 37 was resubmitted to the accounting standard setters in November 1990 for reconsideration as a separate accounting standard on cash flow statements. Serious public pressure, brought about by a volatile stock market, corporate bankruptcies of the 1980s and the overseas requirement for the cash flow reporting, were the main factors for this resubmission. Extreme pressure from the ASX may also have been a major consideration. The AARF and the Australian Accounting Standard Board

(AASB) responded by issuing ED 52 "Statement of Cash Flows" in May 1991. Surprisingly, the majority of the submissions supported the ED37 proposal. Seven months after the release of the ED52, AAS28 "Statement of Cash Flows" and AASB 1026 were issued and gazetted after making improvements that addressed criticisms of the ED52 proposal.

Thus, it is clear that reporting entities in Australia waited for a long time to report cash inflow and outflow compared with those in other countries. Walker and Robinson (1994) even conclude that the competition and the conflict between two accounting standard agencies (AASB and AARF) were the main cause of delaying the cash flow standard in this country. With the approval of the AASB 1026, however, cash flow reporting in Australia becomes more comparable to that in other countries. This AASB 1026 applies for financial years ending on or after 30 June 1992, but may be adopted before this date. Like other accounting standards, the AASB applies to each firm that is a reporting entity and to each firm that is a parent entity. The next section discusses rationale for adopting cash flow standards in detail.

2. 2 Rationale for the Cash Flow Statement

The accounting literature reveals several arguments that support the cash flow statement. First, proponents of cash flow reporting mainly argue that the introduction of the cash flow statement stems from the controversy appearing under accrual-based accounting. The most crucial issue under this accounting method is arbitrary and subjective allocation of costs. For example, alternative methods of depreciation and amortisation give the opportunity for the management of a firm to manipulate its

yearly income. Cash flow data, on the other hand, cannot be affected by arbitrary allocations through subjective allocation of costs.

Drebin (1964) provided a good illustration of the arbitrary allocation problem when he examined the decline of US Steel` income for the year 1962. At that time, income of most US steel companies declined because the internal revenue service (IRS) allowed companies to practise a certain method of cost allocation, which resulted in high depreciation, less income tax, and thus lower dividends. However, US Steel did not realise that the cash flow of the companies was actually enhanced by the IRS ruling, and simply blamed taxation as the reason for the earnings decline Drebin (1964).

The second argument for reporting cash flow information is that cash flow data is a better predictor for a firm's *liquidity* than net income and working capital. A good example of this is the bankruptcy case of the chain store, W.T Grant Company, in the USA. In 1972 according to its funds statement, Grant had a healthy working capital provided from operations of $46 million. Meanwhile the cash flow from operations was showing a deficit of $10 million. However, the next year (1973) Grant's cash flow from operations declined by $114 million while its working capital provided from operations increased to $47 million. However, the company still went bankrupt. This situation clearly showed the funds statement of the company under the working capital approach failed to provide investors with relevant information. The investors were unable to detect from the funds statement that cash flows from operations were a negative sign during the five years prior to bankruptcy (Largay and Stickney, 1980).

The third argument for generating cash flow data is that the information contained in the cash flow statement is useful for predicting financial failure. The concept underlying financial distress is *insolvency*. Firms having inadequate cash to pay their liabilities when due are insolvent. A number of past studies have examined the association of cash flow data and financial distress. The major conclusion from these studies supports the notion that cash flow data can be useful in assessing a firm's financial difficulties (Charitou and Venieris, 1990; and Ward, 1994).

The fourth argument for cash flow reporting is that cash flow data can be important as an indicator of the future cash flow of a firm and this is important to many interested parties. Creditors, for example, are interested in the firm's ability to repay amounts borrowed and interest. Investors are concerned with the amount that will be invested and will be received as returns. In other words, these two parties generally want to know the amount that the firm will spend for investments and the cash flows generated in returns. Before making decisions for new investments, these groups of users usually query information with regard to the amount and timing of expected cash flows. The amount and timing of cash payments is much easier to control than of cash receipts. But, the amount and timing of cash receipts still can be estimated, assessed and analysed from a reliable source. The statement of cash flows was designed to meet this demand, that is, to help interested parties assess a company's ability to generate positive future cash.

The above arguments mainly view the usefulness of the cash flow statement for external users. An argument for the cash flow reporting can also be from internal users (within the firm). In this framework, the statement of cash flows can be used as

a part of the internal performance evaluation system. The reason for using cash flow statements for internal performance evaluation is because most internal decisions of the company, such as for capital expenditures, relate to cash flows. These internal decisions should be converted into cash flow for performance if they are accrual based accounting. Otherwise, there may be a lack of congruence between management decisions and their performance acceptability (McEnroe, 1997).

Following the above support for cash flow reporting, accounting professions have mandated to report the cash inflows and outflows in the USA in November 1987, New Zealand in October 1987, and UK in September 1991. Similarly, it became mandatory in Australia in June 1992. The following section shows selected features of the cash flow disclosure, which is particular to Australia.

2. 3 Selected Features of the Cash Flow Statement

Cash flow statements represent the replacement of statements of sources and applications of funds. In other words AASB 1026 supersedes ASRB 1007. The main difference between a funds statement and a cash flow statement is that the cash flow statement eliminates the controversial concept of funds and replaces it with a more accurate concept of cash. Under funds statement, funds can be defined as: cash and its equivalent, net working capital or working capital. This is an ambiguous concept. On the other hand cash flow under AASB 1026 is a readily understood concept. Therefore, a cash flow statement may give more reliable information about an entity's liquidity and solvency than a funds statement.

Another difference is that a statement of cash flows must be included in a set

of financial reports as a separate financial statement. Under ASRB 1007, the funds statement was specifically defined as a note to the accounts or consolidated accounts. This means that AASB 1026 requires a statement to be included in the accounts or consolidated accounts. Therefore, it brings cash flow statements within the definition of accounts as a statement attached or intended to be read with the profit or loss account and balance sheet. It is a part of the general purposes of financial reports.

As a liquidity and solvency concept, AASB 1026 defines cash as cash on hand and cash equivalents. Cash equivalents are defined as highly liquid investments that are readily convertible into cash and that are used to manage cash on a day-to-day basis. Bank securities are an example. Cash equivalents also involve borrowings that are integral to the cash management function and that are not subject to a term facility. Bank overdrafts are an example.

With this definition of cash, the AASB 1026 classifies cash receipts and disbursements of the company on the basis of their sources into three components: operating, investing and financing activities:

> "investing activities" means those activities which relate to the acquisition and disposal of non-current assets, including property plant and equipment and other productive assets, and investments, such as securities, not falling within the definition of cash,
>
> "financing activities" means those activities which relate to changing the size and composition of the financial structure of the entity, including equity, and borrowings not falling within the definition of cash,
>
> "operating activities" means those activities which relate to the provision of goods and services (AASB 1026 par. 9).

In summary, it suggests that the cash flow statement, which consists of three main components, has a different concept from the funds statement, and is expected

to provide a better disclosure than its predecessor. The following section shows general approaches to reporting these components into a form called a statement of cash flows.

2. 4 Reporting of Cash Flows

There are two methods of presenting and calculating cash flows: direct and indirect methods. Both methods, however, will result in the same net amount of cash flows. Table 2.1 and 2.2 show examples of cash flow statements under the two approaches. The difference between the two methods is only in terms of calculating cash flows from operating activities. Under the direct method, the main category of operating cash flows is directly estimated and reported on the statement. In other words the direct method of reporting cash flows requires cash inflows and outflows to be reported on a gross basis. The main advantage of the direct approach is that it discloses gross operating cash receipts and payments. These components are not found in the profit or loss statement and balance sheet. Consequently, this approach adds new information and enhances comparability because it eliminates the effect of using different accounting methods. This approach, however, has disadvantages in terms of costs associated with producing information. The information may be provided either from an accounting system that is specifically oriented towards recording cash flows or by making such adjustments to information that is presently recorded. Either method results in an additional cost of reporting.

Under the indirect approach, the operating cash flow is estimated through adjusting net income; that is, it uses net profit and adjusts it for deferrals and accruals

Table 2-1 An Example of the Cash Flow Statement with Direct Method

XYZ Corporation
Statement of Cash Flows
For the Year Ended June 30, 19x1
Increase (Decrease) in Cash and Cash Equivalent
(amounts in thousands)

Cash flows from operating activities:		
Receipts:		
Collections from customers	$ 271	
Interest received on notes receivable	10	
Dividend received on investment in stock	9	
Total cash receipts		$ 290
Payments:		
To suppliers	$ (133)	
To employees	(58)	
For interest	(16)	
For income tax	(15)	
Total cash payments		(222)
Net cash inflow from operating activities		*68*
Cash flows from investing activities:		
Acquisition of plant assets	$ (306)	
Loan to another company	(11)	
Proceeds from sale of plant assets	62	
Net cash flows from investing activities		*(255)*
Cash flows from financing activities:		
Proceeds from issuance of common stock	$ 1 01	
Proceed from issuance of long-term debt	94	
Payment of long-term debt	(11)	
Payment of dividends	(17)	
Net cash flows from financing activities		*167*
Net decrease in cash		(20)
Cash balance, December 31, 19x1		42
Cash balance, December 31, 19x2		$ 22

Numbers in this example are arbitrary

(Source: Harrison and Horngren, 1995, p.709)

Table 2-2 An Example of the Cash Flow Statement with Indirect Method

XYZ Corporation
Statement of Cash Flows
For the Year Ended June 30, 19x1
Increase (Decrease) in Cash and Cash Equivalent
(amounts in thousands)

Cash flows from operating activities:		
Net income		$ 41
Add (subtract) items that affect net income and cash flow differently		
Depreciation	$ 18	
Gain on sale of plant assets	(8)	
Increase in account receivable	(13)	
Increase in interest receivable	(2)	
Decrease in inventory	3	
Increase in prepaid expenses	(1)	
Increase in account payable	34	
Decrease in salary and wage payable	(2)	
Decrease in accrued liabilities	(2)	
Net cash inflow from operating activities		*68*
Cash flows from investing activities:		
Acquisition of plant assets	$ (306)	
Loan to another company	(11)	
Proceeds from sale of plant assets	62	
Net cash flows from investing activities		*(255)*
Cash flows from financing activities:		
Proceeds from issuance of common stock	$ 1 01	
Proceed from issuance of long-term debt	94	
Payment of long-term debt	(11)	
Payment of dividends	(17)	
Net cash flows from financing activities		*167*
Net decrease in cash		(20)
Cash balance, December 31, 19x1		42
Cash balance, December 31, 19x2		$ 22

Numbers in this example are arbitrary
(Source: Harrison and Horngren, 1995, p.729)

of operating cash flows plus other investing and financing activities that are not classified in investing and financing activities. This indirect approach has an advantage over the direct approach since it shows the difference between net income and net cash flow from operations (non-cash items). In addition, this approach is less expensive to compile since it can rely on the existing accounting records. Further it provides a link between cash flows, income and the balance sheet. Nonetheless, the indirect approach does not report the components of gross operating receipts and payments and discloses only net cash flows from operating activities. This can be regarded as less useful information.

AASB 1026 considered the availability of information and its predictive ability when choosing the direct method of reporting cash flow statement for Australian reporting entities. According to AASB 1026, the direct method provides information that is not otherwise available in the balance sheet and profit and loss account. The direct method also provides a more useful basis for estimating future cash flows than a method of presentation which discloses only the net amount of cash flows from operating activities and does not report the individual components of cash flows from operating activities.

Accounting literature reveals choosing one of these methods of reporting cash flows is debatable. Farragher and Reinstein (1988) preferred the indirect method since the method would allow for firms that do not want to disclose their major classes of gross operating cash flows. Kistler and Hamer (1988) argued the direct method has limited usefulness. Mahoney *et. al.* (1988) also considered the indirect method should be encouraged for three reasons:

(1) it provides a useful linkage between the statement of cash flows and the income statement and balance sheet,

(2) statement users are more familiar with it, and

(3) it is generally the less expensive approach.

O'Leary (1988), on the other hand, preferred the direct method since its gross treatment of operating cash flows is consistent with the approach of financing and investing sections of the statement of cash flows (SCF). Drtina and Largay (1985) argued that the indirect method is not equal to actual cash flows from operations because of many conceptual and practical problems intrinsic to the adjustment process. Emmanuel (1988) and Nurnber (1989) provide similar arguments to Drtina and Largay (1985) and O'Leary (1988).

In summary, statements presenting cash inflows and outflows can use either the direct or indirect method. Each method has its own advantages and disadvantages. The most serious criterion that may be considered when choosing the method of presenting cash flows is whether the disclosure of cash flows is actually useful information for its users on a cost-benefit basis. The following section discusses selected results of previous studies on this matter.

2. 5 Survey Evidence on the Usefulness of the Cash Flow Statement

A number of past studies to assess the usefulness of cash flow data have proceeded along one of two avenues: (i) survey of preparers and users of financial statements or (ii) measurement of capital market reaction to such information. The first of these approaches is discussed in this section (as summarised in Table 2-3).

Table 2-3: Summary of the Surveys on the Usefulness of Cash Flow Data

Author(s) and Years	Sample Size	Country	Principal Findings
Govindarajan (1980)	Security analysts	USA	Majority of respondents favoured earnings to cash flow information.
Lee (1981	182 accountants of Scotland	Scotland	There were substantial supports to reporting cash flows. Cash flow was useful to assess firm's liquidity.
McEnroe (1989)	201 useable responses	USA	Majority of bankers, lenders, shareholders and suppliers perceived cash flow statement as useful.
Jones, Romano, and Smyrnios (1995)	210 representatives of firms	Australia	Cash flow statement was important for a various context of decisions. Profit did not give a superior performance to cash flow
Anderson and Epstein (1995)	436 individual investors	Australia	Cash flow statement's readership was low. Cash flow statement was the second place of difficulties to be understood.
Jones and Ratnatunga (1997)	210 representatives of firms	Australia	Cash flow was relevant across a number of decision making contexts.
McEnroe (1997)	282 respondents	USA	The financial analysts and investment advisers were more receptive toward the role of the cash flow statement than the accounting professors and accountants.
Dowds and Esslemont (1997)	112 useable questionnaires	New Zealand	Even though financial analysts had a little difficulty in understanding the statement of cash flow, they found it useful.
Yap (1997)	260 useable responses	Australia	Cash flow statement was an important source of information. It was a complementary report to balance sheet and income statement.
Jones and Widjaja (1998)	159 useable responses	Australia	There is strong support for cash flow statement by loan officers and financial analysts.

The second approach will be discussed in chapter 3. Evidence on the usefulness of cash flows under these two approaches will give insights into the importance of the cash flow disclosure for this study. It also will serve as a general benchmark for the methodology adopted in the present study.

Recently, some scholars have examined the attitudes of users of cash flow statements. Studies examining this aspect include Govindarajan (1980), Lee (1981), Anderson and Epstein (1995), Jones, Romano and Smyrnios (1995), Jones and Ratnatunga (1997), McEnroe (1989, 1997), Yap (1997), and Jones and Widjaja (1998). These studies, which are summarised in Table 2.3, can be categorised into two periods: before and after the introduction of cash flow standards.

Those studies conducted before the introduction of a cash flow standard may be intended to socialise cash flow reporting since these studies focus on whether a new standard of cash flows should be introduced to assist users of financial statements. Govindarajan (1980), for example, examined whether security analysts tended to place more importance on earnings or cash flows when evaluating securities. The study was conducted to provide evidence to the FASB that tentatively accepted cash flows as the major focus of financial statements. He examined published analyst comments of 976 firms. It was shown in this study that 86.5 percent placed more importance on earnings than cash flows. Only three percent of the security analysts favoured cash flows.

Lee (1981) surveyed the views of professional accountants of Scotland regarding whether they favoured the introduction of cash flow accounting in the financial reports. Generally results showed that there was substantial support for the

idea of cash flow reporting to external parties. Only 32 per cent of respondents did not show any support for cash flow reporting. Those who favoured cash flow reporting agreed that cash flow data would be primarily useful for assessing firm liquidity. In the replication of Lee's study by McEnroe (1989), it was shown that 75 per cent of respondents agreed to include a cash flow statement in the financial reports.

Since the introduction of the cash flow standard, some studies indicate that the cash flow statement has become more meaningful for its users. Anderson and Epstein (1995) reported that only 24 percent of respondents read the cash flow statement. But Jones *et. al.* (1995) after surveying companies listed on the Australian Stock Exchange showed that there was strong support for the new accounting standard and the underlying principles of cash flow reporting. Jones *et. al.* also claimed that the statement of cash flows was important for various decisions, and was considered to be a superior measure of business performance to operating profit by a large number of Australian companies. In a further analysis by Jones and Ratnatunga (1997), it appeared that the cash flow statement was relevant in the Australian reporting environment for both internal and external decision making contexts. Yap (1997) also provided evidence that the new statement would be primarily useful for evaluating liquidity, solvency and financial flexibility. In the USA, McEnroe (1997) reported financial analysts and investment advisers were more receptive toward the role of cash flow statements for external financial reporting. Finally, over all results reported by Jones and Widjaja (1998) indicated strong support for the cash flow statements given by loan officers and financial analysts.

Those studies above are important since they in general confirm and support the position of the accounting profession as they issued the new accounting standards. However, because of the survey method employed, these studies may have the problem of respondent's interpretation. The studies require respondents to answer the questions in a questionnaire, but respondents may respond to the questions in a way that is different from what the researchers actually ask. In addition, the result of the studies may not be generalised due to different respondents and business environment. Further, the most serious problem of previous studies in Australia is that survey studies were only concerned with perceptions, opinions and attitudes of users of the cash flow statement. The studies did not touch information or data reported by the cash flow statement. For this reason there is a need to supplement such studies using this method or to use other approaches to reinforce the meaning of cash flow data. Chapter 3 discusses empirical evidence on the usefulness of cash flow disclosure using capital market research.

2. 6 Summary

This chapter reviews the literature that relates to cash flow statements. It discusses the development of the cash flow statement in Australia and its rationale. It appears that the statement took a long time coming to this country partially because of different opinions between two accounting bodies: AARF and AASB. The reasons for the adoption of the cash flow statement include deficiencies in accrual based accounting due to arbitrary allocation of costs, the ability of cash flow data to predict financial distress, the ability of cash flow data to predict future cash flows, and

internal performance evaluation.

Selected features of AASB 1026 that regulate the disclosure of cash flows in Australia are illustrated above. It indicates the presentation of cash flow data in Australia is somewhat different from that in the USA. In addition, this chapter suggests that cash flows can be useful for decision making. The empirical evidence utilising survey methods strongly confirms this usefulness and thus supports the introduction of cash flows, particularly in Australia. However, this support comes from a survey about opinions, attitudes, and perceptions of users of financial statements. The support was not based on the data or information reported in the cash flow statement. Accordingly, a study using another approach and data reported in the cash flow statement in Australia is still warranted.

CHAPTER 3

INFORMATION CONTENT OF CASH FLOWS

In Chapter two, survey evidence on usefulness of cash flows was reviewed. The second approach to understanding their utility uses market-based accounting research. This stream of studies employs market participants and methods that are well accepted in corporate finance theory. This type of accounting research assumes the change in market prices can be viewed as an indication of value of information. Thus the announcement of financial statements by a company, for example, can be seen as a factor influencing its stock market price. If it is so, financial statements have information content.

This chapter consists of five sections. The purpose of section one is to discuss the term "information content". Section two explains the derivation of incremental and relative information content that previous studies often used in a capital market setting. In section three and four a theoretical framework of the relationship between cash flow, earnings and security returns is described. Empirical evidence from the US, UK, Australia and New Zealand on the information content of cash flows is presented and discussed in section five. The present chapter will provide a framework for hypothesis development in chapter four and will serve as a basis for the comparison of the results of hypothesis tests presented in chapters five and six.

3. 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 his 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:

$$E(R_{jt} \mid NetCF) = E(R_{jt}) \qquad (3\text{-}1)$$

Where:

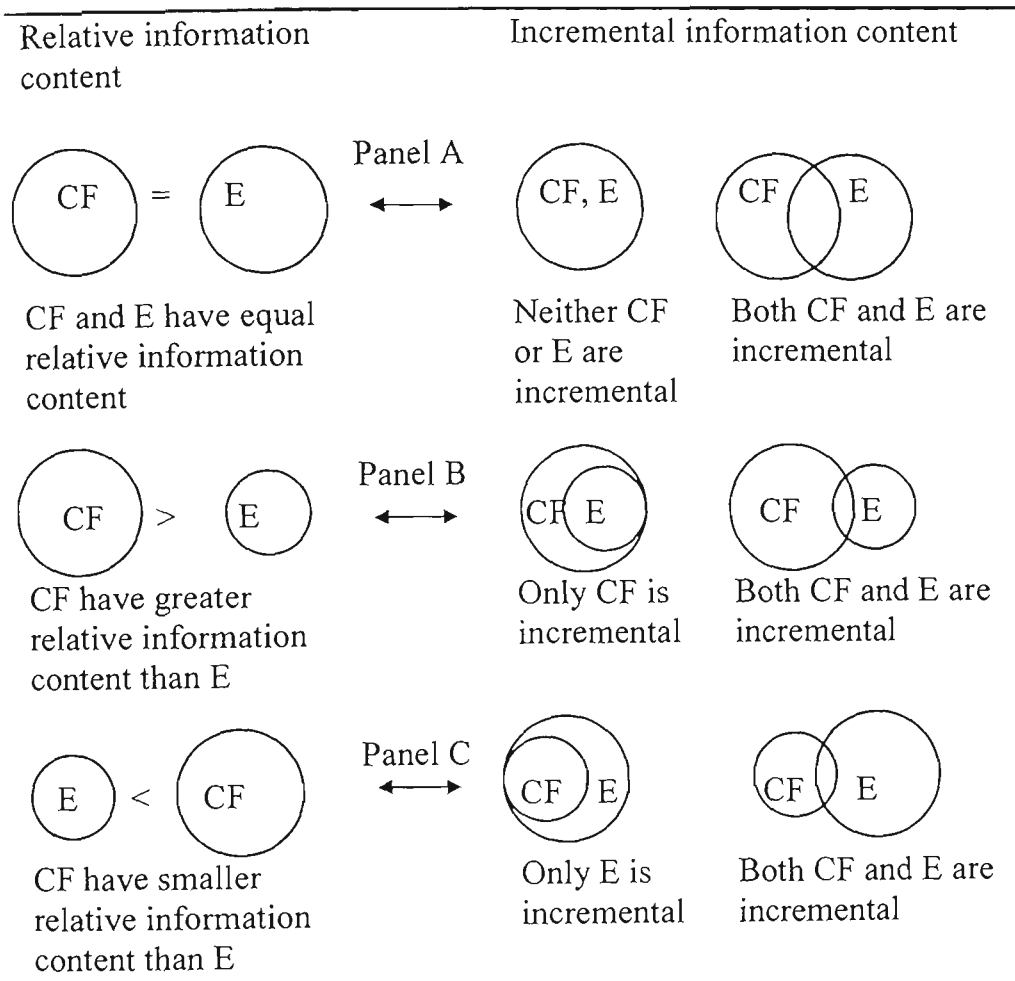
R_{jt} *is security returns*
NetCF is the net cash flows
$E(R_{jt})$ *is expected value of* R_{jt}
$E(R_{jt} \mid NetCF)$ *is expected value of* R_{jt} *given signal NetCF*

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.

3. 2 Incremental and Relative Information Content

The term incremental and relative information content became popular as a result and an extension of the studies on information content. Biddle *et. al.* (1995) provide an extensive explanation of the difference between these two types of information content. According to them, the term incremental information content is used to assess whether one accounting measure or a set of measures provides information content beyond that provided by another. This term applies when one or more accounting measures are considered as given and an assessment is desired regarding the incremental distribution of another. In accounting research, tests for incremental information content have been applied extensively to address questions such as the incremental information content of cash flows (earnings) beyond earnings (cash flows) and the incremental information content of additional financial disclosure (Biddle *et. al.*, 1995).

Figure 3-1: Relative versus incremental information content



Source: Biddle et. al., 1995. p4.

- E = cash flows
- CF= Earnings

Biddle *et. al.* also argued that the term "relative information" content is not used to test whether one accounting measure provides information beyond that provided by another, but rather which measure provides greater information content. The term relative information applies when ranking two or more sets of information content, or when a choice is being made among mutually exclusive alternatives. For example, relative comparison applies when accounting policy makers either make or choose among alternative accounting treatments for reporting results of a firm's operations. This term also can be used when mutually exclusive design choices are made among alternative empirical specification and proxies (Biddle *et. al.*, 1995).

Figure 3-1 shows the mapping between relative and incremental information content comparisons. The areas covered by circles in the table indicate the proportion of variation in a dependent variable explained by predictor variables, for example, CF (cash flows) and E (earnings). The left column of figure 3-1 represents the outcome situation of three relative information contents while the right column indicates the corresponding condition of incremental information content for CF and E.

In terms of statistical dependency, the incremental and the relative information content are a conditional statistical relationship between some accounting variables and security returns. The conditioning variables in this study are the component of cash flows and earnings.

For example, say that historical cash flows (NetCF) consist of total cash flows from operations (Op), financing (Fin) and investment (Inv). The test for no incremental information content of operating cash flows (Op) may be represented by the following relationship:

$$E(R_{jt} | Op, Fin, Inv) = E(R_{jt} | Fin, Inv) \qquad (3\text{-}2)$$

Where:

R_{jt} is security returns
$E(R_{jt} \mid Op, Fin, Inv)$ is expected value of R_{jt} given signal Op, Fin, and Inv and
$E(R_{jt} \mid Fin, Inv)$ is expected value of R_{jt} given signal Fin, Inv

The issue here is to test whether the additional variable, operating cash flows, changes the expectation of the security return distribution. Stated differently, *do operating cash flows have information content if financing cash flows and investing cash flows hold constant?* (Jennings, 1987). This is the general notion of the hypothesis adopted in this study to test the incremental information content of the component of cash flows and earnings.

In testing the relative information content of operating cash flows the conditioning variables may be financing cash flows, and investing operating cash flows or historical cash flows. In the null hypothesis, the statistical relationship may be represented as:

$$E(R_{jt} \mid Op, NetCF) = E(R_j \mid NetCF) \qquad (3\text{-}3)$$

Where:

R_{jt} is security returns
$E(R_{jt} \mid Op, NetCF)$ is expected value of R_{jt} given signal Op and NetCF
$E(R_{jt} \mid NetCF)$ is expected value of R_{jt} given signal NetCF alone

The issue here is that whether one component of historical cash flows, say operating cash flows, change the expected distribution of returns, given that the aggregate variable of accounting data (NetCF) is already known. Stated differently, is the aggregate accounting measure (NetCF) alone sufficient to describe the relationship behaviour between return and its components (Jennings, 1987). This is also the general notion of the hypothesis adopted in this study to test the relative information content of the component of cash flows, given aggregate (net) cash flows.

In summary, the present study uses the above definition of incremental and relative information content to test the information value conveyed by cash flow measures. The purpose is to test the ability of components of cash flows to reflect the net effect of all signals affecting share returns. Also in this study, the information value conveyed by cash flow measures and income numbers is compared. The purpose is to test the ability of these two sources of information individually or collectively to capture the net effect of all of the signals that affect a firm's security returns.

3. 3 Cash Flows and Their Components

As stated in Section 1.3, the first research objective of the current study is to investigate the ability of the cash flow component in predicting future cash flows. Under AASB 1026, the cash flow component is classified according to cash flows from operating, investing and financing activities (as discussed in the variable specification section). In the next paragraph, the relevance of these cash flow variables in predicting future cash flows of the firms is discussed. The consideration for each component of cash flows to predict future cash flows is based on the previous empirical studies and theoretical judgement.

3. 3. 1 Operating Cash Flow

Operating cash flows indicate the amount received from and spent for the main transactions of the company throughout the year. A positive net cash flow from operating activities is expected by every reporting entity. The higher operating cash flow position, the higher the firm's ability to finance other activities. As pointed out

by AASB 1026, the information provided in a statement of cash flows may assist in assessing the ability of a company to generate net cash flows in the future; meet its financial commitments, including the servicing of borrowing and the payment of dividends; and obtain external finance where necessary. This notion implicitly suggests a company could not finance its activities without having enough positive operating cash flows.

The empirical literature also reveals that most of the previous studies have focused on a single aspect of cash flows, namely, cash from operations (e.g: Rayburn, 1986; Charitou, 1997; and Charitou and Vafeas, 1998). The results of these studies are inconclusive; some studies indicate a strong association between cash flows from operations and share prices, while a few of them indicate no association. The emphasis on this component of cash flows is not surprising because most valuation models suggest that unexpected operating cash inflows or outflows in the current period should influence share prices through their effect in the current and future cash flows (Livnat and Zarowin, 1990). For example, the dividend discount model assumes that the value of current equity can be undertaken by discounting future expected cash flows at the cost of equity capital to arrive at the present value. Mathematically, the model can be represented as,

$$V_j = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \ldots + \frac{Dn}{(1+k)^n} \qquad (3\text{-}4)$$

Where: V_j = *value of stock j*
$D_{1,\,2,\,\ldots n}$ = *cash flows during period t*
k = *required rate of return on stock j*

This model implies that the current value of stock j is dependent upon current and future cash flows. Accordingly, the two justifications underlying the importance of

operating cash flows above suggest that the operating cash flows should have significant association with share prices.

3. 3. 2 Financing Cash Flow

The second component of cash flow statement is cash receipts from and payments for financing activities. This component indicates the sources and uses of a firm's capital (capital structure). The most prominent theory in finance literature dealing with the capital structure is the Modigliani and Miller (MM) theory (1958). This theory analyses the debt financing decision and its effects on security prices. According to MM, in perfect capital markets, the market value of any firm is independent of its capital structure. In other words, in the absence of market imperfections the use of debt, common stocks, and preferred stock will not influence the value of the firm since these instruments are perfect substitutes and the way to finance firms. The MM theory also contends that the securities should not be sold at different prices in the same market at the same time. If it were the case, an arbitrage advantage, an opportunity for a risk-free profit, would exist. However, this arbitrage eventually will force the new value of the company into its equilibrium value and risk free opportunities will be arbitraged away.

3. 3. 3 Investing cash flows

The last component of a cash flow statement is cash flows from investing activities. These cash flows reflect the company's ability to obtain funds from and to finance investments. The importance of these cash flows to predict future cash flows can be traced in the empirical literature in economics. In general this literature

emphasizes the fact that investment is highly correlated with cash flows or measures of internal funds (Gilchrist and Himmelberg, 1995; Vilasuso, 1997). Two possible explanations on this significant correlation are that investment is directly tied to available internal funds, and, more plausibly, shocks to current earnings affect future net worth (Gilchrist and Himmelberg, 1995). Gilchrist and Himmelberg (1995) also state that in periods when current profits are high, the cost of funds is low, and firms invest more. This increase in investment is an addition to the increase caused by the fact that rising profits signal investment opportunities. This profit eventually influences the stock price.

The direct relevance of investing cash flows in relation with share prices can also be drawn from the work of Miller and Rock (1985). Miller and Rock argued that increases in investments will generally be followed by higher cash flows. Thus, there will be a positive relationship between the announcement of the new investment decisions and stock returns. Empirical studies from McConnel and Muscarela (1985) support this assertion.

3. 4 Cash Flows and Earnings

Many studies have examined and compared the information content of cash flows and earnings (e.g: Livnat and Zarowin, 1990; Clubb, 1995; Ingram and Lee, 1997). The empirical studies indicate that earnings have information content, implying earnings can be used to predict future cash flows. The explanation of this result may be that earnings, as reported in the income statement, has been used by a wide range of users as the summary of firm performance (Dechow, 1994). Meanwhile cash flow data has received serious attention in the last decade, and the

cash flow figure is also expected to have predictive ability of future cash flows. Evidence of previous studies is consistent with this expectation (e.g: Ali and Pope, 1995; Wilson, 1987).

Since both income and cash flow statements individually may have information value, the question arises as to whether or not these two statements are mutually exclusive or inclusive. If the two statements convey *inclusive* information, the information conveyed by one statement should be incremental to the information provided by another statement. In other words, the information of cash flows (earnings) is marginal to that of earnings (cash flows).

In contrast, if income and cash flow statements provide mutually *exclusive* information, then cash flow data should have relative information to earnings figures or earnings figures should have relative information to earnings figure cash flow data. If this is so, the cash flow data (earnings) should provide greater information content than earnings (cash flows).

3. 5 Capital Market Evidence on Information Content of Cash Flows

The purpose of this section is to review capital market evidence on the current state of information content and incremental information content of cash flows in relation to earnings, dividends and security prices. As depicted in table 3-1, there are thirty-two major market-based accounting studies, which use different motivations. Each is presented according to the source of the data used in the studies: USA, UK, and Australia and New Zealand. Each study of these countries is also presented according to the purpose of the study, methodology utilised, principal findings and the limitations. The last part provides a summary and general conclusions.

3. 5. 1 USA-based studies

There are a number of past studies provided by US researchers concerned with information content of cash flow data. Two approaches have been utilised extensively: cash flow-return method and cash flow-dividend method. The former is concerned with the relationship between cash flows and security prices and the latter is regarded as the ability of cash flows to explain dividend changes. This review of studies on cash-flow information content will be summarised and discussed under these two approaches.

Ball and Brown (1968) conducted an early study that examined the relationship between earnings and cash flows, and security returns, by utilising the efficient market hypothesis. Their study is often considered to be the foundation of market-based accounting research today (Lev and Ohlson, 1982). The results indicated that earnings explain security prices significantly more than cash flows. However, Beaver and Dukes (1972) questioned the results of Ball and Brown due to the measurement of accounting earnings, which unfortunately had been a major concern of users of accounting data. Beaver and Dukes then investigated this relationship. The result of the Beaver and Dukes study is consistent with Ball and Brown's, that earnings had a significantly greater relationship to security returns than cash flow data. The consistent conclusion provided by these two studies, however, should be interpreted carefully for the following two reasons. First, the cash flow measure used was clearly subject to criticisms in the literature because of employing traditional cash flow measures, which were computed by adding back depreciation, amortisation and depletion to net income. Second, these studies did not test for incremental information content, but only tested relationships among the

Table 3-1: A Summary of Studies on Information Content of Cash Flows and Earnings

Author(s) and Years	Sample Size (Country)	Research Method	Variables	Principal Findings
Ball and Brown (1968)	261 firms 1946-1966 (USA)	Multiple regression	2 earnings 1 cash flow	Earnings was associated to stock prices significantly more than cash flow.
Beaver and Dukes (1972)	123 NSYE firms (USA)	Multiple regression	2 earnings 1 cash flow	Earnings related more than cash flow to the residuals of stock returns.
Belkaoui (1982)	66 firms (USA)	Multiple regression and ratio method	2 accrual based ratio 1 cash flow ratio	Accrual based ratio provided more information than cash flow in determining security prices.
Harmon (1984)	123-126 firms (USA)	Multiple regression and event study	3 income 6 fund flow	All variables indicated low correlation with market reaction.
Wilson (1986)	322 manufacturing firms (USA)	Multiple regression and two-event study	2 accrual 2 cash flows	Cash flow and accruals had information content beyond earnings. Accruals had information content beyond cash flow.
Lipe (1986)	81 firms Excl. bank and insurance firms (USA)	Multiple regression and CAPM model	6 accruals 1 earnings	Accrual components possessed more information than earning alone.
Rayburn (1986)	175 firm Excluding bank and utilities (USA)	Multiple regression and two-event study	1 total accrual 1 cash flow	Accruals provided information content beyond funds.
Schaefer and Kennelley (1986)	All companies on both the Compustat and the CRSP for the year of 1977-1981 (USA)	Multiple regression	1 earnings 3 cash flow both traditional and refined variable	Both refined and traditional cash flow provided information content. Traditional cash flow provided more information content beyond earnings than refined cash flow
Bowen, Burgstahler, and Daley (1987)	98 firms (USA)	Multiple regression	2 earnings 2 cash flow	Cash flow had more information content than accruals. Earning provided information content more than cash flow.
Wilson (1987)	379 firms (USA)	Multiple regression	1 earnings 2 fund flow	Cash flow provided greater information content than earnings and accrual.
Ismail and Kim (1989)	272 firms (USA)	Multiple regression	1 earnings 2 fund flow 1 cash flow	Cash flow and fund flow had information content beyond earnings.
Board and Day (1989)	39 manufacturing firms (UK)	Multiple regression	1 earnings 2 cash flow	Earnings had information content beyond cash flow.
Bernard and Stober (1989)	177 firms (USA)	Multiple regression	Replicate study of Wilson's (1986, 1987)	Cash flow and accruals were unsuccessful in explaining stock market behaviour.
Barlev and Livnat (1990)	239 firms (USA)	Multiple regression	Cash flow ratios Traditional ratios	Cash flow ratios were more highly related to return than traditional measures.
Livnat and Zarowin (1990)	345-382 firms (USA)	Multiple regression and MM valuation model	1 accrual 14 cash flow	Disaggregating net income into accruals and components of cash flow, provided information content.
Charitou and Ketz (1990)	70 firms in the retail industry (USA)	Multiple regression and CAPM model	1 earnings 3 cash flow	Earnings was valued more than cash flows. Cash flow and accrual provided equal information to the market.

Table 3-1 continued

Author(s) and Years	Sample Size (Country)	Research Method	Variables	Principal Findings
Charitou and Ketz (1991)	403 firms (USA)	Multiple regression and CAPM model	1 accrual 4 cash flow	Cash flow components had a strong association with the market value.
Arnold, Clubb, Manson and Wearing (1991)	171 firms (UK)	Multiple regression	1 earnings 2 fund flow 4 cash flow	Cash flow did not provide information content.
Simons (1992)	A six-year data from Compustat (USA)	Multiple regression	3 cash flow 1 earnings 1 dividend	Cash flow did not have information content beyond earnings and dividend.
Ali (1994)	8820 firm-years (USA)	Multiple regression	1 earnings 1 cash flow 1 working capital	Cash flow had no information content beyond earnings and working capital.
Ali and Pope (1995)	1160 firm-years (UK)	Multiple regression	1 earnings 1 cash flow 1 fund flow	Earnings, cash flow and fund flow provided information content.
Clubb (1995	48 firms (UK)	Multiple regression and MM valuation model	1 earnings 1 cash flow 3 fund flow	Earnings possessed information beyond cash flow.
Seng (1996)	52 firms for 1990 and 1991 40 firms for 1992 (New Zealand)	Multiple regression	1 earnings 4 cash flow	New Zealand investors appear to continue to rely on accrual earnings over cash flow information.
Cotter (1996)	62 firms (Australia)	Multiple regression	1 earnings 3 cash flow 2 accruals	Earnings had higher association than cash flow to stock returns.
Ingram and Lee (1997)	1000 firms Financial institution excluded (USA)	Multiple regression	1 earnings 1 cash flow	Jointly cash flow and earnings were important for observing firm's performance and prospects.
Chia, Czernkowski, and Loftus (1997)	915 firm-years (Australia)	Multiple regression	1 earnings 1 cash flow 2 accruals	Accruals and cash flow provided better information than earnings.
Charitou (1997)	2894 firm-year observations (UK)	Multiple regression	1 earnings 1 cash flow	Cash flow had a more important role when considering the operating cycle, magnitude of accruals and the measurement of interval.
Cheng, Liu and Schaefer (1997)	3,982 firm-year observation (USA)	Multiple Regression	1 earnings 2 cash flows	Reported cash flows from operation had significant incremental explanatory powers after controlling earnings and estimated cash flows from operations.
Charitou and Vafeas (1998)	5,997 firm-year observations (USA)	Multiple regression	1 earnings 1 cash flow 2 dividend 1 growth	The relationship between cash flows and dividend changes depended upon the magnitude of total accruals and growth. There was no relationship between cash flows and dividend changes.
Wang and Eichenseher (1998)	3,010 firm-year observations. Financial and utility firms excluded (USA)	Multiple regression and CAPM model	1 earnings 1 cash flow	The incremental informativeness of cash flows is an increasing function of its predictability and a decreasing function of the predictability of earnings.
Garrod and Hadi (1998)	156 firms	Multiple regression	1 accrual 10 cash flows	Disaggregation of cash flows did not improve information content. Cash flow variables and cash flow per share provide similar amount of information.

variables (Bowen, *et. al.,* 1986). These studies reflected the thinking of the period by many users of accounting information that earnings were more meaningful than cash flow data. Therefore, these early studies seem to support the validity of FASB's notion that earnings are a better predictor and indicator of future earnings than cash flow (Charitou, 1997).

Belkaoui (1982) was concerned with issues about the superiority of accrual accounting over cash accounting, which was central to the determination of the objectives and the nature of financial reporting. He investigated the relative merits of derived performance indicator numbers from both accrual and cash flow accounting. He used a ratio approach and obtained a result that was closely related to the previous studies. The earning-based ratio, which Belkaoui assumed was the product of accrual accounting, had a stronger relationship to stock prices than a cash-based ratio. However, due to the small size of the sample, the ability to support the theory must be questioned.

Similar to Belkaoui (1982), Harmon (1984) used a ratio approach to test the superiority of earnings over cash. However, Harmon examined nine variables, rather than three variables, from income and cash-based accounting. The Cramer statistic was used to measure the relative strength of association between each variable and market reaction. The Cramer statistic indicated that all variables had a poor association with the market change but earnings were the superior variable. The short-term nature of the sample period is a major criticism of this study.

Since there are consistent results from the previous studies that earnings explain security prices, a number of studies were directed toward the content of

earnings, mainly accruals[1]. One study of this type is by Wilson (1986, 1987), who decomposed earnings into current accruals, non-current accruals, working capital from operations (fund flows), and cash flow from operations. He tested whether the components of accruals in general provided incremental information. The studies indicated that earnings accruals had information content beyond cash flows and that cash flows and accruals jointly had information beyond earnings alone.

Similar studies by Rayburn (1986) and Lipe (1986) indicated a result consistent with Wilson's (1986) study. However, Rayburn's study suffered from at least three deficiencies. First, the result might not be generalisable to smaller firms because samples in the study were large firms as restricted by the sample criteria. Second, there are specification issues that introduce some ambiguities into the interpretation of the results. Finally, the study lacks a theoretical structure to support the claims (Jennings, 1986).

Wilson's studies (1986, 1987) have also been criticised in the literature because it used only two quarters of data for the time periods, from 1981 to 1982. Bernard and Stober (1989) even doubted the validity and robustness of Wilson's studies. They then replicated the study by using data for over 32 quarters. Their study indicated that only in two-quarter periods was the result consistent with that of Wilson's, but there was no evidence for a similar result for the longer period of 1977-1984.

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[1] For example, Wilson (1986) decomposed earnings as follows:
Cash flow from operation + Current accruals = working capital from operation,
working capital from operation + non-current accrual = Accounting earnings.
Current accruals include such items as increases in inventories and receivables and decreases in payables while non-current accruals include depreciation, amortisation, depletion, and deferred taxes. Accounting earnings was defined as net income before extraordinary and discontinued operations.

In addition to studies using a crude definition of cash flows, some studies attempted to use more refined definitions as suggested by Gombola and Ketz (1983) and Largay and Stickney (1980). Two refined definitions of cash flows were: the cash flow that was computed as working capital from operations plus decreases in current assets other than cash and increases in current liabilities, and the cash flows as in the former cash flow definition but excluding current maturities of long-debt. According to Gombola and Ketz (1983) the refined cash flow definition provided an earlier sign of financial distress than that did other financial ratios and earnings information. Largay and Stickney (1980) indicated that cash flow ratios contain information that is separate and distinct from earnings-based information.

Schaefer and Kennelley (1986) compared the incremental information content of these three cash flow measures over accrual earnings. The empirical result showed that accounting earnings provided information content beyond the various measures of cash flows and refined cash flow did not support greater association with stock prices. This result was consistent with Bowen *et. al.,* (1987) but was contrary to results of Ismail and Kim (1989) that cash flows and fund flows had information beyond earnings. Barlev and Livnat (1990) also provided a consistent result with Schaefer and Kennelley even though Barlev and Livnat used a ratio approach. The study by Schaefer and Kennelley, however, suffered from limitations that prevent it from providing strong evidence of the importance of the cash flow. First, collinearity among independent variables occurred and thus incremental effects would not be expected. Another problem was the assumption underlying the study that the market reacts to the cash flow disclosures of pooled sample firms in a similar fashion to industrial and individual behavior.

At the beginning of the 1990s the most comprehensive study to examine the component of cash flows was undertaken by Livnat and Zarowin (1990). They doubted the previous studies that mostly emphasised operating cash flows. Livnat and Zarowin examined fourteen components of cash flows, including accruals, and revealed that operating cash inflows were positively associated with stock returns, but cash outflows were negatively associated with stock returns. When looking at individual components of cash flows, the result suggested that debt issue was positively associated, stock issue weakly but positively associated, and dividends positively associated with stock returns. In addition, when they disaggregated net income into operating cash flows and accruals, this disaggregating did not contribute to the associations with security returns beyond the contribution of net income alone. However, the disaggregation of financing and operating cash flows into their components improved the degree of association, which was not found with components of investing flows. Even though the results provided by Livnat and Zarowin were robust, the study still had a limitation: that is, the use of crude proxies of cash flow components. This weakness occurred because of data from pre-SFAS No.95 that was introduced in 1987. However, the study was an initial comprehensive examination of the cash flow components, as a contrast to most of the previous studies concentrating only on the operating cash flows.

Unlike previous studies which employ returns as the measure of a firm's value, Charitou and Ketz (1990, 1991) used cross-sectional valuation in testing the association of cash flows from operating, financing and investing activities with the market values of the firm. In particular, Charitou and Ketz employed the CAPM approach by extending the work of Rayburn (1986) and Wilson (1986, 1987). In

these two studies, Charitou and Ketz defined the value of information as a statistical relationship between accounting data and security prices. With 403 firms in the sample from Compustat and Centre for Research in Securities Price Database for the period 1968 to 1985, the 1991 study found that accrual and cash flow components of earnings were valued in the market place. More specifically, cash flow information from operations, cash available for dividends and cash available for investments were associated with positive price movements. The 1990 study by Charitou and Ketz, however, indicated that earnings were valued more than cash flows, and cash flows and accruals provide equal information in explaining security prices.

Although the model used in the study by Charitou and Ketz suffers from a heteroskedastic problem, the study indicates an improvement compared to previous studies in the sense that the model used did not have serial correlation, and that the analysis was conducted in terms of a year-by-year basis. In addition, in terms of the valuation of securities, the result of this study contributes to the understanding of the role of accrual and cash flow measures in explaining share price movements.

The studies discussed above mainly assume a linear relationship between returns and cash flow data and earnings. Ali (1994) used both linear and non-linear relationships when examining the incremental information content of earnings, working capital from operations and cash flows. With the sample of 8,820 firm-years covering the period 1974 to 1988, the linear and non-linear models indicated that earnings had information content beyond working capital and cash flows. Working capital also had incremental information content beyond earnings and cash flows. The two models yielded different results when Ali examined the information content of cash flows. In the linear model, cash flows had no incremental information

relative to earnings and working capital. Cash flows had incremental information content for the low changes of the cash flow, but the cash flows had no incremental information content for firm-years in the high change group in the non-linear model. However, since it is difficult to determine the type of non-linear models, the result from the non-linear study by Ali may be difficult to interpret.

So far the studies have contrasted cash flow data and earnings in explaining security price behavior. Ingram and Lee (1997), on the other hand, investigated information provided jointly by accrual and cash-based measures. The idea behind this study was that both proxies were outcomes of the accrual accounting measurement process. The tests were based on approximately 1,000 US companies covering the period 1974 to 1992. In this study, Ingram and Lee (1997) concluded that cash flow and income measures together were useful for evaluation of growth and growth prospects of firms.

At the end of 1997, Cheng, Liu and Schaefer (1997) assessed the importance of the cash flow statement as required by FASB no.95. The motivation for this study is that previous studies did not provide consistent evidence on the incremental information content of cash flows and they used estimated rather than reported cash flows. These estimated cash flows, according to them, are noisy. In this study, Cheng, Liu and Schaefer found the estimated cash flows fail to show significant market effects after actual FASB no.95 disclosures are included in the analysis. Inversely, the reported cash flows continued to have information content in market association beyond estimated cash flows from operations. Cheng, Liu and Schaefer (1997) concluded cash flows from operations are relevant disclosures for investment. Thus, this study supports FASB no.95 "Statement of Cash Flows". The focus on cash

flows from operations may be the serious limitation of this study.

Wang and Eichenseher (1998) investigated the relationship between the informativeness and the predictability of cash flow data. In this study, predictability is defined as the ability of an accounting variable to predict future cash flows. The focus on the relative predictability of cash flows is motivated by the insights of recent analytical models for capital market research. Using two-signal capital asset pricing models, this study indicated the incremental information content of cash flows is an increasing function of its predictability and a decreasing function of the predictability of earnings. This suggests, according to Wang and Eichenseher, that the informativeness of alternative information is an important factor in examining the incremental information of cash flows. This study documents that cash flow disclosures possess incremental information content beyond that reflected in accrual earnings, but this study did not attempt to provide evidence on whether cash flow disclosure has relative information content given earnings. In addition this study also did not answer whether the cash flows themselves have information value in predicting future cash flows.

The studies conducted in the USA generally evaluate the information content of cash flow data and earnings in relation to security prices, which is called a cash flow-return approach. Two recent studies, however, employ a cash flow-dividend approach in assessing the usefulness of cash flow data. Simons (1992), for example, investigated cash flow as a variable in the dividend-change model. The independent variables in her study were cash flows from operations, net current operating funds and total cash flows before dividends; and dividend change as dependent variables. From the data of dividend changes for the period of 1983-1984 and 1984-1985,

Simons (1992) found that none of the cash availability measures add incremental value to profits and previous dividends in explaining dividend changes. In other words, cash flow data did not have information content beyond earnings.

Since Simons's study suffered from a possible limitation for the use of two-period data, Charitou and Vafeas (1998) tried to replicate the study with a larger sample and to use more refined cash flow measures. In this replication study, Charitou and Vafeas found similar results to that of Simons's; there was no significant relationship between dividend changes and operating cash flows. If there is a link, according to their findings, the relationship depends upon the magnitude of total accruals and growth opportunities.

3. 5. 2 UK-based studies

Although the importance of the cash flow data and earnings has been addressed extensively in the USA, studies on this topic have only recently commenced in the United Kingdom (UK). All these studies employ a cash flow-return approach to determine the (incremental) information content of cash flows. Board and Day (1989), for example, examined the link between earnings and share prices. Board and Day used cumulative average return as the dependent variable and measures of earnings as independent variables. These earnings measures included traditional historical cost accounting return, working capital based rate of return and quick asset based rate of return. With the sample for the years 1961 to 1977, Board and Day found that there was substantial information content in the traditional historical cost accounting number but very little information given by two measures that were closest to cash flow measures. This finding suggested that the traditional

rate of return had more information content than two measures that were closer to cash flows. These findings were consistent with Clubb's (1995) results.

However, Ali and Pope (1995) doubted the validity of the three performance measures employed by Board and Day (1989). Ali and Pope extended Board and Day's study by incorporating some recent innovations in the specifications of earnings-returns model. Ali and Pope (1995) found results inconsistent with Board and Day: that is, cash flows had value-relevant incremental information for equity investors beyond earnings and funds flow. In a similar study, Charitou (1997) strengthened the result of Board and Day, particularly when incorporating the operating cycle, magnitudes of accruals and measurement interval in the cash flow-return relationship.

New evidence on the usefulness of cash flows in the UK is provided by Garrod and Hadi (1998). The purpose of this study was to evaluate the usefulness of cash flow data as required by FRS 1 and introduce cash flow per share as a possible development that may contain information value for security markets. The sample for this study consisted of 156 industrial firms quoted on the London Stock Exchange that were in existence for the period of 1977 to 1991 inclusive. In general, Garrod and Hadi (1998) found that except for cash flows from taxation and from financing activities, five sub categories of cash flows identified in FRS 1 had incremental information content. When these five components were decomposed into ten components of cash flows, the disaggregation did not improve the information content. Garrod and Hadi (1998) also indicated that cash flow per share did not possess any incremental information content beyond cash flow variables nor did a cash flow variable have any incremental information content beyond cash flow per

share. In general, Garrod and Hadi (1998) concluded that their findings supported the requirement to disclose cash flows under FRS 1.

3. 5. 3 Australia and New Zealand studies

In Australia, studies that examined the association of cash flows and earnings with security prices have also 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 before 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.

3. 5. 4 General Assessment of Evidence on Information Content of Cash Flows

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.

Finally, these previous studies generally emphasise a certain component of cash flows, namely operating cash flows or the aggregate of cash flows. These studies also focus on incremental rather than relative information content. Nevertheless a comprehensive study assessing the predictive ability of cash flow components on security returns after the enactment of cash flow accounting standards such as AASB 1026 has not been explored. In addition, a study that examines whether cash flow disclosures have both incremental and relative information content, given earnings figures, is scarce. This study addresses the above issues.

3. 6 Summary

In this chapter the concept of both information content and empirical evidence of previous studies on the usefulness of cash flows were discussed. A conceptual framework of the relationship between cash flow, earning and security returns was also presented. The market-based accounting research literature suggests that there is some doubt about the information content of cash flow disclosures. Some studies report the information content of cash flow data, while other studies indicate the opposite result. In addition, the majority of studies show cash flow data has less information value than that conveyed by earnings. These empirical results on information content, however, are mainly generated from the USA and UK studies. A study that explores these issues in Australia is still warranted.

This study is different from previous studies in many aspects and contributes to the market-based accounting research in the following ways. First, it focuses on the components of cash flows, rather than aggregate cash flows. In this sense, the test will be less restrictive because all variables used in this study will represent the content of the cash flow statement. Second, while previous researchers have not explicitly tested the relative information content of cash flows, in this study it will be explicitly addressed by testing several components of the aggregate cash flows. Third, most previous studies used estimated cash flows. In the current study reported cash flows will be employed and thus test the usefulness of the cash flow statement since it was mandated. The next chapter provides a detailed discussion on the methodology used to conduct this study.

CHAPTER 4

METHODOLOGY

This chapter introduces the research methodology employed in the study. It consists of five main sections. The first section describes the proposed hypotheses. Section two defines the variables and their measurement. The third part is the empirical design to test the hypotheses, which include the regression models and the statistical tests. Section four describes the data and its criteria. The last section describes the factors that may influence the robustness of hypothesis tests.

4. 1 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.

In the light of the natural behaviour of the relationship between cash flows and security returns, there are two issues addressed in this study. The first issue is whether a certain component changes the expectation distribution of returns. The test will be conducted to determine whether each component of the cash flow statement (as defined in Section 4.2) contributes to the ability of cash flows to alter the

expectation distribution of returns after controlling for other components. This type of information content is referred to as incremental information content. The second issue is whether a certain component of cash flows has a similar ability to alter the expectation distribution of returns to the other components of the cash flow statement. This type of information content is referred to as relative information content.

Tests of incremental and relative information content are an integral element in achieving the general objective of the present study. The combination of the empirical evidence on the incremental and relative information content of the component of cash flows provides evidence about the relationship between cash flow statement and security prices. This combination is tested to answer the first specific objective of this study. In addition, the current study investigates and compares the incremental and relative information content of cash flow data versus earnings figures. This comparison addresses the second specific objective of this study. Accordingly, the joint results of the first and second specific purposes will provide information about the information content of cash flow disclosures as required by the AASB 1026 *"Statement of Cash Flows"*. The following section describes proposed hypotheses to achieve the two objectives.

4. 1. 1 Cash Flows and Their Components

As stated in Section 1.3, the first research objective of the current study is to investigate the ability of the cash flow component in predicting future cash flows. The cash flow component is classified according to cash flows from operating,

investing and financing activities (as discussed in the specification variable section below). Given the relevance of cash flow data from operating, financing and investing activities in relation to share prices as discussed in section 3.3 of the previous chapter, five sets of hypotheses are proposed (stated in its null form) as follows.

H_{o1}: Historical cash flows do not 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_{o2}: Total operating, investing and financing cash flows do not 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_{o3}: Total operating, investing and financing cash flows do not have relative information content.

The third hypothesis is to test whether or not the aggregate of each of the three components of cash flows provides identical information in predicting future cash flows. Hypothesis three is a corresponding hypothesis for hypothesis two.

H_{o4}: Components of total operating, investing and financing cash flows do not have incremental information content.

The fourth 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.

H_{o5}: *Components of total operating, investing and financing cash flows do not have relative information content.*

Hypothesis five is a corresponding hypothesis to hypothesis four and is to test whether or not each of the detailed components of cash flows has identical information in predicting future cash flows.

4. 1. 2 Cash Flows and Earnings

The second objective of the current study is to compare the ability of cash flows and earnings in predicting future cash flows. The issue addressed here is whether two sources of information (cash flow statement and income statement) provide information in predicting future cash flows jointly or individually. The following hypotheses (stated in null form) are constructed to test this issue.

H_{o6}: *Historical cash flows do not have incremental information content beyond that provided by earnings alone.*

Hypothesis six tests whether historical cash flows received during a year have additional information content after controlling for the variable of earnings.

H_{o7}: *Historical cash flows do not have relative information content, given earnings alone.*

The seventh hypothesis to test whether or not historical cash flows have identical information to the earnings variable in predicting future cash flows. Hypothesis seven is the corresponding hypothesis to six.

H_{o8}: *Total operating, investing and financing cash flows do not have incremental information content beyond that provided by earnings alone.*

Hypothesis eight tests whether or not the aggregate of each of the three components of cash flows adds information to predict future cash flows when earnings variable is

controlled.

H_{o9}: Total operating, investing and financing cash flows do not have relative information content, given earnings alone.

The ninth hypothesis is to test whether or not each of the three components of cash flows has identical information to the variable of earnings in predicting future cash flows. Hypothesis nine is the corresponding hypothesis to eight.

H_{o10}: The components of total operating, investing and financing cash flows do not have incremental information content beyond that provided by earnings alone.

The tenth hypothesis is to test whether or not each of the detailed components of cash flows adds information to predict future cash flows after controlling for earnings variable.

H_{o11}: The components of total operating, investing and financing cash flows do not have relative information content, given earnings alone.

Hypothesis eleven is to test whether or not each of the detailed components of cash flows provides similar information to the variable of earnings in predicting future cash flows. This hypothesis is the corresponding hypothesis for ten.

4. 2 Definition and Measurement of Variables

The typical statistical method to measure relationship between cash flows and security returns is to employ a multiple regression technique. This method has the ability to separate each independent variable with respect to other variables so that estimated coefficients capture only the incremental effect of each independent variable on the dependent variable. In this study, the dependent variable is yearly returns of the companies. The independent variables involve both the aggregate and

component of cash flows, and earnings. Table 4-1 provides a summary of the variables included in the current study. The following discussion describes the definition and measurement of the variables incorporated in the models, and variable specifications used to test the hypotheses.

4. 2. 1 Return Variable

The dependent variable employed for all multiple regression models in this study is the security returns. 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:

$$R_{jt} = \frac{(P_{jt} - P_{jt-1}) + D_{jt}}{P_{jt-1}} \qquad (4\text{-}1)$$

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 use of raw security returns as calculated by equation 4-1 has advantages over other approaches. According to Granger (1975), this calculation approach of security return mitigates many inherent problems associated with collinear variables, particularly with regard to causality and variable association. For instance, many previous studies used abnormal or cumulative abnormal returns as the explained variable (e.g: Livnat and Zarowin, 1990; Board and Day, 1989; Rayburn, 1986). These studies used the market model that requires information about certain

Table 4-1 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	$NetCf_{jt}$
• Earning per share scaled by price per share at the beginning of the year	E_{jt}
Dependent Variable	
• Annual return of a company j at time t	R_{jt}

Similarly, if the extra three months for the year t+1 (B, above) is included, then there will be returns that will reflect the events of the year t (Jennings, 1987).

The second alternative is to calculate security returns for the period beginning with the month after the previous year's announcement of accounting disclosures, for example CF_{t-1}, and ending with the month of the current year's announcement (D, above). The justification for this alternative is that the amount of cash flows at the end of the fiscal year are usually not known yet and the full effect from cash flow events occurring during the year may not be known. However, this procedure results in security returns that do not reflect that year's events (Jennings, 1987).

Previous studies such as Rayburn (1986) and Beaver, Griffin, and Landsman (1982) used both alternatives and showed similar results. The present study uses the fiscal year in calculating a firm's stock return (as A above). Table 4-1 specifies the return variable.

4. 2. 2 Cash Flow Variables

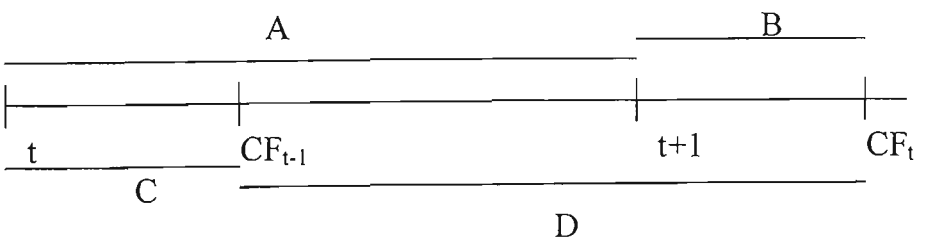
As explained in Chapter one, the purpose of the present study is to examine the information content of cash flows in Australia. Consequently, this study uses the AASB definition of components of cash flows in selecting the variables in the models. The components of cash flows are classified as cash flows 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".

observations during the preceding years to obtain the value of that year's abnormal return. This procedure also employed ordinary least squares as a typical method in estimating the abnormal return of the market model. However, as Roll (1977) contended the most fundamental difficulty of the market model actually lies with market estimation. For example, the estimation of abnormal returns can be based on 30 or 60 observations of a preceding fiscal year. The observation can also be daily or weekly security prices. This procedure of returns is judgmental.

The annual interval over which the returns are calculated is an important issue in the measurement of R_{jt}. Figure 4-1 shows the interval problem clearly (Jennings, 1987). Let t and t+1 represent the beginning of year t and t+1 respectively. Let CF_t and CF_{t-1} be the announcement date of cash flows, assumed to take place during the third month for the fiscal year t-1 and t respectively.

Figure 4-1 Possible Interval Returns



Two alternatives of the annual return can be seen from Figure 4-1. First is the fiscal year over which the cash flow is measured in A above. The consideration for this fiscal year is to test whether cash flows reflect the events of that year. If the first three months (C, above) are excluded, there will be events in that period affecting cash flows for the year t that will not be reflected in the calculation of returns.

> "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".

Given this definition, the variables of cash flows in this study are depicted in Table 4-1. These variables of cash flows are similar to those employed by Livnat and Zarowin (1990) and Cotter (1996), but this study differs because the present study uses reported rather than estimated cash flow data.

Previous studies used either level or change approach in specifying the cash flow and earnings variables. The level method is usually a regression of annual returns on the contemporaneous year's cash flows deflated by the beginning of the year prices (Livnat and Zarowin, 1990; Biddle and Seow, 1995). In change specifications, the previous years' cash flows or the beginning of the year price deflates the annual changes of cash flows (Bowen *et. al.*, 1987). Ohlson (1991), Easton and Harris (1991), and Biddle and Seow (1995) have demonstrated that the two approaches result in similar association with annual returns. The present study uses the level specification as those employed by Livnat and Zarowin (1990) and Cotter (1996). The inclusion of all components of cash flows in the model and the possibility of incomplete financial data of the firms for the time period tested (1992-1997) are the main consideration for not using the change approach.

The cash variables in Table 4-1 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. For the purpose of the comparison, however, total asset value reported in the annual financial statements is used as another deflator in this study. This deflator was used by Bernard and Stober (1989) and Wilson (1987).

4. 2. 3 Earnings

Net income is defined as net income after tax but before extraordinary items. This definition conforms to "AASB 1018: Profit and Loss Account". This definition was used in the study by Chia *et. al.* (1997). Similar to cash flows variable, earnings is on per share basis but deflated by the per share price or total assets as shown in Table 4-1.

4. 3. Empirical Design

As outlined in the previous section, the multiple regression models were used to test hypotheses. The following discussion describes the regression models and statistical inferences to test the eleven hypotheses.

4. 3. 1 Regression Models

This study employs six regression models to test eleven hypotheses identified in the earlier section. The first three models (equations 4-2 to 4-4) consist of three sets of cash flow components and are designed to address the first objective as reflected in hypotheses 1 to 5). The last three sets (equations 4-5 to 4-7) are the models of cash flows plus earnings and are designed to address the second objective of the present study. The last three model also come from equations 4-2, 4-3 and 4-4 but add the earnings per share (E) scaled by price per share at the beginning of the year.

The models proposed in the present study to test the first objective of the study are:

$$R_{jt2} = \gamma_0 + \gamma_1 NetCf + w_i \qquad (4\text{-}2)$$

$$R_{jt3} = \beta_0 + \beta_1 AgOp + \beta_2 AgFin + \beta_3 AgIn + v_i \qquad (4\text{-}3)$$

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

Where,
λ, γ, and β are estimated parameters,
w, v, and u are random disturbances, and
the other variables are as defined in Table 4-1

Equations 4-2, 4-3 and 4-4 are used to test hypotheses 1 to 5 defined in section 4.1.1. The first hypothesis is tested by using equation 4-2. The second and third hypotheses are tested by using equation 4-3. Equation 4-4, which represents the detailed component of cash flow statements and is the disaggregation of equation 4-3, is employed to test hypothesis four and five.

The second objective of this study is to test whether the information provided by cash flow data is incremental or relative to that conveyed by earnings. The models proposed are:

$$R_{j15} = \varphi_0 + \varphi_1 NetCf + \phi_1 E + w_j \qquad (4\text{-}5)$$

$$R_{j16} = \chi_0 + \chi_1 AgOp + \chi_2 AgFin + \chi_3 AgIn + \phi_2 E + v_j \qquad (4\text{-}6)$$

$$R_{j17} = \delta_0 + \delta_1 Cst + \delta_2 Spp + \delta_3 Tx + \delta_4 Int + \delta_5 Othop + \delta_6 Uinv + \delta_7 Obinv + \delta_8 Acqb + \delta_9 Obdebt + \delta_{10} PDebt + \delta_{11} Iseq + \delta_{12} Dev + u_j \qquad (4\text{-}7)$$

Where,
φ, χ, and δ are estimated parameters,
w, v, and u are random disturbances and
the other variables are defined in Table 4-1

Equations 4-5, 4-6 and 4-7 are used to test hypotheses 6 to 11. The sixth and seventh hypotheses are tested by using equation 4-5. Equation 4-6 is used to test hypothesis eight and nine. Equation 4-7, which represents earnings figure and the detail component of the cash flow statement, is to test hypothesis ten and eleven.

4. 3. 2 Statistical Test of Hypotheses

A firm's cash flow statement is said to have information content if it leads to a change in investors' assessment of the expected future returns (prices), such that there is a change in equilibrium market price. The information content is measured in terms of the degree of association of unexpected changes in cash flows with unexpected changes in security prices. Thus, for instance, historical cash flow data has information value when there is a strong association between cash flow measures and security prices or market value of the firm. The following sections discuss

statistical tests that need to be conducted to test research hypotheses of the present study.

4. 3. 2. 1 Information content of historical cash flows

For the purpose of testing hypothesis one, the significance of t-value of the regression coefficient in equation 4-2 is considered. This statistic value is used to determine whether hypothesis one would be rejected:

H_{o1}: $\gamma_1 = 0$ *(T-1)*
(Or no information content of historical cash flows)

The null hypothesis is rejected if the coefficient of γ_1 is not equal to zero. If the null hypothesis is rejected, then it can be concluded that historical cash flow data has information content.

4. 3. 2. 2 Incremental information content of cash flows

To test incremental information of the component of cash flows, the present study considers the significance of the slope coefficient of the regression models. Hypothesis two is inferred when the following coefficients in equation 4-3 are significant.

H_{o2}: $\beta_1 = \beta_2 = \beta_3 = 0$ *(T-2)*
(or no incremental information content of total operating, investing and financing cash flows).

The incremental information content of hypothesis four is drawn by looking at whether the following coefficients in equation 4-4 are significant from zero.

H_{o4}: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = \lambda_7 = \lambda_8 = \lambda_9 = \lambda_{10} = \lambda_{11} = \lambda_{12} = 0$ *(T-3)*
(or no incremental information content of each component of cash flows)

Similarly, the incremental information content of cash flows beyond earnings in hypothesis six is inferred when the slope coefficient in equation 4-5 is significantly different from zero as follows.

H_{o6}: $\gamma_1 = 0$ *(T-4)*
(or no incremental information content of historical cash flows beyond earnings)

Incremental information content of the three components of cash flows beyond earnings in hypothesis eight is inferred by the significance of slope coefficients in equation 4-6 as follows:

H_{o8}: $\beta_1 = \beta_2 = \beta_3 = 0$ *(T-5)*
(or no incremental information content of total operating, investing and financing cash flows beyond earnings)

The analysis of hypothesis ten, which tests incremental information content of detailed components of cash flows beyond earnings, is inferred by looking at the significance of the slope coefficient in equation 4-6 as follows:

H_{o10}: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = \lambda_7 = \lambda_8 = \lambda_9 = \lambda_{10} = \lambda_{11} = \lambda_{12} = 0$ *(T-6)*
(or no incremental information content of each component of cash flows beyond earnings)

4. 3. 2. 3 Relative information content of cash flows

To test relative information in hypotheses 3, 5, 7, 9 and 11, the present study uses the method introduced by Biddle *et. al.* (1995). This procedure follows the definition of relative information value as depicted in Figure 3-1. In addition this procedure provides a finite sample under normal conditions, generalises to any number of predictor variables, and can be applied simultaneously with White's test of heteroskedasticity.

According to Biddle *et. al.*, the pairwise tests for relative information content

will enhance the comparability with standard tests for incremental information content. Relative information content can be inferred when F-values of Wald tests for the two variables in the pairwise are significant. The F-values for Wald tests will be obtained using the general procedure developed by Biddle *et. al.* (1995). This general model is modified for the present study to accommodate larger numbers of variables. The following procedure is an outline of this method and mainly draws from Biddle *et. al.*(1995). This procedure is intended to provide F-value to test hypothesis seven based on equation 4-5.

1. Consider the following general linear model in matrix form:

$$R = MB + \varepsilon \qquad (4\text{-}8)$$

Where R is an n x1 dependent variable vector of stock returns, M is an n x k matrix of regression coefficients, B is a k-vector of predictor variables, ε is an n-vector of unobserved disturbance with mean 0 and unknown covariance matrix Ω.

The matrix M has two parts: M_1 is historical cash flows, and M_2 is earnings. To asses the relative information content of historical cash flows (M_1) and earnings (M_2), define N_1 as columns of M not in M_1 and N_2 as the columns of M not in M_2. Define B_1 as the subset of B for N_1 and B_2 as the subset of B for N_2. Here B_1 or B_2 is comprised of regression coefficient omitted when only M_1 or M_2 is used to predict R.

2. Regress R on M_1 (historical cash flows) only and find the expected sum of squared residual with the following formula:

$$E(SSResid M_1) = B_1`N_1`[I_n - M_1(M_1`M_1)^{-1}M_1`]N_1B_1 + tr\,(\Omega) - tr\, M_1(M_1`M_1)^{-1}M_1`\Omega \qquad (4\text{-}9)$$

Where I_n is the n x n identity matrix and tr is the matrix trace operator.

3. Predict R by using M_1 only and define the expected sum of squared prediction as follows:

$$E(SSPreErrM_1) = B_1`N_1`[I_n - M_1(M_1`M_1)^{-1}M_1`]N_1B_1 + tr\,(\Omega) + tr\,M_1(M_1`M_1)^{-1}M_1`\Omega \quad (4\text{-}10)$$

4. Find a lack of fit measure (FM_1) with following equation:

$$FM_1 = \frac{E(SSPreErrM_1) + E(SSResidM_1)}{2} \quad (4\text{-}11)$$

5. Do similar steps (2 to 4) for earnings variables (M_2).

6. Define the null hypothesis to compare the relative information content of earnings and cash flows (M_2 and M_1) as follows:

$H_o = B_1'N_1'[I_n - M_1(M_1'M_1)^{-1}M_1']N_1B_1 = B_2'N_2'[I_n - M_2(M_2'M_2)^{-1}M_2']N_2B_2$ (4-12)

(Historical cash flows and earnings have equivalent information content)

$H_i = B_1'N_1'[I_n - M_1(M_1'M_1)^{-1}M_1']N_1B_1 \neq B_2'N_2'[I_n - M_2(M_2'M_2)^{-1}M_2']N_2B_2$

7. Test equation 4-12 using Wald test.

This procedure is applied to each pair of variables in equations 4-3 to 4-7 and the test of hypothesis is based on the Wald test. If the F-value for a certain pair is greater than that of the Wald test, then it is concluded that there is relative information content in its pair of variables under consideration. In particular, the hypothesis is rejected.

4. 4 Sensitivity Analysis

The results of hypothesis tests are dependent upon correct specifications of the models and can be sensitive to the underlying assumptions. Like previous studies, these factors can influence the robustness of hypothesis results. This section discusses related issues when using the cross-sectional regression methodology. Those issues are:

1. pooling of cross-sectional and time series data,
2. outlier,

3. heteroscedasticity,
4. collinierity, and
5. autocorrelation.

4. 4. 1 Pooling of Cross-sectional and Time Series Data

The inclusion of only cash flow variables in equations 4-2 to 4-7 discussed in Section 4.3.1 has ignored company characteristics although the firm characteristics may influence the coefficient of independent variables in the regression. For example, firm size is considered important in the regression models in many studies. The studies by Banz (1981) and Reinganum (1981) used the equity value as a measure of firm size and found it a significant factor. Also, the measure of company size of total assets was found significant in Singhvi and Desai (1971). Christie (1987), however, attacked the inclusion of firm size in the model. He stated that the difficulty of including a size variable arises because it is not possible to investigate the relationship between incremental cash flows attributable to size and size directly since these incremental cash flows are not observable (p.246). He also argued that both theory and evidence do not provide enough guidance about the appropriate form of size variables as independent variables. Similarly, Banz (1981, p.161) stated that "there is no theoretical foundation for such an effect. We do not even know whether the factor size is size itself or whether size is just a proxy for one and more true but unknown factors correlated with size".

Another important factor of firm characteristics that should be considered is industry differences. According to Biddle and Seow (1995), industry membership is

a favourable classification scheme that captures a wide range of economic and financial characteristics. In addition, categorising companies by industry would be meaningful in providing more powerful tests of the relationship between response coefficients and underlying firm characteristics by reducing random cross-firm variation. This study will not use industry differences in classifying firms included in the analysis since it assumes homogeneity with regard to firm size or industry classification. Instead, two other level analyses are used in this study. First, the analysis is a pooled sample. Second, the analysis will be year by year (annual cross-sectional regression). These two approaches are favourably used in previous studies.

Hypothesis results will be provided by running and combining all data of each year under the study. The assumption underlying the combination of annual cross-sectional data is that firm-year observations are homogeneous, that is, firm behaviour is identical. However, it is possible that the behaviour of pooled data is likely to be different from the behaviour of the annual cross-sectional data. Accordingly, the relationship between security returns and cash flows for each cross-sectional time and all the time (1992-1997) can be characterised by their own special intercept. In this study, an additional test will be performed to check whether hypothesis results are influenced by the period of reporting. The additional variables are added to the models in equations 4-2 to 4-7 by including dummy variables representing the period of reporting as follows:

$$R_{jt13} = \gamma_0 + \gamma_1 NetCf + D92 + D93 + D94 + D95 + D96 + w_u \qquad (4\text{-}13)$$

$$R_{jt14} = \beta_0 + \beta_1 AgOp + \beta_2 AgFin + \beta_3 AgIn + D92 + D93 + D94 + D95 + D96 + v_v \qquad (4\text{-}14)$$

$$R_{jt15} = \lambda_0 + \lambda_1 Cst + \lambda_2 Spp + \lambda_3 Tx + \lambda_4 Int + \lambda_5 Othop + \lambda_6 Uinv + \lambda_7 Obinv + \lambda_8 Acqb + \lambda_9 Obdebt + \lambda_{10} Pdebt + \lambda_{11} Iseq + \lambda_{12} Dev + D92 + D93 + D94 + D95 + D96 + u_w \qquad (4\text{-}15)$$

$$R_{jtI6} = \varphi_0 + \varphi_1 NetCf + \phi_1 E + D92 + D93 + D94 + D95 + D96 + w_x \quad (4\text{-}16)$$

$$R_{jtI7} = \chi_0 + \chi_1 AgOp + \chi_2 AgFin + \chi_3 AgIn + \phi_2 E + D92 + D93 + D94 + D95 + D96 + v_y \quad (4\text{-}17)$$

$$R_{jtI8} = \delta_0 + \delta_1 Cst + \delta_2 Spp + \delta_3 Tx + \delta_4 Int + \delta_5 Othop + \delta_6 Uinv + \delta_7 Obinv + \delta_8 Acqb + \delta_9 Obdebt + \delta_{10} Pdebt + \delta_{11} Iseq + \delta_{12} Dev + D92 + D93 + D94 + D95 + D96 + u_z \quad (4\text{-}18)$$

Where,
λ, γ, β, φ, χ and β are estimated parameters,
w, v, and u are random disturbances,
D92, D93, D94, D95, and D96 are dummy variables consisting: 1 for ith cross-sectional time, otherwise 0 (i=92, 93 ..., 96) and other variables are defined earlier.

4. 4. 2 Outliers

An outlier is an observation in the data set characterised usually by a large difference between predicted and actual values. This difference may be due to a data input error or the inclusion of an observation from a portion of the population not suitable for the model. An outlier influences the coefficient of the regressions, and therefore it should be excluded from the data set. This study uses Cook's Distance procedure to detect outlier observations. An observation generating 2.5 or higher value of Cooks Distance will be excluded from the data set (DiIorio, 1991).

4. 4. 3 Heteroscedasticity

The specification of the variables in the previous section is in dollar terms. It is fair to say that this specification causes severe heteroscedasticity, the variance of the dependent variable around each point on the regression line is not equal. If this exists, the standard errors of the coefficient and tests of significance will be biased. This study adopts the standard deflator in the accounting literature as the solution of

this problem; that is, to deflate the raw cash flow data with the market value of equity of the firm at the beginning of the period and total assets.

4. 4. 4 Autocorrelation

The general model in this study assumes that the residuals (the e_i's) are not correlated. Autocorrelation occurs when observations for a unit of analysis are serially or temporally ordered, and an observation value of a variable at time t influences the value at time t-1. Since this study is cross-sectional rather than time series, the problem of autocorrelation is not important to consider. However, to test the robustness of the result of the hypothesis testing, the present study uses Durbin-Watson (DW) statistic as a formal procedure to identify the problem of autocorrelation (DiIorio, 1991). If the value of DW is close to 2, no autocorrelation exists.

4. 4. 5 Multicollinearity

In previous studies there has been a degree of intercorrelation among independent variables, which indicate a collinearity or multicollinearity may be a problem. The effect of collinearity is large standard errors of the estimated coefficients so that the estimates may not be efficient. This study uses the procedure of the correlation coefficient as a first indicator to identify the presence of multicollinearity. Judge *et. al.* (1988) suggest that multicollinearity is a serious problem if the correlation coefficient between the values of two independent variables is greater than 0.8 or 0.9. DiIorio (1991) suggests the use of variance inflation factors

(VIF) as a standard method of detecting the presence of collinearity. The VIF value of 10 or more of a certain variable suggests the variance is inflated and thus the presence of collinearity.

The absence of collinearity requires a solution. As a standard solution, some previous studies drop or combine variables due to collinearity. However, Christie, Kennelley, King and Schaefer (1984) note that dropping variables results in correlated omitted variables and thus biased estimators if the original model is the true model. In addition, Christie *et. al.* (1984) state that there are no partitions of dependent or independent variables, orthogonal or otherwise that can mitigate relative effects of collinear variables because multicollinearity is a data problem and not a statistical problem.

4. 5 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 and earnings 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).

4. 6 Summary

This chapter describes the research methodology used for this study and consists of five main sections. In the first section, eleven proposed hypotheses are discussed. These hypotheses reflect the two objectives of the current study. Five hypotheses reflect only cash flow components and six hypotheses reflect the comparison between cash flows and earnings.

The variable definition and measurement of cash flows, which is the breakdown of AASB 1026, are discussed in Section two. This section also presents an argument of the use of the level specification rather than change specification.

The third section provides an explanation of the empirical design to test the hypotheses. This part discusses the regression models and the statistical inferences. There are six equations to test eleven proposed hypotheses. The statistical inference for incremental information content is on the basis of the significance of the coefficient in the regression from zero. The statistical inference to test relative information content follows Biddle *et. al.* (1995).

While section four discusses those factors that can influence the robustness of hypothesis results, including the step taken to overcome the problem, section five explains the type and the source of the data. The next chapter provides the empirical results of hypothesis tests.

CHAPTER 5

RESULTS OF TESTING INFORMATION CONTENT OF CASH FLOWS

Chapter five presents results of hypothesis tests and consists of five main sections. The first section reports selected statistical descriptives of the data. The second section presents and discusses results from testing five hypotheses of cash flows, including the comparison of the findings with the previous studies. In section three, the finest model is selected from competing models of cash flows. Section four analyses the robustness of the findings. The last section summarises the findings.

5. 1 Descriptive Statistics

Table 5-1 shows the number of observations that meet the requirement criteria discussed in the previous chapter. There are 3344 and 3355 observations when market equity (MAD) and total asset of firms (TAD), respectively, are used to deflate the accounting data. As Table 5-1 shows, the number of firms included in the sample in each year and each deflator is different. Table 5-1, however, indicates that in both types of deflators there is a tendency for the number of firms that meet the criteria to increase since the AASB 1026 was mandated in 1992. For example, there are 400 firms meeting the criteria in 1992, 463 in 1993 and 684 in 1997 for the MED data.

Table 5-2 provides distributional information and the descriptive statistics for the six years under the study (1992-1997). The MED of Table 5-2 shows the descriptive statistics for returns, earnings, and components of cash flows when cash flows are deflated by market equity of firms. The TAD indicates the univariate

Table 5-1: Yearly Observations

Years	Number of Firms	
	MED	*TAD*
1992	400	398
1993	463	462
1994	510	512
1995	617	622
1996	670	673
1997	684	685
Pooled	3344	3353

MED: Market equity deflator
TAD: Total asset deflator

statistics for detailed components of cash flows when cash flows are deflated by total assets of firms. In general, Table 5-2 indicates that selected statistical value for the TAD is larger than that for the MED. This larger value is not surprising because total assets of the firm as a deflator are larger than market equity.

5. 2 Hypothesis Testing

Section 5.1 presents descriptive statistics of the data. In this section, results from performing the statistical tests of the hypotheses proposed in chapter 4 are presented. To recall, the five hypotheses that were tested are:

H_{o1}: Historical cash flows do not have information content.

H_{o2}: Total operating, investing, and financing cash flows do not have incremental information content.

H_{o3}: Total operating, investing, and financing cash flows do not have relative information content.

H_{o4}: Components of total operating, investing, and financing cash flows do not have incremental information content.

H_{o5}: Components of total operating, investing, and financing cash flows do not have relative information content.

Table 5-2: Selected Descriptive Statistics

MED: Market Equity Deflator (n=3344)

Statistics	RR	E	Netcf	Agop	Agin	Agfin	Cst	Spp	Tx	Int	Othop	Uinv	Obinv	Acqb	Iseq	Obdebt	Pdebt	Dev
Means	0.4358	0.1001	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	0.0080	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	2.1225	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	-3.7735	-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	117.8427	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

TAD: Total Assets Deflator (3353)

Statistics	RR	E	Netcf	Agop	Agin	Agfin	Cst	Spp	Tx	Int	Othop	Uinv	Obinv	Acqb	Iseq	Obdebt	Pdebt	Dev
Means	0.464972	-0.1290	0.0083	-0.0249	-0.0730	0.1062	0.6694	-0.6775	-0.0097	-0.0044	-0.0027	-0.1704	0.1050	-0.0075	0.1367	0.0737	-0.0822	-0.0182
Median	0.129870	0.0124	0.0020	0.0227	-0.0528	0.0117	0.3554	-0.3460	0.0000	0.0000	0.0000	-0.0815	0.0099	0.0000	0.0020	0.0000	-0.0048	0.0000
Std Dev	2.136129	1.1441	0.2714	0.4357	0.6542	0.6557	1.1496	1.2195	0.0344	0.0520	0.1711	0.3493	0.6504	0.0426	0.3341	0.5224	0.5792	0.0710
Minimum	-22.0000	-34.9697	-5.4082	-11.8376	-6.1429	-24.8148	-0.0443	-26.4604	-1.5767	-1.7472	-7.5664	-7.1224	-0.6977	-0.8419	-0.2113	-1.4477	-24.8148	-3.2010
Maximum	70.96426	25.1286	4.8364	6.2474	31.4074	12.0045	26.4345	0.3075	0.4030	0.2591	2.3277	2.5145	31.4074	0.2029	8.5060	22.7663	1.2923	0.1751

There are three sets of cash flows tested in this chapter. Those are historical cash flows (NetCF), aggregate cash flows from operating, investing and financing activities (AgOp, OgIn and AgFin), and detailed components of cash flows (Cst, Spp, Tx, ..., Dev). AgOp, OgIn and AgFin are the disaggregation of NetCf (or historical cash flows) and Cst, Spp, Tx, ..., Dev are the disaggregation of AgOp, OgIn and AgFin. The analysis of information content of these three sets of cash flows is presented in the following section.

5. 2. 1 Historical Cash Flows

This section presents the results of the test for equation T-1 from the regression in model 4-2 discussed in section 4.3.1 and 4.3.2. The null hypothesis is that historical cash flows have no information content (H_{o1}). No previous studies attempted to test this hypothesis. For the purpose of testing this hypothesis, the significance of the regression coefficients in model 4-2 is interpreted as information content. Table 5-3 presents the results of T-1 for each of the seven years under study and for the pooled regressions.

Table 5-3 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.

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

Table 5-3: Results of Tests of the Information Content of Historical Cash Flows (T-1, 1992-1997)

Market Equity Deflator (MED)

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

Total Asset Deflator (TAD)

Year	$\hat{\gamma}_0$[a]	$\hat{\gamma}_1$[a]	Std. Error	R^2	F	N
1992	0.7033	0.1622	0.4900	-0.0022	0.110	398
1993	0.7819	1.0628***	0.3604	0.0164	8.694***	462
1994	0.6179	0.0975	0.4196	-0.0019	0.054	512
1995	0.1006	0.2061	0.3225	-0.0010	0.408	623
1996	0.4586	1.1332***	0.3586	0.0132	9.980***	673
1997	0.3105	0.4009**	0.1611	0.0075	6.188***	685
Pooled	0.4610	0.4780***	0.1357	0.0034	12.508***	3353

a. This coefficient from the equation: $\hat{R}_{jt2} = \hat{\gamma}_0 + \hat{\gamma}_1 NetCf$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

information content, including the last two consecutive years.

Table 5-3 also reports the number of observations for each year under the study. The number observations included in Table 5-3 are slightly smaller than those in Table 5-1. Outliers are the cause of this difference. As explained in section 4.4.2, an observation that has a 2.5 Cook distance value is treated as an outlier and is automatically excluded from the study.

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.

5. 2. 2 Total Operating, Investing and Financing Cash Flows

This section presents the tests of hypotheses two and three. Hypothesis two is to test the incremental information content of three main elements of cash flows. The third hypothesis is to test the relative information content of the three components of cash flows. The three variables are total operating, investing, and financing cash flows.

Incremental Information Content

Hypothesis two examines the incremental information content of the three components of cash flows (T-2). The significance of the slope coefficients in equation 4-3 (T-2) is interpreted as incremental information of the component of cash flows in hypothesis two. Table 5-4 presents the results of T-2 for each of the seven years under study and for the pooled seven years.

Table 5-4 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 MED 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 5-4 are significant at the 10% level.

The estimates of pooled data in Table 5-4 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.

The estimates from annual cross-sectional data are generally consistent with

Table 5-4: Results of Tests of the Incremental Information Content of Total Operating, Investing and Cash Flows (T-2, 1992-1997)

MED: Market Equity Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\beta}_0$)	.5853	.6202	.5476	-.1719	.3119	.2477	.3444
Ogop ($\hat{\beta}_1$)	.2475467**	1.01485***	.072629	.731139***	.985291***	.684917***	.690026***
(Std. Error)	(.1221)	(.1068)	(.1675)	(.1438)	(.2226)	(.1337)	(.0610)
AgIn ($\hat{\beta}_2$)	-.029975	-.107177	-.030578	-.099201	.120382	.419144***	.341529***
(Std. Error)	(.1130)	(.1996)	(.1250)	(.1084)	(.1602)	(.1358)	(.0589)
AgFin ($\hat{\beta}_3$)	.038815	.998255***	-.025684	.161520	.884039***	.432217***	.544960***
(Std. Error)	(.0942)	(.1043)	(.1596)	(.1058)	(.1413)	(.1183)	(.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

TAD: Total Asset Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\beta}_0$)	.6714	.7271	.5821	.0546	.3544	.3216	.4560
Ogop ($\hat{\beta}_1$)	.656871	.759214**	.266092	.756438	1.508190***	.411990**	.525385***
(Std. Error)	(.7137)	(.3810)	(.4979)	(.5206)	(.3641)	(.18358)	(.1484)
AgIn ($\hat{\beta}_2$)	-.194670	.832789*	-.088483	-.057127	.599664	.455349**	.448717***
(Std. Error)	(.5971)	(.4399)	(.4471)	(.3761)	(.4460)	(.18554)	(.1394)
AgFin ($\hat{\beta}_3$)	.280867	1.568609	.233665	.433921	1.652778***	.357997**	.515993***
(Std. Error)	(.5212)	(.4152)	(.4319)	(.4399)	(.3964)	(.1855)	(.1443)
F-value	.933	5.017***	.581	.760	8.053***	2.326*	4.669***
Adj-R^2	-0.0005	0.0255	-0.0025	-0.0012	0.0306	0.0101	0.0033
N	397	462	512	623	672	685	3353

a. This coefficient from the equation: $\hat{R}_{jt3} = \hat{\beta}_0 + \hat{\beta}_1 \text{AgOp} + \hat{\beta}_2 \text{AgFin} + \hat{\beta}_3 \text{AgIn}$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

those from pooled data. The MED data of Table 5-4 shows that, except in 1994, total operating cash flows have significant coefficients for all the years under the study period. For the TAD data, this coefficient is significant in three years (1993, 1996 and 1997). In addition, total financing cash flows are not significant in 1992, 1994, and 1995 (MAD data). In the other three years, this coefficient is significant at the 1% level. For the TAD data, the coefficient of AgFin is also significant for two consecutive years (1996 and 1997).

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 for the MED and for two years at the 10% for the TAD data. 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 Zarowin (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).

Relative Information Content

Hypothesis three is concerned with the relative information content of total operating, investing, and financing cash flows. The issue addressed here is to determine whether any of three cash flows (AgOp, AgIn and AgFin) possess the greatest information content, given other components. The procedure to test the hypothesis of no relative information content was discussed in chapter four. The significance of Wald test statistic is interpreted as relative information content and thus the two variables provide incremental information content. Results of this test are reported in Table 5-5.

Table 5-5: Results of Tests on the Relative Information Content among Total Operating, Investing and Financing Cash Flows (1992-1997)

MED: Market Equity Deflator

	R^2 of Cash Flows Variables			F-values of Wald Tests[a]		
Years	AgOp	AgIn	AgFin	AgOp & Agin	AgOp & AgFin	AgIn & AgFin
1992	.0416	.0268	.0001	1.6382	3.1518*	0.3166
1993	.0032	.0362	.0100	4.2089**	27.7100***	3.9773**
1994	.0008	.0000	.0001	0.3029	0.2967	0.2805
1995	.0669	.0502	.0125	3.0860*	4.6599**	4.1663**
1996	.0026	.0562	.0759	5.0895**	5.8302**	6.8627***
1997	.0196	.0013	.0000	0.9837	1.7676	0.2258
Pooled	.0161	.0195	.0087	3.3525*	3.8420**	8.8833***

TAD: Total Asset Deflator

	R^2 of Cash Flows Variables			F-values of Wald Tests[a]		
Years	AgOp	AgIn	AgFin	AgOp & Agin	AgOp & AgFin	AgIn & AgFin
1992	.0006	.0048	.0023	0.0947	0.2016	0.0135
1993	.0000	.0005	.0233	0.3990	2.7880*	2.6349
1994	.0000	.0028	.0017	1.2040	0.7742	0.7780
1995	.0015	.0003	.0001	0.3524	3.8513**	0.5942
1996	.0010	.0090	.0042	2.3557	2.0145	3.5576*
1997	.0008	.0028	.0001	1.1069	1.3445	0.7014
Pooled	.0004	.0000	.0003	1.5413	1.2331	1.5552

a. F-values for pairwise among cash flow variables in equation:

$\hat{R}_{jt3} = \hat{\beta}_0 + \hat{\beta}_1 \text{AgOp} + \hat{\beta}_2 \text{AgFin} + \hat{\beta}_3 \text{AgIn}$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

The MED pooled data indicate that F-values for Agop&AgFin and AgIn&AgFin are significant at the 5% level while the F-value for Agop&AgIn is not significant. Accordingly, total financing cash flows (AgFin) have no identical information content to total investing and total operating cash flows (AgOp and AgIn), but total investing and operating cash flows (AgOp&AgIn) have equal information content. The ranking of information content then is based on the coefficient of determination (R^2) and can be depicted as follows: AgOp = AgIn > AgFin. The TAD pooled data, on the other hand, indicate none of the three cash flow measures has relative information content. In other words, all components of cash flows in panel B (AgOp, AgIn and AgFin) possess similar information content.

The results from annual cross-sectional data support those from pooled data. The MED data indicates the pairwise comparison of total cash flows from operating and financing activities possesses relative information content for three years under the study (1993, 1995 and 1996). In the same years, the presence of the relative information content is also present for the pairwise comparison between total investing and financing cash flows. Total operating and financing cash flows (AgOp and AgFin) have relative information content for three years (1993, 1995 and 1996).

For the TAD data, the relative information content is present for the pairwise comparison of total operating and financing cash flows in 1993 and 1995. The pairwise comparison of total investing and financing cash flows in 1996 shows the relative information content. The other pairwise comparisons are not significant at the conventional level. This may imply no relative information content exists when total assets of firms deflate cash flow data. Stated differently, all cash flow variables

have identical information content when total assets deflate the cash flow data.

The relative information content of the three components of cash flows for MED and TAD data seems in contrast. The deflator may be a possible explanation of this contradiction. For the MED data, the dependent variable comes from stock prices. The independent variables are deflated by the market value of the firm, which also comes from stock prices. Thus, this is reasonable if there is a relationship between dependent and independent variables. For the TAD data, on the other hand, total assets are the deflator. Total assets are values of the firm based on the past transactions of the firms. The past transactions are recorded by considering the principle of the conservativism. Accordingly, it makes sense if there is no relationship between dependent (security market price) and independent variables (cash flows as historical value of the firm). According to Christie (1987), the deflator other than the market equity of the firm leads to a historical cost bias.

In summary, the main issue addressed by tests of incremental information content (hypothesis 2) is whether each component of total cash flows from operating, investing and financing cash flows contributes to the information employed by investors to price securities, assuming investors know other components. The evidence strongly indicates that total operating cash flows possess incremental information content for both pooled and annual cross-sectional data. Further these three components of cash flows (AgOp, AgIn and AgFin) can be used to predict future cash flows.

Hypothesis three is concerned with relative information content comparisons of three components of cash flows. Relative information content reflects differences

in incremental information content. Accordingly, the issue addressed in hypothesis three is to determine whether any measure among total cash flows from operating, investing and financing activities provides the highest information content. The evidence indicates that total operating and investing cash flows possess greater information content than total financing cash flows, and total operating and investing cash flows possess equal relative information content (AgOp=AgIn>AgFin). This evidence achieved when market equity of the firm is used to deflate cash flow data. However, when total assets act as deflator of cash flow data, a little relative information content exists and the three cash flows variables in general provide identical information content.

5. 2. 3 Detailed Components of Cash Flows

This section analyses the information content of the components of the cash flow items. This is achieved by the testing of two hypotheses: hypothesis four and five. Hypothesis four and five correspond with hypotheses two and three respectively. Hypothesis four is to test incremental information content of twelve components of cash flows. Hypothesis five, a corresponding hypothesis for hypothesis four, is to test relative information content of the twelve components of cash flows. The twelve variables are Cst, Spp, Tx, int, Othop, Obinv, Uinv, Acqb, Iseq, Obdebt, Pdebt and Dev. These variables are detailed components of AgOp, AgIn and AgFin as discussed in previous section.

Incremental Information Content

The fourth hypothesis is that the components of the total operating, investing, and financing cash flows do not 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 (equation 4-3). 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 4-4, $\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_3$, $\hat{\lambda}_4$, 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 5-6 presents the results of T-3.

Table 5-6 reports F-values of equation 4-4. F-values of all regressions are very strong at the 1% level for both the MED pooled and annual cross-sectional data. The combination of the significance of the F-values and the higher R^2 for the MED data of Table 5-6 compared to similar data in Table 5-5 suggests that further disaggregation of components of cash flows can be useful in explaining security returns and thus communicates more information.

The F-value for the TAD pooled data is also significant at the 5% level. This may suggest that a further disaggregation of three general components of cash flows

Table 5-6: Results of Tests of the Incremental Information Content of Component of Cash Flows (T-3, 1992-1997)

MED: Market Equity Deflator

Variables [a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\lambda}_0$)	.2595	.5215	.3416	-.2302	.2039	.0297	.2130
Cst ($\hat{\lambda}_1$)	.119913	.526149***	.269499**	.497303***	.008690	.540494***	.087733***
(Std. Error)	(.7.1552)	(.1436)	(.1094)	(.1180)	(.18264)	(.1254)	(.0301)
Spp ($\hat{\lambda}_2$)	.143672	.522037***	.251016**	.502803***	-.00400	.531473***	.076613**
(Std. Error)	(.1651)	(.1462)	(.1106)	(.1181)	(.1826)	(.1250)	(.0305)
Tx ($\hat{\lambda}_3$)	2.423976	1.708643	-3.49352**	.336866	.269822	-2.44234**	2.465465***
(Std. Error)	(1.4988)	(1.3926)	(1.5492)	(.7339)	(.1.3577)	(1.0619)	(2567)
Int ($\hat{\lambda}_4$)	-.190341	.420859	-.439671	.276212	.046808	.962375	-.343038***
(Std. Error)	(.2299)	(.3585)	(.5010)	(.3635)	(.5698)	(.5526)	(.0446)
Othop ($\hat{\lambda}_5$)	-.127242	.561346**	.731999***	.618485**	-.702469**	.541729***	.247515***
(Std. Error)	(.1830)	(.2682)	(.1813)	(.1877)	(.3392)	(.1456)	(.0823)
Uinv. ($\hat{\lambda}_6$)	-.181438	-.493354**	.064960	-.085099	.016589	.196109	-.071335**
(Std. Error)	(.1390)	(.2221)	(.0771)	(.0740)	(.1120)	(.1333)	(.0286)
Obinv. ($\hat{\lambda}_7$)	.047108	-.541080	.118362**	-.035273	.072475	.212532	.052991***
(Std. Error)	(.1260)	(.2249)	(.0584)	(.0724)	(.1059)	(.1289)	(.0163)
Aqcb ($\hat{\lambda}_8$)	2.749862	1.022059	.483049	.071345	-.697304	-.886124**	-.583850**
(Std. Error)	(1.8544)	(.8791)	(.5115)	(.2786)	(.6398)	(.3503)	(.2313)
ObDebt ($\hat{\lambda}_9$)	-.011568	.223209	.185180**	.254690**	.024551	.222638	.0550997**
(Std. Error)	(.1905)	(.2141)	(.0828)	(.1079)	(.0816)	(.1397)	(.02424)
PDebt ($\hat{\lambda}_{10}$)	.030008	.250366	.219009***	.091151	.072608	.093891	.094958***
(Std. Error)	(.0893)	(.2028)	(.0787)	(.1274)	(.0924)	(.1653)	(.02424)
Iseq ($\hat{\lambda}_{11}$)	2.019672***	1.790981***	.753538***	.504416***	1.478259***	1.173945***	.592651***
(Std. Error)	(.9683)	(.1934)	(.1182)	(.1243)	(.1715)	(.1470)	(.0469)
Dev ($\hat{\lambda}_{12}$)	-3.14377***	-.154858	2.267256	-.458865	-1.19311	-.128831	-2.726613***
(Std. Error)	(-3.247)	(1.0123)	(.1420)	(.5618)	(.6678)	(.5871)	(.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

a. The coefficients of $\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_3$, $\hat{\lambda}_4$, $\hat{\lambda}_5$, $\hat{\lambda}_6$, $\hat{\lambda}_7$, $\hat{\lambda}_8$, $\hat{\lambda}_9$, $\hat{\lambda}_{10}$, $\hat{\lambda}_{11}$, and $\hat{\lambda}_{12}$ from the following model

$$\hat{R}_{j15} = \hat{\lambda}_0 + \hat{\lambda}_1 Rc + \hat{\lambda}_2 Ps + \hat{\lambda}_3 Pt + \hat{\lambda}_4 Pi + \hat{\lambda}_5 No + \hat{\lambda}_6 Pp + \hat{\lambda}_7 Rp + \hat{\lambda}_8 Pa + \hat{\lambda}_9 Rd + \hat{\lambda}_{10} Pd + \hat{\lambda}_{11} Re + \hat{\lambda}_{12} Pv$$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

Table 5-6 continued

TAD: Total Asset Deflator

Variables [a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\lambda}_0$)	.8969	.8518	.3803	-.3662	.2540	.2883	.3898
Cst ($\hat{\lambda}_1$)	.132506	.498711	.082887	1.602475	1.467668***	.562300***	.484673***
(Std. Error)	(.7000)	(.3910)	(.4212)	(.7569)	(.3480)	(.2122)	(.1445)
Spp ($\hat{\lambda}_2$)	.466037	.459967	.119085	1.379417	1.407102***	.554832***	.465485***
(Std. Error)	(.7384)	(.3675)	(.4209)	(.7388)	(.3396)	(.2084)	(.1406)
Tx ($\hat{\lambda}_3$)	5.569938	5.242177*	-.576464	-6.513538	3.659418	-1.246187	1.346524
(Std. Error)	(6.1066)	(3.0868)	(5.9455)	(8.7067)	(3.7927)	(2.2917)	(1.7280)
Int ($\hat{\lambda}_4$)	-2.970347	4.577062	-4.829209	4.086748	3.449456	3.403340**	.498531
(Std. Error)	(1.8877)	(2.8474)	(2.9589)	(6.1187)	(3.0156)	(1.5859)	(1.1081)
Othop ($\hat{\lambda}_5$)	1.931235**	.246234	.698883	.537800	1.722905**	.578211**	.668962***
(Std. Error)	(.9634)	(.7582)	(.7661)	(1.3949)	(.8749)	(.2398)	(.2499)
Uinv. ($\hat{\lambda}_6$)	-1.099960*	.527451	-.096626	-.275282	.421819	.570954	.278633**
(Std. Error)	(.6067)	(.4653)	(.3948)	(.4197)	(.3667)	(.2274)	(.1401)
Obinv. ($\hat{\lambda}_7$)	-.464376	.366368	-.025431	-.616997	.669078***	.350822	.308691**
(Std. Error)	(.7080)	(.4239)	(.3990)	(.7015)	(.2269)	(.2145)	(.1197)
Aqcb ($\hat{\lambda}_8$)	.252040	3.532800	-5.05129***	1.497189	-.045261	-.604081	-.524283
(Std. Error)	(5.5225)	(2.2598)	(1.8775)	(.3.9657)	(1.9881)	(.6902)	(.8721)
ObDebt ($\hat{\lambda}_9$)	.091922	.961491	.058379	.785840	1.386745***	.540410**	.360839**
(Std. Error)	(.7274)	(.6961)	(.4131)	(.8264)	(.4475)	(.2167)	(.1525)
PDebt ($\hat{\lambda}_{10}$)	.159879	.720868	-.362756	-1.125617	1.532272***	.095532	.310314**
(Std. Error)	(.1979)	(.7655)	(.5383)	(1.2717)	(.5102)	(.2919)	(.1342)
Iseq ($\hat{\lambda}_{11}$)	-.319406	1.081387**	.395839	.667080	1.898706***	.340853	.621075**
(Std. Error)	(.4015)	(.4225)	(.3233)	(.5809)	(.3420)	(.2125)	(.1436)
Dev ($\hat{\lambda}_{12}$)	1.294693	5.012797	-4.230544*	-5.041628	.315338	.122760	-.454867
(Std. Error)	(3.9102)	(3.3665)	(2.4064)	(5.9813)	(1.4691)	(.8043)	(.8339)
F-value	1.626*	1.663	1.658*	1.192	3.041***	1.313	2.009**
Adj-R^2	.0186	.0170	.0152	.0037	.0352	.0055	.0036
N	397	462	512	621	673	685	3353

a. The coefficients of $\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_3$, $\hat{\lambda}_4$, $\hat{\lambda}_5$, $\hat{\lambda}_6$, $\hat{\lambda}_7$, $\hat{\lambda}_8$, $\hat{\lambda}_9$, $\hat{\lambda}_{10}$, $\hat{\lambda}_{11}$, *and* $\hat{\lambda}_{12}$ *from the following model*

$$\hat{R}_{jt3} = \hat{\lambda}_0 + \hat{\lambda}_1 Rc + \hat{\lambda}_2 Ps + \hat{\lambda}_3 Pt + \hat{\lambda}_4 Pi + \hat{\lambda}_5 No + \hat{\lambda}_6 Pp + \hat{\lambda}_7 Rp + \hat{\lambda}_8 Pa + \hat{\lambda}_9 Rd + \hat{\lambda}_{10} Pd + \hat{\lambda}_{11} Re + \hat{\lambda}_{12} Pv$$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

is useful in explaining security returns and communicates more information. Cross-sectional F-values for the TAD data, in general, are consistent with those for the MED data. F-ratios for the TAD data are not significant for three out of six years.

The MED 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.

For the TAD data, four components of twelve variables of cash flows are not significant at all at the 5% level. Those are cash outflows for paying tax, interest, acquisition of new business and dividend (Tx, Int, Acqb and Dev). At the 1% level, only four components of cash flows remain significant. Those are cash inflows from customers (Cst), other operating activities (Othop), issuing new equity (Iseq), and cash outflows for suppliers (Spp). In general, however, the TAD pooled data indicates that the majority of the cash flow variables have incremental information content.

The results of the MED cross-sectional data are generally consistent with those from pooled data. As shown by Table 5-6, 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.

Similar to the components of the operating cash flows, the components of the financing cash flows of the MED 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.

The results from the TAD annual-cross sectional tests are not as favourable as those from MED data, but they support results from pooled data. Cash inflows from customers (cst), new debt (obdebt) and new issued equity (iseq) and cash outflows for suppliers are significant for two years. Cash inflows from other operating activities (othop) are only significant in three years. Cash outflows for tax (tx), new investment (uinv) and dividend (dev) are not significant in any single year. Other components of cash flows (int, obinv, acqb and pdebt) have a significant coefficient in one year.

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.

Since the hypothesis of no incremental information content for the components of cash flows is rejected, an additional test on whether the components of each of total operating, investing and financing cash flows provide equal information was also performed. To address this issue, the following coefficients in model 4-4 were tested:

Operating cash flows: $\hat{\lambda}_1 = -\hat{\lambda}_2 = -\hat{\lambda}_3 = -\hat{\lambda}_4 = \hat{\lambda}_5 = 0$
(or components of operating cash flows have equal incremental information content)

Investing cash flows: $-\hat{\lambda}_6 = \hat{\lambda}_7 = -\hat{\lambda}_8 = 0$

(or components of investing cash flows have equal incremental information content)

Financing cash flows: $\hat{\lambda}_9 = \hat{\lambda}_{10} = -\hat{\lambda}_{11} = \hat{\lambda}_{12} = 0$
(or components of financing cash flows have equal incremental information content)

F-values for this additional test are reported in Table 5-7. The pooled data indicates that the components of each of the three general cash flows do not have identical information content. Cross-sectional data in general also support the result from pooled data. The MED and TAD data indicate that the components of operating and financing cash flows strongly support the pooled results. Weaker evidence is given by the components of investing cash flows for the MED data. The F-ratio in this variable is significant only in 1993 and 1997. The significance of values for the components of the three cash flow variables (Agop, Agin and Agfin) supports the previous notion that the disaggregation of total operating, investing and financing cash flows is useful in predicting future cash flows.

Relative Information Content

The relative information content of each component of cash flows is tested using hypothesis five. The issue addressed here is to determine whether any of the cash flow components have relative information content, given other components, and thus provide a greater information content than other components. The significance of F-value of Wald tests as discussed in chapter four is used to infer the relative information content. Table 5-8 presents F-values of pairwise comparisons from Wald tests.

The MED data in Table 5-8 indicates the majority of pairwises of cash flow

Table 5-7: Results of Tests on the Equal Information (1992-1997)

MED: Market Equity Deflator

Component[a]	1992	1993	1994	1995	1996	1997	Pooled
Operating [1]	2.4558 **	3.070 ***	7.9628 ***	4.2564 ***	3.0985 ***	6.2513 ***	30.7950 ***
Investing [2]	1.9090	2.5233 *	1.9846	1.0212	0.7531	3.6964 **	15.9269 ***
Financing [3]	32.6570 ***	22.9218 ***	12.1117 ***	6.4988 ***	20.3262 ***	18.0179 ***	81.8252 ***

TAD: Total Assets Deflator

Component[a]	1992	1993	1994	1995	1996	1997	Pooled
Operating [1]	2.4388 **	1.3630	.7868	1.4179	3.7096 ***	1.9015 *	2.7737 **
Investing [2]	1.1019	1.1509	2.4461 *	0.3437	2.9123 **	2.6645 **	2.6033 *
Financing [3]	0.4264	2.1967 *	1.5223	1.2525	7.7808 ***	2.119 *	5.0164 ***

a. 1. $\hat{\lambda}_1 = -\hat{\lambda}_2 = -\hat{\lambda}_3 = -\hat{\lambda}_4 = \hat{\lambda}_5 = 0$, *2.* $-\hat{\lambda}_6 = \hat{\lambda}_7 = -\hat{\lambda}_8 = 0$, *and 3.* $\hat{\lambda}_9 = \hat{\lambda}_{10} = -\hat{\lambda}_{11} = \hat{\lambda}_{12} = 0$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

Table 5-8: Results of Tests on the Relative Information Content of Detailed Components of Cash Flows (1992-1997)

MED: Market Equity Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Cst and Spp	3.1231*	0.2329	1.0808	2.4191	0.4319	2.8205*	0.0356
Cst and Tx	2.1932	3.5361*	0.3797	1.4817	1.8118	10.0798***	0.1095
Cst and Int	5.5947**	8.5074***	0.5346	0.0250	0.4401	0.1809	1.8776
Cst and Othop	1.7154	1.3516	5.1597**	0.5505	2.5581	0.4467	0.2446
Cst and Uinv	3.2960*	0.4050	1.1735	2.6485	0.8324	2.0737	4.9353**
Cst and Obinv	2.9152*	2.3140	1.7682	1.8828	0.0231	1.9295	1.4048
Cst and Iseq	4.0454**	5.1301**	3.6724*	3.5514*	0.2024	4.8908**	4.6922**
Cst and Aqcb	13.6027***	8.7400***	8.2423***	5.5522**	3.5908*	9.6911***	9.9142***
Cst and ObDebt	0.0534	0.7425	0.0064	1.0642	2.7841*	1.3482	1.7322
Cst and Pdebt	0.4263	0.0143	2.5061	0.8568	5.2747**	6.0617**	2.8329*
Cst and Dev	0.4969	13.5979***	0.0222	2.3823	4.4386**	7.1044***	7.0269***
Spp and Tx	1.9198	3.4483*	0.3519	1.6152	1.9611	10.3695***	0.1578
Spp and Int	6.7851***	7.6070***	0.2822	0.0124	0.3433	0.1178	1.9464
Spp and Othop	1.9600	1.3445	5.0284***	0.5638	2.5525	0.3455	0.2325
Spp and Uinv	3.6001*	0.4157	1.1467	2.6495	0.8305	2.0585	5.0356**
Spp and Obinv	2.9810*	2.3422	2.3193	1.9094	0.7833	1.9321	5.2915**
Spp and Aqcb	3.9443**	5.0792**	3.5132*	3.5492*	0.2044	4.9168**	5.1757**
Spp and Iseq	13.6464***	8.7588**	8.1094***	5.5463**	3.5883*	9.5434***	9.9062***
Spp and ObDebt	0.3595	0.7683	.0184	1.0834	2.3126	1.6003	1.6811
Spp and Pdebt	0.5542	0.0046	2.8197*	0.8944	0.5134	6.4410**	3.3176*
Spp and Dev	0.5032	13.5852***	0.0183	2.3819	4.6145**	7.1042***	7.1601***
Tx and Int	1.3206	0.1219	0.3608	0.7932	4.6930**	10.0679***	1.2499
Tx and Othop	1.2065	4.2378**	0.5523	0.8003	2.6668	10.2505***	2.0769
Tx and Uinv	1.0503	4.1737**	0.1804	0.2019	2.4788	8.9663***	0.4888
Tx and Obinv	1.3379	2.8568*	0.4794	0.6749	3.9683**	8.9837***	16.0692***
Tx and Aqcb	2.9017*	2.8683*	0.5207	1.2511	2.3961	3.6335*	2.7740*
Tx and Iseq	1.3822	1.1763	0.7415	1.1609	9.2106***	17.7260***	0.2526
Tx and ObDebt	1.1919	4.5564**	0.4459	0.1167	0.7673	8.4296***	8.2234***
Tx and Pdebt	1.5819	3.2451*	0.4891	0.5767	4.0353**	8.4391***	16.1172***
Tx and Dev	0.7017	0.7993	0.7789	0.2521	1.5946	5.0181**	8.0714***
Int and Othop	4.2544**	0.9744	5.3790**	0.7901	2.3732	0.0407	0.3015
Int and Uinv	17.0515***	1.9002	0.2027	0.3188	0.0019	0.1161	3.9548**
Int and Obinv	3.7378*	1.7671	2.6430	0.0742	0.1997	0.0059	4.6566***
Int and Aqcb	4.0040**	6.5563**	4.1876**	3.5890*	0.1979	4.8665**	7.6588***
Int and Iseq	13.1549***	9.2119***	7.2247***	5.3786**	3.4884*	2.0477	11.2489***
Int and ObDebt	5.9800**	1.5962	0.6628	0.6408	1.5135	0.0248	4.2725**
Int and Pdebt	5.4041**	3.7500*	2.8772*	1.4654	0.0435	0.2810	4.5525**
Int and Dev	0.5923	3.1101*	0.0543	2.3645	12.9273***	6.5302**	7.0798***

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

MED continued

Variables	1992	1993	1994	1995	1996	1997	Pooled
Othop and Uinv	1.1855	0.9863	5.5909**	1.5373	2.2768	0.6679	0.1583
Othop and Obinv	1.9218	1.5232	5.0877**	0.6795	2.3264	0.2313	0.2556
Othop and Acqb	3.9591**	3.7976*	3.9507**	3.4975*	0.0064	4.9453**	11.4233***
Othop and Iseq	14.7211***	9.3569***	3.5136*	3.2174*	1.6036	9.2359***	0.8512
Othop & ObDebt	1.8793	0.8410	5.0195**	1.4751	2.5064	2.0598	0.2483
Othop and Pdebt	2.5715	1.3914	5.0866**	0.6142	2.3633	6.0323**	0.2494
Othop and Dev	0.5549	13.3978***	0.0312	2.3389	48.0578***	7.0048***	10.4307***
Uinv and Obinv	2.7107*	5.9804**	1.3786	0.0950	1.4582	1.0668	5.9291**
Uinv and Aqcb	3.3316*	5.0288**	0.0951	3.1719*	0.2004	4.8720**	2.0447
Uinv and Iseq	12.9177***	8.6627***	7.9694	4.3418**	3.4959*	9.0935***	6.8476***
Uinv and ObDebt	4.8511**	0.6751	1.2536	0.7059	0.8220	0.9872	5.8558**
Uinv and Pdebt	4.0325**	0.1308	1.3622	2.7236*	1.2465	5.6217**	5.7646**
Uinv and Dev	0.4317	12.8938***	0.0236	1.9055	6.3576**	5.9826**	5.6787**
Obinv and Aqcb	3.7345*	4.7027**	3.9805**	3.4667*	0.1975	4.8962**	11.8002***
Obinv and Iseq	13.5259***	8.8097***	8.2147***	5.6534**	3.4899*	9.6050***	10.5666***
Obinv & ObDebt	4.1872**	0.9375	0.0332	0.8688	4.6451**	1.7729	2.3898
Obinv and Pdebt	2.3488	0.0394	0.1139	0.5254	0.1748	5.3841**	0.4417
Obinv and Dev	0.4444	15.0292***	0.0438	2.3297	10.7873***	5.8995**	10.7202***
Acqb and Iseq	4.3474**	1.4509	0.6122	1.2069	0.3983	2.6458	8.2704***
Acqb and ObDebt	4.3029**	5.3534**	1.0483	0.7816	0.1923	4.7379**	5.2192**
Acqb and Pdebt	4.9252**	4.9524**	3.9795**	3.2813*	0.1992	4.9070**	11.4731***
Acqb and Dev	2.9542*	8.9855***	0.31726	2.8265*	5.2147**	0.4985	6.2168**
Obdebt & Iseq	14.2170***	11.6861***	7.2067***	6.5553**	3.5188*	9.1140***	10.6606***
Obdebt & Pdebt	13.5804***	9.0432***	8.1906***	5.7077**	3.4904*	7.5673***	10.5411***
Obdebt & Dev	0.5073	0.2111	0.2213	2.6841	9.1872***	4.9727**	11.8053***
Pdebt and Iseq	1.1009	0.5962	0.0471	1.3464	5.4166**	2.2455	2.2895
Pdebt and Dev	0.5401	12.3162***	0.0308	1.2373	3.3044*	6.2499**	7.5150***
Iseq and Dev	0.4907	13.2323***	0.0436	2.1742	11.2718***	5.4143**	10.7125***

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

Table 5-8 continued

TAD: Total Asset Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Cst and Spp	0.1837	1.0018	0.0239	0.7395	0.0003	0.7276	0.5623
Cst and Tx	4.539**	3.6429*	0.2403	0.4141	0.5265	1.5954	0.0831
Cst and Int	1.0414	1.2187	1.074	0.0402	0.6829	0.2872	0.0466
Cst and Othop	0.3038	0.0402	0.5080	0.0859	0.2088	0.3080	0.7299
Cst and Uinv	0.2734	0.0233	0.6815	0.0081	1.0570	1.9964	0.4149
Cst and Obinv	0.0107	0.6264	0.3052	0.0835	0.5791	0.2301	0.0039
Cst and Iseq	0.0511	4.0561**	0.7615	0.0055	0.0591	0.6165	0.5737
Cst and Aqcb	0.9936	1.2615	2.7627*	0.6323	2.4544	0.0489	3.6896*
Cst and ObDebt	0.0032	0.1495	0.2344	0.1630	0.1668	0.0577	0.0554
Cst and Pdebt	1.2873	0.0000	0.7815	0.4222	0.0013	0.2715	0.0335
Cst and Dev	0.6936	3.8927**	0.7825	0.6292	0.0162	1.3820	0.0528
Spp and Tx	4.8002**	3.8474**	0.2308	0.4348	0.5553	1.6982	0.0568
Spp and Int	1.0309	1.5189	1.0230	0.0008	0.6451	0.0384	0.1263
Spp and Othop	0.3170	0.0171	0.5278	0.1176	0.2194	0.3816	0.7124
Spp and Uinv	0.3400	0.3131	0.6807	0.1795	1.0757	2.0187	0.3780
Spp and Obinv	0.0001	0.1959	0.3031	0.8034	0.6030	0.2135	0.0048
Spp and Aqcb	0.0772	4.064**	0.7617	0.0002	0.0569	0.6145	0.5748
Spp and Iseq	0.7785	1.3808	2.7129*	0.4881	2.5928	0.0578	3.3683*
Spp and ObDebt	0.0002	0.1200	0.2677	0.1122	0.0811	0.2106	0.0506
Spp and Pdebt	0.3752	0.0075	0.7531	0.4898	0.0061	0.6486	0.0008
Spp and Dev	0.7929	4.1832**	0.7723	0.6036	0.0223	1.3787	0.0516
Tx and Int	6.2405**	2.1885	0.2137	0.4041	0.9868	1.6299	0.2400
Tx and Othop	6.3228**	3.8997**	0.2116	0.3867	0.6562	1.6799	0.04288
Tx and Uinv	6.1595**	3.6511*	0.2311	0.3935	0.5416	1.6966	0.0484
Tx and Obinv	6.2779**	3.8425**	0.2137	0.3868	0.5871	1.4777	0.0491
Tx and Aqcb	6.3471**	4.7622**	0.4478	0.3853	0.5607	1.4125	0.4857
Tx and Iseq	6.1193**	4.5054**	0.3989	0.3967	0.0168	1.4467	0.0009
Tx and ObDebt	6.1683**	3.9048**	0.2288	0.3891	0.6206	1.6375	0.0486
Tx and Pdebt	6.2198**	3.8829**	0.2357	0.3913	0.6131	1.6170	0.0490
Tx and Dev	4.2039**	7.9327***	0.0174	0.3082	3.5177*	0.8923	0.5362
Int and Othop	0.0124	1.7633	0.9975	0.8389	0.7619	0.1797	0.1257
Int and Uinv	0.4097	1.8933	1.1649	0.8845	0.5633	0.1257	0.2024
Int and Obinv	0.2624	2.1101	0.9495	0.8532	0.6871	0.1526	0.1430
Int and Aqcb	0.2364	3.8663**	0.9242	0.8239	0.7752	0.6489	0.6699
Int and Iseq	0.2971	1.3204	1.3185	0.8819	0.3386	0.2128	0.4613
Int and ObDebt	0.2832	1.8681	0.9045	0.3351	0.6153	0.8119	0.0890
Int and Pdebt	0.2765	1.7765	0.7994	0.4314	0.9749	1.0069	0.1958
Int and Dev	1.2046	5.6856**	0.7037	0.1087	0.7695	1.2815	0.0049

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

TAD continued

Variables	1992	1993	1994	1995	1996	1997	Pooled
Othop and Uinv	0.3311	0.0179	0.5186	0.0805	0.4510	1.7178	0.7427
Othop and Obinv	0.2853	0.0304	0.7599	0.0198	0.2042	0.4759	0.7119
Othop and Acqb	0.2353	3.9225**	0.7589	0.0045	0.0617	0.6142	0.5654
Othop and Iseq	0.3142	1.0963	0.5819	0.0352	0.5633	0.0090	0.1432
Othop & ObDebt	0.2857	0.0873	0.5258	0.2550	0.2169	0.3639	0.7106
Othop and Pdebt	0.2901	0.0019	0.5617	0.3839	0.2147	0.3716	0.7121
Othop and Dev	1.2161	4.2047**	0.7765	0.5479	0.0347	1.3690	0.0491
Uinv and Obinv	0.0022	0.9316	0.0551	1.7505	0.3111	2.8064*	0.3552
Uinv and Aqcb	0.1797	3.9400**	0.7736	0.0067	0.0604	0.6122	0.5867
Uinv and Iseq	0.4865	1.6079	2.4426	0.1918	2.1427	1.7247	4.0532**
Uinv and ObDebt	0.1626	1.1770	0.0513	0.4601	1.1674	1.9575	0.3588
Uinv and Pdebt	0.4110	0.0087	0.7692	0.3929	1.1919	1.9391	0.3603
Uinv and Dev	1.3805	4.1843**	0.8054	0.5734	0.0521	1.3455	0.0531
Obinv and Aqcb	0.2335	3.9503**	0.7646	0.0005	0.0684	0.6139	0.5749
Obinv and Iseq	0.0149	1.4168	0.3668	0.1143	2.8769*	0.0730	3.6735*
Obinv & ObDebt	0.0000	0.1430	0.2482	0.5973	0.2306	0.2332	0.0737
Obinv and Pdebt	0.0016	0.0067	0.6175	0.4952	0.6319	0.1370	0.0154
Obinv and Dev	1.2439	3.9732**	0.7641	0.5461	0.1161	1.2681	0.0520
Acqb and Iseq	0.2184	3.4584*	0.7114	0.0022	0.0751	0.6546	0.4667
Acqb and ObDebt	0.2163	4.3462**	0.7625	0.0328	0.0593	0.6158	0.5731
Acqb and Pdebt	0.2147	3.8984**	0.7670	0.6859	0.0571	0.6205	0.5742
Acqb and Dev	0.9299	2.6051	0.8174	0.5496	0.0669	1.6640	0.5959
Obdebt & Iseq	0.0257	1.1780	2.5644	0.0222	2.5960	0.0458	3.6648*
Obdebt & Pdebt	1.0750	0.4579	0.9113	0.3689	2.4834	0.0481	3.6940*
Obdebt & Dev	1.1354	2.8785*	1.0606	0.5695	0.5381	1.4133	0.1352
Pdebt and Iseq	0.0095	0.0728	0.6624	0.1673	0.9189	0.0879	0.0341
Pdebt and Dev	1.0713	4.1991	0.7749	0.5706	0.0279	1.3858	0.0515
Iseq and Dev	1.0039	4.3578	0.9165	0.5515	0261	1.3828	0.0511

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

components have relative information content. For the MED pooled data, 42 out of 66 F- values of pairwise comparisons are significant at the 10% level. Results from cross-sectional data, in general, are consistent with those pooled samples. Since the majority of the cash flow components have no identical information content, the ranking of information content for each pairwise can be inferred from the coefficient of determination (R^2). Appendix A presents R^2 for each pairwise in detail.

The TAD data of Table 5-8 indicates contradict results with the MED data. Pooled results indicate six pairwise comparisons of cash flows that are significant at the 10% level. Cross-sectional data support the pooled results. With these results, the TAD data suggests that there is a little evidence of the relative information content of cash flow components.

In summary, the issue addressed in hypothesis four is to test whether each component of cash flows either from operating, investing or financing activities (Cst, Spp, Tx ..., Dev) reflects the information used by investors to price securities, assuming investors know other components. The evidence strongly indicates that all components of operating, investing and financing cash flows possess strong incremental information content when cash flow variables are deflated by market equities of the firm. When utilising total assets as the deflator, the majority of the cash flow variables possess incremental information content. Further, there is evidence that each component of cash flows has no incremental information that equal to other components. Finally, the results suggest that disaggregation of cash flows into Cst, Spp, Tx ... Dev is useful in explaining future cash flows.

The main issue discussed in hypothesis five is to determine whether any of the

cash flow measures provides greater or less information content than other components. The evidence indicates that the majority of components of cash flows possess relative information content and thus all provide different information content. This is achieved when market equity of the firm is used to deflate cash flow data. However, when total assets act as deflator of cash flow data, no relative information content exists and thus cash flows variables have identical information content.

5. 3 Competing Models

As discussed in chapter four, there are three sets of cash flows tested in this chapter: 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 4-2 to 4-4 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 5-9 presents mean square errors from the estimation of cash flow models used in this study.

The MED pooled data of Table 5-9 indicates that equation 4-4 has the lowest MSE and equation 4-3 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

Table 5-9: Comparison of Mean Square Errors of Cash Flow Components

MED: Market Equity Deflator

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

TAD: Total Asset Deflator

Years	Models of Cash Flows		
	1 CF [a]	3 CF [b]	12 CF [c]
1992	3.54785	3.54935	3.48149
1993	2.59963	2.57569	2.59815
1994	3.57898	3.58117	3.51802
1995	11.95472	11.95717	11.93719
1996	3.50095	3.41229	3.42295
1997	1.21995	1.22209	1.22249
Pooled	4.54743	4.54811	4.54662

a. $\hat{R}_{jt2} = \hat{\gamma}_0 + \hat{\gamma}_1 NetCf$ (Equation 4-2)

b. $\hat{R}_{jt3} = \hat{\beta}_0 + \hat{\beta}_1 \text{AgOp} + \hat{\beta}_2 \text{AgFin} - \hat{\beta}_3 \text{AgIn}$ (Equation 4-3)

c. $\hat{R}_{jt3} = \hat{\lambda}_0 + \hat{\lambda}_1 Rc + \hat{\lambda}_2 Ps + \hat{\lambda}_3 Pt + \hat{\lambda}_4 Pi + \hat{\lambda}_5 No + \hat{\lambda}_6 Pp + \hat{\lambda}_7 Rp + \hat{\lambda}_8 Pa + \hat{\lambda}_9 Rd + \hat{\lambda}_{10} Pd + \hat{\lambda}_{11} Re + \hat{\lambda}_{12} Pv$ (Equation 4-4)

dispersion around the true value of a parameter and thus a smaller residual component.

The TAD data of Table 5-9 provides indifferent results from the MED data. Pooled results indicate that equation 4-2 has the highest MSE among three equations of components of cash flow variables. Results form annual regressions provide consistent results.

5. 4 Sensitivity Analysis

The results reported in section 5.2 may be sensitive to assumptions underlying models. This section discusses the issues influencing the robustness of hypothesis results: pooling of cross-sectional and time series data; collinearity; and autocorrelation.

Pooled results reported in Tables 5-3 to 5-8 of section 5.3 are provided by assuming that firm-year observations are homogeneous. Since the behaviour of pooled data is likely to be different from that of the annual cross-sectional data, the relationship between security returns and cash flows for each cross-sectional time and all the time (1992-1997) can be characterised by their own special intercept. The present study performs an additional test to check whether pooled results reported previously are different when dummy variables which represent the period of reporting are included in the models (equations 4-13 to 15). Appendix B provides the results of the test.

Appendix B indicates that the coefficients of cash flow variables are mostly significant, implying the dummy variables did not change the result of pooled

regressions. Therefore, pooled results reported in section 5.2 are still valid and not sensitive to the period of reporting. In particular, the homogeneous assumption can be held.

The present study also tests the problem of autocorrelation. Durbin-Watson (DW) statistic as a formal procedure to identify autocorrelation (DiIorio, 1991) indicates there was no serious problem of serial correlation (Appendix C).

Appendix D provides correlation coefficients among cash flows variables. By using the guidance of Judge *et. al.* (1988), the observed correlations among regressors for equation 4-3 to 4-4 indicate there might be serious multicollinearity.

Appendix E provides variance inflation factors (VIF) for equations 4-3 and 4-4. By using VIF value of 10 as a standard, Appendix E indicates that the significant collinearity exists in equation 4-4. In these equations, the variance of Cst and Spp were inflated not only at the pooled level but also at the annual cross-sectional level. Equation 4-3 of Appendix E indicates there was collinearity at the annual cross-sectional data but no collinearity at the pooled data.

Collinearity may be one of the weaknesses in the present study. However, since collinearity is a data problem rather than a statistical one (Christie *et. al.*, 1984), the results reported in section 5.2 may be still valid and not need special treatment. In addition, the present study is not to build models, rather to provide the information content of components of cash flows. It is also not to find the appropriate variable to be included or excluded in the models. Therefore, the collinearity problem can be ignored.

5. 5 Summary

In this chapter the characteristics of the data and empirical results from hypothesis tests of components of cash flows are presented. From hypothesis analyses, the results of information content tests can be summarised according to the three following categories: information content, predictive ability and the best models. In terms of information content, empirical results indicate, according to hypothesis, as follows:

	Market Equity Deflator	**Total Asset Deflator**
H_{o1}	Historical cash flows possess information content.	Historical cash flows possess information content.
H_{o2}	Total operating, investing and financing cash flows possess incremental information content.	Total operating, investing and financing cash flows possess incremental information content.
H_{o3}	Total operating, investing and financing cash flows possess relative information content.	Total operating, investing and financing cash flows do not possess relative information content.
H_{o4}	All components of operating, investing and financing cash flows possess strong incremental information content.	The majority of the components of operating, investing and financing cash flows possess incremental information content.
H_{o5}	The majority of components of cash flows possess relative information content.	The majority of components of cash flows do not possess relative information content.

In terms of predicting future cash flows, all models of cash flow components reach a similar conclusion; that is, all models can be used to predict future cash flows. By looking at the mean square errors of the models, the twelve-component model (equation 4-4) is the best model among cash flow models.

Having examined the results of hypothesis tests of cash flows, comparisons of cash flows and earnings are presented in the next chapter.

CHAPTER 6

RESULTS OF TESTING INFORMATION CONTENT OF CASH FLOWS AND EARNINGS

In chapter five, the results of testing five hypotheses of cash flows were presented and discussed. The present chapter consists of four main sections and its purpose is to report results of hypothesis tests of cash flows versus earnings. The first section discusses the results of testing six hypotheses. The second section compares mean squared errors of equations to select the finest model. Section three discusses the robustness of the findings. The last section summarises the findings.

6. 1 Hypothesis Testing

This section reports the results from performing the tests of the hypotheses of cash flows versus earnings. To recall, the six hypotheses that were tested are:

H_{o6}: Historical cash flows do not have incremental information content beyond that provided by earnings alone.

H_{o7}: Historical cash flows do not have relative information content, given earnings alone.

H_{o8}: Total operating, investing, and financing cash flows do not possess incremental information content beyond that provided by earnings alone.

H_{o9}: Total operating, investing, and financing cash flows do not provide relative information content, given earnings alone.

H_{o10}: Components of total operating, investing and financing cash flows do not have incremental information content beyond that provided by earnings alone.

H_{o11}: Components of total operating, investing and financing cash flows do not have relative information content, given earnings alone.

In chapter five, three original sets of cash flows were tested: historical cash flows (NetCF), aggregate cash flows from operating, investing and financing activities (AgOp, OgIn and AgFin), and detailed components of cash flows (Cst, Spp, Tx, ... Dev). In the present chapter, these three sets of cash flows are tested against earnings (as given in equations 4-5 to 4-7). Earnings is used as a benchmark because the information content of this variable is well known in the literature.

6. 1. 1 Historical Cash Flows and Earnings

This section addresses two hypotheses: hypothesis six and seven. Hypothesis six tests the incremental information content of historical cash flows, given earnings. Hypothesis seven tests the relative information content of historical cash flows versus earnings.

Incremental Information Content

The issue addressed in hypothesis six here is whether historical cash flows have incremental information value to predict future cash flows after controlling for earnings. The incremental information content of the historical cash flow is inferred when the coefficient of historical cash flows (φ_1) in equation 4-5 is significant. Table 6-1 presents the results of the tests.

The MED and TAD data of Table 6-1 indicates that earnings and historical cash flows jointly have information value to predict future cash flows. F–values for pooled data are significant at the 1% level. Cross-sectional F-values also support this result.

Table 6-1: Results of Tests of the Incremental Information Content of Net Cash Flows versus Earnings (T-4, 1992-1997)

MED: Market Equity Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\varphi}_0$)	.692680	.745081	.475616	-.139104	.417660	.286221	.419366
NetCF ($\hat{\varphi}_1$)	-.035741	.960625***	.603532***	.038525	.098143	.385072**	.012948
(Std. Error)	(.1060)	(.1098)	(.2085)	(.0822)	(.0630)	(.1588)	(.0158)
E ($\hat{\phi}_1$)	-.507586*	-.419461	.223168	.455289***	.204258	.351139**	.112846**
(Std. Error)	(.2981)	(.2702)	(.2243)	(.1155)	(.2551)	(.1538)	(.0466)
F-value	1.637	38.853***	4.771***	8.159***	1.515	6.668**	3.214**
Adj-R^2	.0032	.1416	.0147	.0229	.0015	.0163	.0013
N	395	460	506	613	668	683	3336

TAD: Total Asset Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\varphi}_0$)	.718332	.780753	.780753	.110432	.440365	.339528	.465091
NetCF ($\hat{\varphi}_1$)	.347272	1.071718***	.051490	.11420	1.32756***	.398446**	.455073***
(Std. Error)	(.5146)	(.3681)	(.4222)	(.3573)	(.4047)	(.1604)	(.1384)
E ($\hat{\phi}_1$)	.079404	-.008936	.12544	.084249	-.211117	.231884**	.030030
(Std. Error)	(.0678)	(.0725)	(.1264)	(.1473)	(.2198)	(.0825)	(.0328)
F-value	.740	4.345***	.519	.368	5.467***	7.125***	6.672***
Adj-R^2	-.0013	.0143	-.0019	-0.0020	.0131	.0176	.0034
N	398	462	512	623	672	684	3353

a. $\hat{\varphi}_1$ *and* $\hat{\phi}_1$ *are from the equation:* $\hat{R}_{its} = \hat{\varphi}_0 + \hat{\varphi}_1 NetCf + \hat{\phi}_1 E$

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

For the MED data, the coefficient of historical cash flows (NetCf) is not significant but it is significant at the 1% level for the TAD data. Therefore, historical cash flows have information content for only the TAD data. On the other hand, earnings possess incremental information content for the MED data but not for the TAD data.

Both MED and TAD cross-sectional data of Table 6-1 indicates that the coefficient of historical cash flows is significant for three years, implying incremental information content of cash flows. The coefficient of earnings (E), on the other hand, is significant in three years for the MED data and in one year for the TAD data. Since year by year results provide significant coefficients, then it can be concluded that historical cash flows have incremental information content beyond that provided by earnings alone.

Relative Information Content

Empirical evidence from previous studies has shown the dominance of information content of earnings over cash flows. But these studies did not test whether or not cash flow and earnings data have identical information content. Hypothesis seven is to provide evidence on this issue and to examine whether historical cash flows (NetCf) have a greater or less information content than earnings (E). Table 6-2 presents the results of hypothesis tests.

Table 6-2 indicates that historical cash flows and earnings convey different information content. F-values of Wald's test for the MED and TAD pooled data are statistically significant at 5% level. Cross-sectional results indicate that two out of

Table 6-2: Results of Tests on the Relative Information Content of Net Cash Flows and Earnings (1992-1997)

MED: Market Equity Deflator

	R^2 for Variables		F-values of Wald Tests[a]
Years	NetCF	E	
1992	.0010	.0080	1.0943
1993	.01408	.0021	0.13578
1994	.0167	.0023	3.6485*
1995	.0013	.0257	17.1984***
1996	.0036	.0009	0.41365
1997	.0117	.0108	1.0086
Pooled	.0002	.0017	11.4103***

TAD: Total Asset Deflator

	R^2 for Variables		F-values of Wald Tests[a]
Years	NetCF	E	
1992	.0003	.0026	0.6052
1993	.0185	.0005	1.4528
1994	.0001	.0020	0.9580
1995	.0007	.0010	0.7776
1996	.0147	.0003	1.8948
1997	.0091	.0116	3.4644*
Pooled	.0037	.0008	6.2211**

a. F-value for pairwise of earnings and historical cash flows
** Significant at the 10% level*
*** Significant at the 5% level*
**** Significant at the 1% level*

the six years support this. The relative information content for pairwise comparison of NetCf&E exists in 1994 and 1995 for the MED data and in 1997 for the TAD data. Accordingly evidence that historical cash flows and earnings have different information content is weak.

In summary, the main issue addressed in hypothesis six is to test whether historical cash flows reflect the information used by investors to price securities, conditional on investors knowing earnings information. The evidence in general indicates that historical cash flows possess (NetCF) incremental information content beyond that provided by earnings alone (E). There is also evidence that historical cash flows and earnings jointly can be used to predict future cash flows.

The issue addressed in hypothesis seven is to determine whether historical cash flows and earnings provide different information content. Empirical evidence indicates that there is relative information content for pooled data but weak on annual basis.

6. 1. 2 Total Operating, Investing and Financing Cash Flows and Earnings

This section presents the tests on hypothesis eight and nine. Hypothesis eight tests incremental information content of three components of cash flows after controlling for earnings (AgOp, AgIn, AgFin, and E). Hypothesis nine tests the relative information content of cash flows, given earnings.

Incremental Information Content

The issue addressed by hypothesis eight is whether any of the three categories

of cash flows provide incremental information content, given the information of earnings (equation 4-6). The null hypothesis is rejected when the coefficients of the cash flow variables are significant, implying incremental information content. Table 6-3 presents this test.

Table 6-3 reports F-values of equation 4-6 and indicates that they are very strong at the 1% level. The significance of the F-values suggests that the three components of cash flows and earnings are useful in explaining security returns.

Table 6-3 further indicates that using pooled data the coefficients of operating, investing and financing cash flows ($\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_2$) are strongly significant at the 1% level. The coefficient of earnings, on the other hand, is not significant. Therefore, total operating, investing and financing cash flows possess incremental information content beyond that provided by earnings alone. Earnings do not have incremental information content beyond that given by the three components of cash flows.

The results of the cross-sectional data of Table 6-3 in general are consistent with those of the pooled data. The coefficient of operating cash flows ($\hat{\lambda}_1$) is strongly significant for all the years in the MED data and for two years in the TAD data. The total financing cash flow ($\hat{\lambda}_3$) in both the MED and TAD data is significant in three years (1993, 1996, and 1997). The coefficient of total investing cash flows ($\hat{\lambda}_2$) is significant at the 10% level in 1997 for the MED data and in three years for the TAD data. The coefficient of earnings is only significant in one year for the MED data and in two years for the TAD data.

The present results may be comparable to many previous studies. To recall, Cheng *et. al.* (1997) found that cash flows from operations have significant

Table 6-3: Results of Tests of the Incremental Information Content of Total Component Cash Flows versus Earnings (T-5, 1992-1997)

MED: Market Equity Deflator

Variables[a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\lambda}_0$)	.582797	.647513	.5383	-.176531	.298241	.240212	.345521
E (ϕ_2)	-.384058	-.494596**	.138494	0.099451	.232772	.200319*	-.050943
(Std. Error)	(.2797)	(.2564)	(.2457)	(.1260)	(.1990)	(.1165)	(.0410)
AgOp ($\hat{\lambda}_1$)	.354804**	1.035412***	.066314	.680122***	.955306***	.623042***	.706830***
(Std. Error)	(.1424)	(.1069)	(.1679)	(.1577)	(.2240)	(.1383)	(.0625)
AgIn ($\hat{\lambda}_2$)	-.025513	-.080318	-.032869	-.106295	.128459	.380659***	.333750***
(Std. Error)	(.1131)	(.1994)	(.1251)	(.1088)	(.1603)	(.1374)	(.0593)
AgFin ($\hat{\lambda}_3$)	.040387	1.027216***	-.029423	.149624	.888815***	.405088***	.542870***
(Std. Error)	(.0955)	(.1050)	(.1598)	(.1069)	(.1413)	(.1192)	(.0545)
F-value	4.534***	29.697***	.517	16.085***	20.911***	7.604***	49.590***
Adj-R^2	.0348	.1994	-.0038	.0900	.1074	.0375	.0554
N	393	462	510	611	663	679	3314

TAD: Total Asset Deflator

Variables[a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\lambda}_0$)	.692456	.732774	.572563	.058508	.348703	.341730	.4598998
E ($\hat{\phi}_2$)	.133584	.076474	.297505*	.090634	-.203953	.224743***	.026570
(Std. Error)	(.1010)	(.0938)	(.1529)	(.1860)	(.1336)	(.0854)	(.0405)
AgOp ($\hat{\lambda}_1$)	.534528	.670207*	.120312	.601747	2.172897***	.424577**	.473890***
(Std. Error)	(.7190)	(.3966)	(.5021)	(.6100)	(.5672)	(.1835)	(.1687)
AgIn ($\hat{\lambda}_2$)	-.194808	.869627**	-.347595	-.142860	.810817*	.405592**	.440292***
(Std. Error)	(.5966)	(.4424)	(.4653)	(.4154)	(.4665)	(.1858)	(.1399)
AgFin ($\hat{\lambda}_3$)	.359252	1.588277***	.246670	.41664	1.841904***	.387907***	.502183***
(Std. Error)	(.5241)	(.4161)	(.4308)	(.4416)	(.4149)	(.1705)	(.1458)
F-value	1.138	3.926***	1.385	.629	6.635***	3.601***	3.608***
Adj-R^2	.0014	.0248	.0030	-.0024	.0325	.0150	.0031
N	397	462	512	623	672	684	3353

a. The coefficients of $\hat{\lambda}_1$, $\hat{\lambda}_2$, $\hat{\lambda}_3$, *and* $\hat{\phi}_2$ *from* $\hat{R}_{it6} = \hat{\lambda}_0 + \hat{\lambda}_1 AgOp + \hat{\lambda}_2 AgIn + \hat{\lambda}_3 AgFin + \hat{\phi}_2 E$

* *Significant at the 10% level*

** *Significant at the 5% level*

*** *Significant at the 1% level*

incremental explanatory power after controlling earning information. Clubb (1996), on the other hand, found accounting earnings data possess information content beyond cash flows from operations. Ali and Pope (1996) found earnings, working capital and cash flows from operations have incremental information content. Ali (1994) reported earnings have incremental information content beyond working capital and cash flows from operations, working capital from operations have incremental information content beyond earnings and cash flows from operations, and cash flows from operations do not have incremental information content beyond working capital and earnings. Lastly, Bowen *et. al.* (1987) found cash flows from operating and investing have incremental information beyond that contained by earnings. The incremental information content found in the present study supports the findings by Cheng *et. al.* (1997) and Bowen *et. al.* (1987) but is in contrast to Clubb (1996) and Ali (1994).

Relative Information Content

The issue addressed in hypothesis nine is to determine whether any of the aggregate operating, investing, and financing cash flows has higher or lower information content than earnings measure. The significant of F-values of Wald tests is interpreted as relative information content. Table 6-4 presents the statistical results of hypothesis tests.

Table 6-4 indicates by using the MED pooled data, aggregate cash flows from financing and investing activities (AgFin, and AgIn) have relative information content, given earnings (E). Results from cross-sectional data support this evidence.

Table 6-4: Results of Tests on the Relative Information Content of Components of Total Operating, Investing and Financing Cash flows and Earnings (1992-1997)

MED: Market Equity Deflator

	R^2 of Cash Flows Variables				F-values of Wald Tests[a]		
Years	E	AgOp	AgIn	AgFin	E&AgOp	E&AgIn	E&AgFin
1992	.0079	.0416	.0268	.0001	0.9469	1.0732	0.9625
1993	.0011	.0032	.0362	.0100	0.2153	3.3708*	0.8017
1994	.0007	.0008	.0000	.0001	0.4085	0.3678	0.3792
1995	.0251	.0669	.0502	.0125	1.3242	13.3107***	20.2880***
1996	.0009	.0026	.0562	.0759	0.7298	2.8021*	4.5766**
1997	.0131	.0196	.0013	.0000	5.4913**	2.1230	3.2205*
Pooled	.0028	.0161	.0195	.0087	2.4352	3.7015*	9.2725***

TAD: Total Asset Deflator

	R^2 of Cash Flows Variables				F-values of Wald Tests[a]		
Years	E	AgOp	AgIn	AgFin	E&AgOp	E&AgIn	E&AgFin
1992	.0029	.0006	.0048	.0023	0.0036	0.5012	0.6892
1993	.0005	.0000	.0005	.0233	0.3881	0.0042	2.7357*
1994	.0020	.0000	.0028	.0017	0.0298	2.4530	0.4375
1995	.0010	.0015	.0003	.0001	0.5148	2.0687	0.0606
1996	.0005	.0010	.0090	.0042	0.5555	2.41859	2.3172
1997	.0116	.0008	.0028	.0001	4.4371**	4.1338**	4.1941**
Pooled	.0008	.0004	.0000	.0003	0.0185	2.2579	.08895

a. F-values for pairwise among cash flow variables
* *Significant at the 10% level*
** *Significant at the 5% level*
*** *Significant at the 1% level*

F-values for pairwise comparisons of AgFin&E and AgIn&E are significant in three years. The R^2 shows that aggregate cash flows from investing activities (AgFin) provide the greatest information. The ranking of the information content may be represented as: AgIn > E > Agfin = AgOp.

The TAD pooled data of Table 6-4 indicate that each of total cash flows from operating, investing and financing has identical information content to earnings. Cross-sectional TAD data also indicates that F-values for each pairwise comparison in general are not significant.

In summary, hypothesis eight test whether each of total cash flows from operating, investing and financing activities (AgOp, AgIn and AgFin) reflects the information used by investors to price securities, conditional on investors knowing other information, namely earnings. The evidence indicates that the three components of cash flows possess strong information content beyond that possessed by earnings alone. Also, F-values of equation 4-6 indicate that the three cash flow components and earnings (AgOp), AgIn, AgFin, and E) are useful in predicting future cash flows.

With respect to the issue in hypothesis nine there is evidence of the MED data that total cash flows from investing activities provide greater information content than other variables. For the TAD data, the evidence generally indicates all cash flow components (AgOp, AgIn and AgFin) possess identical information content to earnings.

6. 1. 3 Detailed Components of Cash Flows and Earnings

This section presents the results of the tests on hypothesis ten and eleven. Hypothesis ten tests the incremental information content of twelve components of cash flows, given earnings. Hypothesis eleven tests the relative information content of the twelve components of cash flows versus earnings.

Incremental Information Content

This section presents the incremental information contents of detailed components of cash flows. The hypothesis is that the components of total operating, investing and financing cash flows (Cst, Spp, Tx ..., Dev) have no incremental information content beyond that provided by earnings alone. The null hypothesis is rejected if the coefficients of the cash flow are significant from zero. Table 6-5 presents results of hypothesis ten.

Table 6-5 indicates that for the pooled data the components of cash flows together with earnings have significant F-values for all years at the 1% level. The cross sectional data supports the result of the pooled data. The significance of F-values implies that earnings and components of cash flows together have ability to predict future cash flows. However, as discussed in hypothesis four, components of cash flows alone (Cst, Spp, Tx ... Dev) are adequate to predict cash flows. Accordingly, the significance of F-values in Table 6-5 may be dominated by the cash flow variables. If this is the case, the addition of the earnings variable in equation 4-7 may be questionable.

The MED pooled data of Table 6-5 also indicates that all the components of

Table 6-5: Results of Tests of the Incremental Information Content of Components of Cash Flows versus Earnings (T-6, 1992-1997)

MED: Market Equity Deflator

Variables [a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\delta}_0$)	.259999	.525021	.330337	-.238042	.167470	.011766	.209837
E ($\hat{\phi}_3$)	-.114779	-.054441	.326629	.221393**	.602202***	.367210***	.123067**
(Std. Error)	(.2498)	(.2757)	(.2385)	(.1044)	(.2043)	(.1010)	(.0596)
Cst ($\hat{\delta}_1$)	.122212	.530400***	.265664**	.420888***	.004091	.401757***	.077334**
(Std. Error)	(.1554)	(.1453)	(.1093)	(.1231)	(.1816)	(.1300)	(.0305)
Spp ($\hat{\delta}_2$)	.145732	.526896***	.248093**	.425528***	-.009114	.392886***	.065041**
(Std. Error)	(.1653)	(.1484)	(.1105)	(.1233)	(.1815)	(.1296)	(.0310)
Tx ($\hat{\delta}_3$)	2.257689	1.687821	-3.34065**	.314176	1.011777	-2.03567*	2.787167***
(Std. Error)	(1.5433)	(1.3981)	(1.5519)	(.7318)	(1.3731)	(1.0582)	(.3021)
Int ($\hat{\delta}_4$)	-.173433	.413661	-.507828	.148467	-.079954	.691890	-.357348***
(Std. Error)	(.2330)	(.3607)	(.5030)	(.3674)	(.5681)	(.5526)	(.0450)
Othop ($\hat{\delta}_5$)	-.123087	.564737	.714177***	.486285**	-.770617**	.381645**	.231647***
(Std. Error)	(.1834)	(.2690)	(.1816)	(.1972)	(.3381)	(.15085)	(.0826)
Uinv ($\hat{\delta}_6$)	-.175355	-.490255**	.055921	-.095259	.042846	.126988	-.074496***
(Std. Error)	(.1398)	(.2229)	(.0773)	(.0740)	(.1117)	(.1334)	(.0286)
Obinv ($\hat{\delta}_7$)	.045956	-.537270**	.108490*	-.046484	.0888679	.140244	.048575***
(Std. Error)	(.1262)	(.2259)	(.0588)	(.0724)	(.1054)	(.1292)	(.0165)
Aqcb ($_8$)	2.676041	1.009965	.495940	.117454	-.610593	-.939550***	-.445225*
(Std. Error)	(1.8633)	(.8822)	(.5111)	(.2786)	(.6367)	(.3474)	(.2404)
Obdebt ($\hat{\delta}_9$)	-.007022	.226020	.183079**	.234330**	.040455	.164527	.046865*
(Std. Error)	(.1093)	(.2147)	(.0827)	(.1081)	(.0813)	(.1394)	(.0243)
Pdebt ($\hat{\delta}_{10}$)	.032046	.256712	.206658***	.075008	.085767	.022018	.088328***
(Std. Error)	(.0895)	(.2055)	(.0792)	(.1272)	(.0920)	(.1650)	(.0222)
Iseq ($\hat{\delta}_{11}$)	2.026053***	1.785806***	.755005***	.505998***	1.556775***	1.173956***	.596818***
(Std. Error)	(.1911)	(.1954)	(.1181)	(.1239)	(.1726)	(.1456)	(.0469)
Dev ($\hat{\delta}_{12}$)	-3.15971***	-.193748	2.74741*	-.26870	-1.28895*	-.42665	-2.75557***
(Std. Error)	(.9670)	(1.0323)	(1.4618)	(.5673)	(.6645)	(.5875)	(.2394)
F-value	13.878***	13.288***	7.904***	7.122***	9.923***	10.716***	40.335***
Adj-R^2	.3020	.2582	.1499	.1163	.1489	.1578	.1330
N	388	460	510	606	664	675	3334

a. The coefficients of $\hat{\delta}_1$, $\hat{\delta}_2$, $\hat{\delta}_3$, $\hat{\delta}_4$, $\hat{\delta}_5$, $\hat{\delta}_6$, $\hat{\delta}_7$, $\hat{\delta}_8$, $\hat{\delta}_9$, $\hat{\delta}_{10}$, $\hat{\delta}_{11}$, $\hat{\delta}_{12}$ *and* $\hat{\phi}_3$ *from the following model*

$$\hat{R}_{it7} = \hat{\delta}_0 + \hat{\delta}_1 Rc + \hat{\delta}_2 Ps + \hat{\delta}_3 Pt + \hat{\delta}_4 Pi + \hat{\delta}_5 No + \hat{\delta}_6 Pp + \hat{\delta}_7 Rp + \hat{\delta}_8 Pa + \hat{\delta}_9 Rd + \hat{\delta}_{10} Pd + \hat{\delta}_{11} Re + \hat{\delta}_{12} Pv + \hat{\phi}_3 E$$

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

Table 6-5 continued

TAD: Total Asset Deflator

Variables [a]	1992	1993	1994	1995	1996	1997	Pooled
Intercept ($\hat{\delta}_0$)	.872721	.850633	.300867	-.391950	.238869	.286301	.386070
E ($\hat{\phi}_3$)	.089831	.085773	.469404***	.258323	-.186005	.043132	.058105
(Std. Error)	(.1094)	(.0955)	(.1780)	(.2837)	(.1498)	(.0566)	(.0443)
Cst ($\hat{\delta}_1$)	.558365	.407619	.068895	.960587	1.983779***	.538188**	.386004**
(Std. Error)	(.7959)	(.4040)	(.4187)	(1.0344)	(.5420)	(.2147)	(.1629)
Spp ($\hat{\delta}_2$)	.871315	.357790	.079439	.728269	1.924878***	.525598**	.359559**
(Std. Error)	(.8320)	(.3847)	(.4187)	(1.0283)	(.5376)	(.2120)	(.1621)
Tx ($\hat{\delta}_3$)	5.776154	5.233096*	-.236958	-6.659136	4.427023	-1.247036	1.303174
(Std. Error)	(6.0995)	(3.0875)	(5.9116)	(8.7094)	(3.8412)	(2.2924)	(1.7281)
Int ($\hat{\delta}_4$)	-2.503123	4.683730	-3.513275	2.650360	3.686781	4.040551**	.738048
(Std. Error)	(1.9340)	(2.8505)	(2.9834)	(6.3196)	(3.0204)	(1.7935)	(1.1230)
Othop ($\hat{\delta}_5$)	2.374873**	.184669	.645273	.107404	1.993242**	.557009**	.580325**
(Std. Error)	(1.0236)	(.7615)	(.7619)	(1.4730)	(.9012)	(.2415)	(.2588)
Uinv ($\hat{\delta}_6$)	-.812486	.551112	-.229959	-.466295	.524256	.584982**	.24832*
(Std. Error)	(.6352)	(.4661)	(.3958)	(.4693)	(.3757)	(.2282)	(.1420)
Obinv ($\hat{\delta}_7$)	.119571	.394206	-.117212	-.770472	.780813**	.364933	.292306**
(Std. Error)	(.7980)	(.4252)	(.3981)	(.7216)	(.2441)	(.2153)	(.1204)
Aqcb ($_8$)	.465773	3.532708	-4.780169**	1.569488	.038705	-.574267	-.543087
(Std. Error)	(5.5155)	(2.2603)	(1.8692)	(3.9670)	(.19885)	(.6915)	(.8721)
Obdebt ($\hat{\delta}_9$)	1.525880	.695107	-345320	-1.206936	1.456528***	.163192***	.269956**
(Std. Error)	(.9581)	(.6963)	(.4125)	(.8595)	(.5136)	(.2332)	(.1541)
Pdebt ($\hat{\delta}_{10}$)	.208858*	1.108613***	.815840**	.648778	2.018660***	.372042	.625623***
(Std. Error)	(.9054)	(.7663)	(.5351)	(1.2751)	(.5136)	(.3052)	(.1376)
Iseq ($\hat{\delta}_{11}$)	1.114332	.953280	.162494	1.000458	1.398965**	.605848*	.331975**
(Std. Error)	(.5152)	(.4236)	(.3587)	(.5814)	(.3552)	(.2165)	(.1436)
Dev ($\hat{\delta}_{12}$)	1.292218	5.118494	-4.462174*	-5.615715	.374932	.127774	-.483382
(Std. Error)	(3.9203)	(3.3693)	(2.3937)	(6.0153)	(1.4693)	(.8046)	(.8341)
F-value	1.739*	1.597*	2.084**	1.164	2.928***	1.256	1.987**
Adj-R^2	.0237	.0166	.0268	.0034	.0360	.0048	.0038
N	396	462	512	621	673	685	3333

a. The coefficients of $\hat{\delta}_1$, $\hat{\delta}_2$, $\hat{\delta}_3$, $\hat{\delta}_4$, $\hat{\delta}_5$, $\hat{\delta}_6$, $\hat{\delta}_7$, $\hat{\delta}_8$, $\hat{\delta}_9$, $\hat{\delta}_{10}$, $\hat{\delta}_{11}$, $\hat{\delta}_{12}$ *and* $\hat{\phi}_3$ *from the following model*

$$\hat{R}_{it} = \hat{\delta}_0 + \hat{\delta}_1 Rc + \hat{\delta}_2 Ps + \hat{\delta}_3 Pt + \hat{\delta}_4 Pi + \hat{\delta}_5 No + \hat{\delta}_6 Pp + \hat{\delta}_7 Rp + \hat{\delta}_8 Pa + \hat{\delta}_9 Rd + \hat{\delta}_{10} Pd + \hat{\delta}_{11} Re + \hat{\delta}_{12} Pv + \hat{\phi}_3 E$$

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

cash flows possess incremental information content at least at the 10% level, implying the null hypothesis is rejected. The TAD data also indicates the majority of components of cash flows have incremental information content. The cross-sectional data in general supports the presence of information content of cash flows components on the pooled data.

For the cross-sectional MED data, the components of the operating activities in Table 6-5 indicate that coefficients of cash flows from customers (Cst) and for suppliers (Spp) are significant (1993, 1994, 1995, and 1997). Cash flow coefficients from other operating activities (Othop) are significant in 1994, 1995, 1996, and 1997. While the coefficient of cash flows for tax payment (Tx) is significant for two years, cash flow coefficient for interest (Int) is not significant in any single year. In investing activities, both the coefficients of cash used (Uinv) and obtained (Obinv) from investment are significant in 1993. The coefficient of cash flows from acquisition of new business (Acqb) is significant in 1997. In financing activities, net cash received from issuing new securities (Iseq) is strongly significant from zero at the 1% level for all years under the study. This is in contrast to cash paid for debt (Pdebt) and dividend (Dev) that are only significant in 1994 and 1993 respectively. The coefficient of cash inflows from obtained new debts (Obdebt) is significant for two years.

Table 6-5 presents the results of the cross-sectional TAD data. Of the twelve items of cash flows, six coefficients are significant for one year, and four for two years. While the coefficient of other operating activities (Othop) is significant in three years, the cash flow for paying dividend (Dev) is significant in four periods.

The cross-sectional results in Table 6-5 may be classified as follows. Cash inflows from customers (cst), other operating activities (Othop) and issuing new securities (Iseq) and cash outflows for suppliers (Spp) possess strong incremental information content. Cash outflows for tax (Tx), interests (Int) and dividend (Dev) have weak incremental information content. Other cash flow variables (Uinv, Obinv, Acqb, Obdebt, Pdebt) provide moderate incremental information content.

The pooled data of Table 6-5 also indicates a conflicting result for earnings variable (E). The coefficient of earnings is significant for the MED data but not for the TAD data. The time series data also indicates this coefficient is significant for three years for the MED data and for one year for the TAD data.

Relative Information Content

Hypothesis eleven is to test the relative information content of each component of cash flows, given earnings. The issue addressed here is whether the information content each component of cash flows is equal to that of earnings. The results of hypothesis tests are presented in Table 6-6.

The pooled MED data indicates that there is evidence to the presence of relative information content of cash flow components. F-values for pairwise comparisons between earnings (E) and cash flows, namely Tx, Obinv, Iseq, Acqb, Obdebt, Pdebt and Dev are significant at least at the 5% level. The significance of F-values also suggests these components of cash flows individually have no equal information content to earnings. The ranking of the information content based on the R^2 is that E is greater than Obinv, Obdebt, and Pdebt but less than Tx, Iseq and Dev.

Table 6-6: Results of Tests on the Relative Information Content of Detailed Components of Cash Flows and Earnings (1992-1997)

Panel A: Market Equity Deflator

Variables[a]	1992	1993	1994	1995	1996	1997	Pooled
E and Cst	1.2853	.6806	.8981	12.1077***	1.2198	8.9881***	1.7159
E and Spp	1.1563	.7262	.9412	12.0415***	1.2392	9.0072***	2.2452
E and Tx	1.0976	4.3984**	.4881	1.2431	2.4157	6.8167***	6.6334**
E and Int	.0262	3.4905*	1.2999	12.1949***	.4948	.2019	1.1969
E and Othop	1.2691	2.1915	.1629	12.2869***	2.8054*	8.8572***	.5963
E and Uinv	1.0068	.7667	.7229	10.1558***	.8197	8.9081***	2.5389
E and Obinv	.4625	.7371	.7807	12.4288***	1.0186	8.8259***	13.7602***
E and Iseq	1.0612	3.5881*	3.5014*	.4648	.1631	4.7223**	4.72937**
E and Aqcb	10.4307***	8.9431***	1.8694	14.3370***	2.2172	9.5362***	15.4914***
E and ObDebt	.9014	.8596	.7289	11.0312***	1.1277	12.0388***	8.6183***
E and Pdebt	.8356	.7229	.7729	13.4426***	1.0409	.2269	13.6570***
E and Dev	.6640	17.6648***	.0946	2.4559	9.7342***	7.6675***	9.0457***

Panel A: Total Asset Deflator

Variables[a]	1992	1993	1994	1995	1996	1997	Pooled
E and Cst	.2532	1.4054	.2404	.0578	.0297	.0733	1.2926
E and Spp	.8369	.8261	.2368	.0613	.0266	.0604	2.2039
E and Tx	6.2933**	3.856**	.1757	.3698	.6577	1.5553	.0564
E and Int	.1300	1.8615	.9326	1.3118	.7410	.5089	.0209
E and Othop	.2673	.0304	.4881	.0127	.1957	.3584	.6813
E and Uinv	.5019	.3713	.1441	.6005	1.1697	1.7849	.9608
E and Obinv	.0023	.8334	.3079	1.2335	.6216	.2265	1.5654
E and Iseq	.2767	3.9547**	.7573	.0000	.0541	.6179	.5509
E and Aqcb	.1521	1.5197	9.2247***	1.6696	2.8647*	.0220	5.0006**
E and ObDebt	.0377	.1135	.1942	1.9551	.3705	.0947	.1569
E and Pdebt	1.7441	.0112	.6078	.4665	.2170	.0679	.0468
E and Dev	1.2816	4.4314**	.7079	.50927	.0418	1.3693	.0468

a. F-values for pairwise among cash flow variables
** Significant at the 10% level*
*** Significant at the 5% level*
**** Significant at the 1% level*

The MED cross sectional data of Table 6-6 in general provide consistent evidence of relative information content of cash flows components in pooled data. The pairwise comparison of E&Acqb is significant in four years. While E&Uinv, E&Tx and E &Dev are significant for three years, pairwise comparisons of E&Cst, E&Spp, E&Othop, and E&Obdebt are significant in two years. The other pairwise comparisons are significant in a single year.

The TAD pooled data of Table 6-6 indicate only the pairwise comparison between E & Acqb is significant at the 5% level. Other pairwise comparisons are not statistically significant. A lack of relative information content from annual cross-sectional data is also consistent with that from pooled data. While pairwise comparisons of E&Tx and E&Aqcb are significant in two years, the sets of E&Iseq, E&Acqb and E&Dev are significant in one year. The other pairwise comparisons are not significant at all in a single year. Accordingly, in general the TAD data suggest components of cash flows have no relative information content to earnings and thus provide identical information content to earnings.

In summary, hypothesis ten tests whether each of the components of cash flows contributes to the information used by investors to price securities, conditional on investors knowing other information, namely earnings. The evidence indicates the majority of components of cash flows possess incremental information content beyond that possessed by earnings alone. There is also evidence that cash flow components and earnings can be used in predicting future cash flows.

The main issue tested in hypothesis eleven is to determine whether any of the components of cash flows provide different information content from earnings. The

MED data indicates that the majority of the components of cash flows did provide different information content from earnings. The TAD data generally indicate weak evidence that cash flow components possess different incremental information content from earnings.

6. 2. Competing Models

This section presents a set of three competing models: historical cash flows (NetCF and E) plus earnings, aggregate cash flows from operating, investing and financing activities plus earnings (AgOp, OgIn, AgFin and E), and detailed components of cash flows plus earnings (Cst, Spp, Tx, ... Dev and E). To choose the best model among these equations, the model that produces the lowest mean squared errors (MSE) is rated as superior. Table 6-7 presents MSEs.

Table 6-7 indicates that among models of cash flows plus earnings (equation 4-5, 4-6, and 4-7), equation 4-7 has the lowest mean square errors (MSE). For example, the MED pooled data has an MSE of 1.08614. Cross-sectional data for the MED and TAD data in general also provide results consistent with the pooled data. Low MSE implies that the model has less dispersion around the true value of a parameter and results in a smaller residual component.

The pattern of MSE in models of cash flows plus earnings is similar to that of cash flow models discussed in chapter five. This identical pattern of MSE may be because equation 4-5, 4-6, and 4-7 come from equation 4-2, 4-3, and 4-4 respectively by adding up earnings variable (E).

Table 6-7: Comparison of Mean Square Errors of Cash Flows and Earnings

Panel A: Market Equity Deflator

Years	Models of Cash Flows and Earnings		
	2 CFE [a]	4 CFE [b]	13 CFE [c]
1992	3.38891	2.65928	1.60509
1993	2.27326	2.11428	1.96714
1994	1.43069	1.71317	1.41147
1995	0.44837	0.41843	0.24411
1996	2.33961	1.33835	1.30333
1997	1.21165	0.65806	0.45500
Pooled	2.55414	1.48043	1.08614

Panel B: Total Asset Deflator

Years	Models of Cash Flows and Earnings		
	2 CFE [a]	4 CFE [b]	13 CFE [c]
1992	3.54453	3.54261	4.54564
1993	2.60520	2.57758	2.59927
1994	3.57909	3.56163	3.47648
1995	11.96768	11.97192	11.94054
1996	3.50371	3.40550	3.42014
1997	1.20768	1.21089	1.22325
Pooled	4.54766	4.54889	4.54564

a.: $\hat{R}_{it5} = \hat{\varphi}_0 + \hat{\varphi}_1 NetCf + \hat{\phi}_1 E$ (Equation 4-5)

b. $\hat{R}_{it6} = \hat{\lambda}_0 + \hat{\lambda}_1 AgOp + \hat{\lambda}_2 AgIn + \hat{\lambda}_3 AgFin + \hat{\phi}_2 E$ (Equation 4-6)

c. $\hat{R}_{it7} = \hat{\delta}_0 + \hat{\delta}_1 Rc + \hat{\delta}_2 Ps + \hat{\delta}_3 Pl + \hat{\delta}_4 Pi + \hat{\delta}_5 No + \hat{\delta}_6 Pp + \hat{\delta}_7 Rp + \hat{\delta}_8 Pa + \hat{\delta}_9 Rd + \hat{\delta}_{10} Pd + \hat{\delta}_{11} Re + \hat{\delta}_{12} Pv + \hat{\phi}_3 E$ (Equation 4-7)

6. 3 Sensitivity Analysis

The results of hypothesis tests reported in section 6-1 might be sensitive to the assumptions underlying the models used. This section discusses the factors that can influence the hypothesis results, which are pooling of cross-sectional and time series data, and collinearity. The other factors (outliers, heteroscedasticity and autocorrelation) were discussed in section 5.5.

6. 3. 1 Pooling of Cross-sectional and Time Series Data

This study assumes that firm-year observations are homogeneous. This section presents the additional test performed to check whether pooled results reported in Table 6-1 to 6-6 are influenced by the period of reporting. Appendix B presents the results of the additional test.

Appendix B indicates that the coefficients of dummy variables are in general significant. The significant coefficient may imply that the year of cash flow publication influences the relationship between cash flow variables and security returns. Nevertheless, the coefficients of cash flow variables are also significant, implying cash flows still have information content. This also implies that the significance of coefficient variables of cash flows in equations 4-16 to 4-18 is identical to that of similar variables in equations 4-5 to 4-7, as reported in Tables 6-1 to 6-6. Thus, pooled results reported in section 6.1 are still valid and the homogeneous assumption can be held.

6. 3. 2 Collinearity

This section reports the collinearity among the independent variables. Using the criteria of Judge *et. al.* (1988), the observed correlations among regressors in equation 4-5 to 4-7 as reported in appendix D indicate there was collinearity. Using variance inflation factors (VIF) as a standard method of testing collinearity, Appendix E indicates a problem of collinearity exists in equation 4-7. In this equation, variance of Cst and Spp were inflated in both pooled and cross-sectional data. Equation 4-6 of Appendix E also indicates there was collinearity for the cross-sectional data but no collinearity for the pooled data. However, as argued in section 5.5 there are no partitions of dependent or independent variables, orthogonal or otherwise, that can mitigate relative effects of collinear variables since collinearity is a data problem and not a statistical problem (Christie *et. al.*, 1984). Accordingly, the results of hypothesis test may still be valid.

6. 4 Summary

In this chapter empirical results from testing six hypotheses were presented. The six hypotheses were tested to answer the second objective. The empirical results of the hypothesis tests on information content can be summarised as follows:

	Market Equity Deflator	**Total Asset Deflator**
H_{o6}	Historical cash flows possess incremental information content beyond that provided by earnings alone.	The historical cash flows possess incremental information content beyond that provided by earnings.
H_{o7}	There is weak evidence that	There is weak evidence that historical

	historical cash flows possess relative information content compared to earnings.	cash flows possess relative information content compared to earnings.
H_{o8}	Total cash flows from operating, investing and financing activities possess incremental information content beyond that possessed by earnings alone.	Total cash flows from operating, investing and financing activities possess incremental information content beyond that possessed by earnings alone.
H_{o9}	Each of the total cash flows from operating, investing and financing activities provides relative information content compared to earnings.	A little evidence for total cash flows from operating, investing and financing activities provides relative information content compared to earnings.
H_{o10}	The majority of components of cash flows possess incremental information content beyond that possessed by earnings alone.	The majority of components of cash flows possess incremental information content beyond that provided by earnings alone.
H_{o11}	The majority of components of cash flows provide relative information content compared to earnings.	The majority of cash flow components do not possess relative information content compared to earnings.

In terms of predicting future cash flows, all models of cash flows plus earnings reach a similar conclusion, that is, all models can be used to predict future cash flows. Further, the twelve components of cash flows plus earnings (equation 4-7) is the finest model among cash flows plus earnings models.

Having examined the results of hypothesis tests in chapter five and six, the conclusions, implications, limitations of the study, and some suggestions for future studies are discussed in the final chapter.

CHAPTER 7

SUMMARY, CONCLUSIONS, IMPLICATIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

The purpose of this chapter is to draw conclusions from the results of the discussions and analyses in the six preceding chapters. This chapter consists of four sections. The first section summarises the development of the research program. The second section discusses the general findings of the study. The implications of the findings are explained in the third section. Section four identifies the limitations inherent in the present is study. Suggestions for future studies are made in the last section.

7. 1 Development of the Study

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. The purpose of this section is to briefly summarise the developments in conducting and achieving the main objective of the present study.

Chapter one commenced with an explanation of the importance of cash flow information for decision making. It included a statement on the cost-benefit outcomes of the study. Some reasons to suspect that the cash flow disclosure may not generate information content were also presented. The reasons include conflicting

results from previous studies, the possibility of complementary and competing information conveyed by cash flow statements and income statements and a possible lack of market reactions to the cash flow statement. Furthermore, the significance and originality of this study were discussed in this chapter.

Chapter two discussed the development of the cash flow statement in Australia, indicating that the statement took a long time in coming to this country. Rationales for introducing and adopting the cash flow statement were also provided. Those arguments include arbitrary allocation of costs under accrual-based accounting, the ability of cash flow data to predict financial distress, the ability of cash flow data to predict future cash flows, and internal performance evaluation. Likewise, some selected features of AASB 1026 that regulates the disclosure of cash flows in Australia were illustrated. Furthermore, the empirical evidence of the cash flow statement utilising survey method was discussed. The evidence confirms and supports the usefulness of cash flow information, particularly in Australia. Because previous studies only examined attitudes, perceptions and opinions of users of the cash flow statement rather than the information or data reported in the statement, chapter two suggested a study using another approach in Australia was still warranted.

Whereas chapter two emphasised the usefulness of the cash flow statement in general, chapter three provided a detailed review of the literature on information content. In chapter three, the theory of information content and the comparison between incremental and relative information content were discussed. As well, a theoretical framework of the relationship between cash flow, earnings and security

returns was also presented. In this chapter the information content of cash flows and empirical evidence from previous studies on cash flow statements were discussed. The review of previous studies indicates there are doubts about the information content of cash flow disclosures. The doubts stem from inconsistent results of the information content of cash flows found in previous studies, but there are dominant results on information content conveyed by earnings to cash flows. In this chapter, the difference between the present study and previous studies was also discussed.

In chapter four the research methodology used for this study was described. In the first section of chapter four, eleven proposed hypotheses reflecting the two specific objectives of the current study were described. The first five hypotheses reflect the components of cash flows and the rest are cash flows plus earnings hypotheses. The eleven hypotheses were also concerned with incremental and relative information content of cash flows and earnings. Section two of chapter four mainly provided the variable definition and measurement. Section two was followed by discussions of the regression models used and the statistical inferences. There were six equations used to test the eleven variables. The dependent variable of all equations was raw security returns of firms and the independent variables were cash flows and earnings. Statistical tests to infer the incremental information content of a certain variable were the significance of the coefficient of that variable. Relative information content was tested based on the F-value of Wald tests as suggested by Biddle *et. al.* (1995). Section four of chapter four described the data and criteria used in order a certain observation could be included in the study. Chapter four ended by describing the factors that may influence the robustness of hypothesis tests

Chapter five commenced with a description of the data used in this study. There were 3344 firm year observations that were included when using market equity as a deflator, and 3353 firm-year observations when using total asset deflated accounting variables. Chapter five also showed the descriptive statistics of the data. These included means, standard deviation, kurtosis, and median of the each variable used in the study.

The main issue addressed in chapter five was to report the results of testing five hypotheses of cash flows. General results to accomplish this first objective can be summarised as follows:

1. historical cash flows possess information content,
2. total operating, investing, and financing cash flows possess incremental information content,
3. there is evidence that total operating, investing, and financing cash flows have relative information content,
4. components of operating, investing and financing cash flows possess incremental information content,
5. there is evidence that components of operating, investing and financing cash flows possess relative information content.

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.

Chapter six mainly reported results of hypothesis tests of cash flows versus earnings. General results that accomplished this second objective can be summarised as follows:

1. historical cash flows possess incremental information content beyond that provided by earnings alone,

2. there is evidence that historical cash flows have relative information content, given earnings alone,

3. total operating, investing, and financing cash flows provide incremental information content beyond that provided by earnings alone,

4. total operating, investing, and financing cash flows possess relative information content, given earnings alone,

5. components of operating, investing and financing cash flows possess incremental information content beyond that provided by earnings alone, and

6. there is evidence that components of operating, investing and financing cash flows have relative information content, given earnings alone.

Similarly to those results reported in chapter five, these results of hypothesis tests in general were robust.

7. 2 Conclusions

As stated in chapter one, the main purpose of the current study is to investigate and assess the information content of cash flow disclosures. To fulfil this general objective, two objectives were developed. Those are:

(1) to investigate the ability of the cash flow component in predicting future cash flows, and

(2) to compare the ability of cash flows *and earnings* in predicting future cash flows.

Eleven hypotheses were proposed to accomplish these two objectives: five hypotheses for the first objective and six hypotheses the second objective. Based on the eleven hypotheses, six equations reflecting the relationship between security

returns and cash flow variables, and cash flows plus earnings as discussed in chapter four were proposed. The results of the hypothesis tests were summarised in section 7.1.

With respect to the results of the first five hypothesis tests (hypothesis 1 to 5), which represent the first objective, three general 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 last conclusion of the first five hypothesis tests is that decomposing historical cash flows into three components and detailed components of cash flows has relative information content. This suggests each component does not provide identical incremental information content.

The general results to accomplish the second objective can also be summarised according to results from testing six hypotheses (hypotheses 6 to 11). Based on these results, two general conclusions can be drawn. Firstly, cash flow data and earnings jointly have information content. However, looking at the significant coefficient of earnings in the models, in general there is little evidence that earnings have incremental information content. Therefore, it is concluded here that cash flows have incremental information content more than earnings alone. Secondly, cash flows have relative information content, given earnings alone for each of three sets of cash flows (historical cash flows, three components and detailed components of cash

flows). Stated differently, cash flows and earnings do not provide identical information.

7. 3 Implications

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.

Evidence of the present study also has a potential implication for the accounting and finance literature. First, there is evidence that cash flows and earnings provide different information. This finding suggests that the cash flow statement and the income statement provide mutually exclusive information. The two statements convey different information in the market. This finding refutes the previous study outcomes that the income information had disseminated in the market prior to the release of cash flow information. Second, cash flows have incremental information content in addition to earnings alone. Again, these findings clearly and strongly refute results of the majority of previous studies from the USA and UK that indicated cash flow data had less information value than that conveyed by earnings.

This evidence may also suggest that data reported in the cash flow statement can be a main source of information for decision making, separate from the income statement.

7. 4 Limitations and Suggestions for Future Studies

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 and earnings. 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 six 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 present study assumes no heteroscedasticity in the model since the accounting variables were deflated by market equity and total assets of the firm. However, results from multiple regression indicated that the results from models on market equity deflator (MED) tended to be better than those on total assets deflator (TAD). A comparative study among deflators could be challenging in the future.

Fourth, 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.

Lastly, the current study covers a seven-year period of firms' financial report. This may be a too short time interval. Future studies may consider a longer interval period.

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Appendix A: R^2 for Each Variable

*Among the Components of Cash flows

MED: Market Equity Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Cst	.0127	.0010	.0036	.0001	.0178	.0016	.0116
Spp	.0091	.0007	.0048	.0003	.0184	.0007	.0115
Tx	.0128	.0056	.0115	.0022	.0111	.0207	.0054
Int	.0353	.0293	.0081	.0001	.0000	.0001	.0166
Othop	.0019	.0039	.0201	.0010	.0155	.0003	.0017
Uinv	.0735	.0018	.0246	.0395	.0082	.0063	.0335
Obinv	.0285	.0014	.0006	.0016	.0002	.0024	.0002
Acqb	.0018	.0022	.0031	.0046	.0017	.0318	.0065
Iseq	.2497	.2259	.0925	.0201	.0982	.0746	.0569
ObDebt	.0005	.0027	.0010	.0440	.0112	.0060	.0073
Pdebt	.0096	.0001	.0004	.0043	.0000	.0105	.0005
Dev	.0211	.0535	.0002	.0133	.0211	.0123	.0295

TAD: Total Asset Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
Cst	.0110	.0038	.0001	.0069	.0003	.0000	.0000
Spp	.0115	.0019	.0000	.0043	.0003	.0001	.0000
Tx	.0091	.0142	.0014	.0071	.0009	.0031	.0000
Int	.0015	.0056	.0037	.0008	.0019	.0001	.0000
Othop	.0121	.0001	.0013	.0000	.0002	.0001	.0003
Uinv	.0063	.0003	.0017	.0000	.0028	.0021	.0001
Obinv	.0000	.0014	.0005	.0004	.0028	.0002	.0000
Acqb	.0002	.0037	.0151	.0000	.0001	.0031	.0003
Iseq	.0006	.0149	.0051	.0000	.0215	.0001	.0025
ObDebt	.0000	.0002	.0006	.0016	.0003	.0000	.0000
Pdebt	.0013	.0000	.0021	.0022	.0001	.0002	.0000
Dev	.0033	.0091	.0068	.0060	.0000	.0019	.0000

*Among the Components of Cash flows and Earnings

MED: Market Equity Deflator

Variables	1992	1993	1994	1995	1996	1997	Pooled
E	.0103	.0023	.0015	.0287	.0028	.0250	.0024
Cst	.0127	.0010	.0036	.0001	.0178	.0016	.0116
Spp	.0091	.0007	.0048	.0003	.0184	.0007	.0115
Tx	.0128	.0056	.0115	.0022	.0111	.0207	.0054
Int	.0353	.0293	.0081	.0001	.0000	.0001	.0166
Othop	.0019	.0039	.0201	.0010	.0155	.0003	.0017
Uinv	.0735	.0018	.0246	.0395	.0082	.0063	.0335
Obinv	.0285	.0014	.0006	.0016	.0002	.0024	.0002
Acqb	.0018	.0022	.0031	.0046	.0017	.0318	.0065
Iseq	.2497	.2259	.0925	.0201	.0982	.0746	.0569
ObDebt	.0005	.0027	.0010	.0440	.0112	.0060	.0073
Pdebt	.0096	.0001	.0004	.0043	.0000	.0105	.0005
Dev	.0211	.0535	.0002	.0133	.0211	.0123	.0295

TAD: Total Asset Deflator

Variables[1]	1992	1993	1994	1995	1996	1997	Pooled
E	.0026	.0005	.0020	.0010	.0005	.0003	.0008
Cst	.0110	.0038	.0001	.0069	.0003	.0000	.0000
Spp	.0115	.0019	.0000	.0043	.0003	.0001	.0000
Tx	.0091	.0142	.0014	.0071	.0009	.0031	.0000
Int	.0015	.0056	.0037	.0008	.0019	.0001	.0000
Othop	.0121	.0001	.0013	.0000	.0002	.0001	.0003
Uinv	.0063	.0003	.0017	.0000	.0028	.0021	.0001
Obinv	.0000	.0014	.0005	.0004	.0028	.0002	.0000
Acqb	.0002	.0037	.0151	.0000	.0001	.0031	.0003
Iseq	.0006	.0149	.0051	.0000	.0215	.0001	.0025
ObDebt	.0000	.0002	.0006	.0016	.0003	.0000	.0000
Pdebt	.0013	.0000	.0021	.0022	.0001	.0002	.0000
Dev	.0033	.0091	.0068	.0060	.0000	.0019	.0000

Appendix B: SAS output with Yearly Dummy Variables

MED: Market Equity Deflator

Equation 6-1

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	232.61322	38.76887	8.612	0.0001
Error	3346	15062.71886	4.50171		
C Total	3352	15295.33208			

Root MSE	2.12172	R-square	0.0152
Dep Mean	0.46497	Adj R-sq	0.0134
C.V.	456.31231		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.310439	0.08108687	3.828	0.0001
NETCF	1	0.405376	0.13576502	2.986	0.0028
D92	1	0.384177	0.13376104	2.872	0.0041
D93	1	0.486596	0.12774008	3.809	0.0001
D94	1	0.296217	0.12399340	2.389	0.0170
D95	1	-0.200602	0.11774305	-1.704	0.0885
D96	1	0.152357	0.11516027	1.323	0.1859

Equation 6-2

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	8	538.41436	67.30180	47.794	0.0001
Error	3305	4653.97974	1.40816		
C Total	3313	5192.39410			

Root MSE	1.18666	R-square	0.1037
Dep Mean	0.39922	Adj R-sq	0.1015
C.V.	297.24698		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.233574	0.04565608	5.116	0.0001
AGOP	1	0.634073	0.05970883	10.619	0.0001
AGIN	1	0.302306	0.05772096	5.237	0.0001
AGFIN	1	0.508563	0.05325463	9.550	0.0001
D92	1	0.327008	0.07544386	4.334	0.0001
D93	1	0.489731	0.07172433	6.828	0.0001
D94	1	0.267139	0.06965360	3.835	0.0001
D95	1	-0.369544	0.06622770	-5.580	0.0001
D96	1	0.167266	0.06481893	2.581	0.0099

Equation 6-3

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	17	1108.09026	65.18178	40.214	0.0001
Error	3315	5373.12680	1.62085		
C Total	3332	6481.21706			

Root MSE	1.27313	R-square	0.1710
Dep Mean	0.41417	Adj R-sq	0.1667
C.V.	307.39171		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.147788	0.04950062	2.986	0.0029
CST	1	0.075848	0.02956744	2.565	0.0104
SPP	1	0.064832	0.02994872	2.165	0.0305
TX	1	2.443521	0.25168828	9.709	0.0001
INT	1	-0.324576	0.04388959	-7.395	0.0001
OTHOP	1	0.208911	0.08082646	2.585	0.0098
UINV	1	-0.072623	0.02801471	-2.592	0.0096
OBINV	1	0.048472	0.01602649	3.024	0.0025
ACQB	1	-0.622112	0.22682739	-2.743	0.0061
ISEQ	1	0.569713	0.04612284	12.352	0.0001
OBDEBT	1	0.045514	0.02377391	1.914	0.0557
PDEBT	1	0.087440	0.02164198	4.040	0.0001
DEV	1	-2.712966	0.23449556	-11.569	0.0001
D92	1	0.270413	0.08107439	3.335	0.0009
D93	1	0.467000	0.07696154	6.068	0.0001
D94	1	0.182524	0.07465476	2.445	0.0145
D95	1	-0.396242	0.07087654	-5.591	0.0001
D96	1	0.093992	0.06936041	1.355	0.1755

Equation 6-4

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	261.60441	37.37206	15.043	0.0001
Error	3328	8267.76533	2.48430		
C Total	3335	8529.36974			

Root MSE	1.57617	R-square	0.0307
Dep Mean	0.42751	Adj R-sq	0.0286
C.V.	368.68339		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.311591	0.06030575	5.167	0.0001
EPS	1	0.110238	0.04602916	2.395	0.0167
NETCF	1	0.009594	0.01557890	0.616	0.5380
D92	1	0.388538	0.09949380	3.905	0.0001
D93	1	0.489327	0.09499425	5.151	0.0001
D94	1	0.239681	0.09225564	2.598	0.0094
D95	1	-0.351704	0.08755999	-4.017	0.0001
D96	1	0.112455	0.08577697	1.311	0.1899

Equation 6-5

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	539.82998	59.98111	42.595	0.0001
Error	3304	4652.56412	1.40816		
C Total	3313	5192.39410			

Root MSE	1.18666	R-square	0.1040
Dep Mean	0.39922	Adj R-sq	0.1015
C.V.	297.24674		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.234311	0.04566197	5.131	0.0001
EPS	1	-0.040073	0.03996730	-1.003	0.3161
AGOP	1	0.647440	0.06117912	10.583	0.0001
AGIN	1	0.296267	0.05803438	5.105	0.0001
AGFIN	1	0.506989	0.05327773	9.516	0.0001
D92	1	0.326139	0.07544878	4.323	0.0001
D93	1	0.488652	0.07173234	6.812	0.0001
D94	1	0.267939	0.06965810	3.846	0.0001
D95	1	-0.368809	0.06623169	-5.568	0.0001
D96	1	0.167947	0.06482242	2.591	0.0096

Equation 6-6

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	18	1116.68331	62.03796	38.330	0.0001
Error	3315	5365.44711	1.61854		
C Total	3333	6482.13042			

Root MSE	1.27222	R-square	0.1723
Dep Mean	0.41388	Adj R-sq	0.1678
C.V.	307.38473		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.147826	0.04946503	2.988	0.0028
EPS	1	0.131405	0.05850374	2.246	0.0248
CST	1	0.064564	0.02998285	2.153	0.0314
SPP	1	0.052143	0.03047984	1.711	0.0872
TX	1	2.790943	0.29620594	9.422	0.0001
INT	1	-0.338945	0.04422735	-7.664	0.0001
OTHOP	1	0.191908	0.08112074	2.366	0.0181
UINV	1	-0.075774	0.02801812	-2.704	0.0069
OBINV	1	0.043785	0.01614749	2.712	0.0067
ACQB	1	-0.475243	0.23571319	-2.016	0.0439
ISEQ	1	0.574008	0.04612851	12.444	0.0001
OBDEBT	1	0.040994	0.02384469	1.719	0.0857
PDEBT	1	0.080420	0.02184394	3.682	0.0002
DEV	1	-2.744404	0.23475797	-11.690	0.0001
D92	1	0.269265	0.08101812	3.324	0.0009
D93	1	0.464117	0.07691781	6.034	0.0001
D94	1	0.177722	0.07463224	2.381	0.0173
D95	1	-0.402516	0.07083818	-5.682	0.0001
D96	1	0.089353	0.06934278	1.289	0.1976

TAD: Total Asset Deflator

Equation 6-1

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	6	399.17152	66.52859	45.900	0.0001
Error	3307	4793.22259	1.44942		
C Total	3313	5192.39410			

Root MSE	1.20392	R-square	0.0769
Dep Mean	0.39922	Adj R-sq	0.0752
C.V.	301.56966		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.259454	0.04624278	5.611	0.0001
NETCF	1	0.491099	0.05372509	9.141	0.0001
D92	1	0.382098	0.07631622	5.007	0.0001
D93	1	0.502637	0.07269654	6.914	0.0001
D94	1	0.272205	0.07066454	3.852	0.0001
D95	1	-0.359336	0.06718103	-5.349	0.0001
D96	1	0.177357	0.06574059	2.698	0.0070

Equation 6-2

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	8	241.77727	30.22216	6.714	0.0001
Error	3344	15053.55482	4.50166		
C Total	3352	15295.33208			

Root MSE	2.12171	R-square	0.0158
Dep Mean	0.46497	Adj R-sq	0.0135
C.V.	456.30988		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.303300	0.08143084	3.725	0.0002
AGOP	1	0.459772	0.14914809	3.083	0.0021
AGIN	1	0.367329	0.13949800	2.633	0.0085
AGFIN	1	0.445367	0.14427337	3.087	0.0020
D92	1	0.391102	0.13388526	2.921	0.0035
D93	1	0.490921	0.12778499	3.842	0.0001
D94	1	0.294192	0.12400236	2.372	0.0177
D95	1	-0.201090	0.11778603	-1.707	0.0879
D96	1	0.154449	0.11516863	1.341	0.1800

Equation 6-3

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	17	297.69682	17.51158	3.894	0.0001
Error	3335	14997.63526	4.49704		
C Total	3352	15295.33208			

Root MSE	2.12062	R-square	0.0195
Dep Mean	0.46497	Adj R-sq	0.0145
C.V.	456.07571		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.218270	0.08896446	2.453	0.0142
CST	1	0.485709	0.14395729	3.374	0.0007
SPP	1	0.462130	0.14008162	3.299	0.0010
TX	1	1.345667	1.71920530	0.783	0.4338
INT	1	0.876216	1.10477282	0.793	0.4278
OTHOP	1	0.625751	0.24878610	2.515	0.0119
UINV	1	0.220084	0.13982423	1.574	0.1156
OBINV	1	0.277805	0.11939890	2.327	0.0200
ACQB	1	-0.754469	0.86928050	-0.868	0.3855
OBDEBT	1	0.381497	0.15210382	2.508	0.0122
PDEBT	1	0.288973	0.13376423	2.160	0.0308
ISEQ	1	0.583013	0.14341485	4.065	0.0001
DEV	1	-0.596357	0.82993867	-0.719	0.4725
D92	1	0.420028	0.13460542	3.120	0.0018
D93	1	0.520566	0.12833061	4.056	0.0001
D94	1	0.285635	0.12430002	2.298	0.0216
D95	1	-0.194267	0.11783055	-1.649	0.0993
D96	1	0.158964	0.11531171	1.379	0.1681

Equation 6-4

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	237.58464	33.94066	7.540	0.0001
Error	3345	15057.74744	4.50157		
C Total	3352	15295.33208			

Root MSE	2.12169	R-square	0.0155
Dep Mean	0.46497	Adj R-sq	0.0135
C.V.	456.30519		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.313609	0.08114169	3.865	0.0001
NETCF	1	0.376715	0.13847527	2.720	0.0066
EPS	1	0.034383	0.03271798	1.051	0.2934
D92	1	0.391402	0.13393551	2.922	0.0035
D93	1	0.487885	0.12774398	3.819	0.0001
D94	1	0.296318	0.12399150	2.390	0.0169
D95	1	-0.199420	0.11774659	-1.694	0.0904
D96	1	0.153512	0.11516372	1.333	0.1826

Equation 6-5

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	9	244.12053	27.12450	6.025	0.0001
Error	3343	15051.21155	4.50231		
C Total	3352	15295.33208			

Root MSE	2.12186	R-square	0.0160
Dep Mean	0.46497	Adj R-sq	0.0133
C.V.	456.34260		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.305086	0.08147429	3.745	0.0002
EPS	1	0.029141	0.04039388	0.721	0.4707
AGOP	1	0.403303	0.16844911	2.394	0.0167
AGIN	1	0.358089	0.14009473	2.556	0.0106
AGFIN	1	0.430346	0.14577848	2.952	0.0032
D92	1	0.397056	0.13414903	2.960	0.0031
D93	1	0.491769	0.12779956	3.848	0.0001
D94	1	0.294864	0.12401476	2.378	0.0175
D95	1	-0.198595	0.11784522	-1.685	0.0920
D96	1	0.154949	0.11517898	1.345	0.1786

Equation 6-6

Model: MODEL1
Dependent Variable: RR

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	18	307.05520	17.05862	3.795	0.0001
Error	3334	14988.27689	4.49558		
C Total	3352	15295.33208			

Root MSE	2.12028	R-square	0.0201
Dep Mean	0.46497	Adj R-sq	0.0148
C.V.	456.00177		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	0.210206	0.08912546	2.359	0.0184
EPS	1	0.063798	0.04421813	1.443	0.1492
CST	1	0.378171	0.16208735	2.333	0.0197
SPP	1	0.346527	0.16135745	2.148	0.0318
TX	1	1.303482	1.71917520	0.758	0.4484
INT	1	1.145260	1.12022303	1.022	0.3067
OTHOP	1	0.528709	0.25767870	2.052	0.0403
UINV	1	0.186816	0.14169031	1.318	0.1874
OBINV	1	0.260400	0.11998749	2.170	0.0301
ACQB	1	-0.780183	0.86932228	-0.897	0.3695
OBDEBT	1	0.351063	0.15353507	2.287	0.0223
PDEBT	1	0.245584	0.13708186	1.792	0.0733
ISEQ	1	0.588659	0.14344498	4.104	0.0001
DEV	1	-0.630376	0.83013902	-0.759	0.4477
D92	1	0.433993	0.13493121	3.216	0.0013
D93	1	0.524882	0.12834469	4.090	0.0001
D94	1	0.285602	0.12427987	2.298	0.0216
D95	1	-0.188178	0.11788701	-1.596	0.1105
D96	1	0.160668	0.11529906	1.393	0.1636

Appendix C: Durbin Watson (DW) for Autocorrelation Test

MED: Market Equity Deflator

Equation	1992	1993	1994	1995	1996	1997	Pooled
4-2	2.074	2.017	1.871	2.029	2.015	1.923	1.909
4-3	2.051	2.033	1.866	2.069	2.015	1.918	1.902
4-4	2.104	2.061	1.755	2.022	1.996	1.883	1.904
4-5	2.041	2.024	1.921	2.045	2.008	1.884	1.939
4-6	2.055	2.045	1.867	2.071	2.016	1.927	1.907
4-7	2.106	2.063	1.749	2.016	1.998	1.900	1.900

TAD: Total Asset Deflator

Equation	1992	1993	1994	1995	1996	1997	Pooled
4-2	1.972	1.985	1.956	2.010	2.067	1.822	1.971
4-3	1.953	1.979	1.948	1.990	2.079	1.821	1.971
4-4	1.970	1.975	2.015	2.028	2.087	1.819	1.966
4-5	1.970	1.985	1.960	1.982	2.082	1.830	1.965
4-6	1.946	1.978	1.946	1.978	2.079	1.830	1.967
4-7	1.954	1.977	2.012	2.011	2.088	1.818	1.958

Appendix D: Correlation among Cash Flow Variables

MED: Market Equity Deflator

1992

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	-0.04651	0.75325	-0.40057	-0.22845
NETCF	-0.04651	1.00000	-0.00231	-0.00351	0.53934
AGOP	0.75325	-0.00231	1.00000	-0.58240	-0.22092
AGIN	-0.40057	-0.00351	-0.58240	1.00000	-0.53469
AGFIN	-0.22845	0.53934	-0.22092	-0.53469	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99090	0.09939	-0.71455	0.00552	-0.46955	0.23911
SPP	-0.99090	1.00000	-0.04518	0.64918	-0.02849	0.42550	-0.24711
TX	0.09939	-0.04518	1.00000	-0.33774	0.05354	-0.24653	-0.04028
INT	-0.71455	0.64918	-0.33774	1.00000	-0.04721	0.47767	-0.33491
OTHOP	0.00552	-0.02849	0.05354	-0.04721	1.00000	-0.00297	0.02283
UINV	-0.46955	0.42550	-0.24653	0.47767	-0.00297	1.00000	-0.43069
OBINV	0.23911	-0.24711	-0.04028	-0.33491	0.02283	-0.43069	1.00000
ACQB	-0.01072	0.00699	0.25923	-0.00313	-0.01374	-0.01326	0.01086
ISEQ	0.03223	-0.04278	-0.03445	-0.05677	-0.00722	-0.20228	0.17718
OBDEBT	0.22347	-0.23200	-0.03674	-0.09871	-0.02890	-0.38512	0.05946
PDEBT	-0.40838	0.40691	0.08613	0.42380	-0.09002	0.41193	-0.54041
DEV	-0.05778	0.05726	0.32471	-0.03013	0.01762	0.08341	-0.12279
EPS	-0.21839	0.18198	-0.40728	0.39890	-0.00156	0.26704	-0.17818

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.01072	0.03223	0.22347	-0.40838	-0.05778	-0.21839
SPP	0.00699	-0.04278	-0.23200	0.40691	0.05726	0.18198
TX	0.25923	-0.03445	-0.03674	0.08613	0.32471	-0.40728
INT	-0.00313	-0.05677	-0.09871	0.42380	-0.03013	0.39890
OTHOP	-0.01374	-0.00722	-0.02890	-0.09002	0.01762	-0.00156
UINV	-0.01326	-0.20228	-0.38512	0.41193	0.08341	0.26704
OBINV	0.01086	0.17718	0.05946	-0.54041	-0.12279	-0.17818
ACQB	1.00000	-0.07975	-0.04165	0.04617	0.07678	-0.16363
ISEQ	-0.07975	1.00000	0.00454	-0.11965	-0.04117	0.02452
OBDEBT	-0.04165	0.00454	1.00000	-0.63925	-0.09951	0.03380
PDEBT	0.04617	-0.11965	-0.63925	1.00000	0.06091	0.11692
DEV	0.07678	-0.04117	-0.09951	0.06091	1.00000	-0.13806
EPS	-0.16363	0.02452	0.03380	0.11692	-0.13806	1.00000

1993

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.12884	-0.10981	0.01434	0.14543
NETCF	0.12884	1.00000	0.09302	0.14854	0.20622
AGOP	-0.10981	0.09302	1.00000	0.00767	-0.93875
AGIN	0.01434	0.14854	0.00767	1.00000	-0.13960
AGFIN	0.14543	0.20622	-0.93875	-0.13960	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99837	-0.62667	-0.47384	0.00878	-0.15191	0.16607
SPP	-0.99837	1.00000	0.62040	0.46653	-0.02629	0.15754	-0.17209
TX	-0.62667	0.62040	1.00000	0.31821	-0.00066	0.31217	-0.35668
INT	-0.47384	0.46653	0.31821	1.00000	-0.04441	0.01427	-0.02496
OTHOP	0.00878	-0.02629	-0.00066	-0.04441	1.00000	-0.20386	0.17603
UINV	-0.15191	0.15754	0.31217	0.01427	-0.20386	1.00000	-0.93825
OBINV	0.16607	-0.17209	-0.35668	-0.02496	0.17603	-0.93825	1.00000
ACQB	-0.00224	-0.00116	0.03921	-0.01927	0.06084	-0.00912	-0.00588
ISEQ	0.05624	-0.05835	0.06644	0.24607	0.04507	-0.09282	0.02893
OBDEBT	0.10928	-0.10808	-0.12235	-0.18288	-0.08788	-0.18980	0.10784
PDEBT	-0.59695	0.58818	0.46678	0.46404	-0.09571	0.13143	-0.17070
DEV	-0.04646	0.04743	0.12455	-0.66656	-0.01965	0.09215	-0.08099
EPS	-0.23049	0.23852	0.01741	0.15787	-0.01393	-0.01628	0.03389

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.00224	0.05624	0.10928	-0.59695	-0.04646	-0.23049
SPP	-0.00116	-0.05835	-0.10808	0.58818	0.04743	0.23852
TX	0.03921	0.06644	-0.12235	0.46678	0.12455	0.01741
INT	-0.01927	0.24607	-0.18288	0.46404	-0.66656	0.15787
OTHOP	0.06084	0.04507	-0.08788	-0.09571	-0.01965	-0.01393
UINV	-0.00912	-0.09282	-0.18980	0.13143	0.09215	-0.01628
OBINV	-0.00588	0.02893	0.10784	-0.17070	-0.08099	0.03389
ACQB	1.00000	0.00400	-0.04663	-0.00657	0.01108	-0.08317
ISEQ	0.00400	1.00000	0.07819	-0.09570	-0.36292	-0.12433
OBDEBT	-0.04663	0.07819	1.00000	-0.52476	-0.08878	-0.02346

PDEBT	-0.00657	-0.09570	-0.52476	1.00000	0.03614	0.18716
DEV	0.01108	-0.36292	-0.08878	0.03614	1.00000	-0.14436
EPS	-0.08317	-0.12433	-0.02346	0.18716	-0.14436	1.00000

1994

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	-0.15622	-0.12563	-0.16174	0.15930
NETCF	-0.15622	1.00000	0.92853	0.99549	-0.99244
AGOP	-0.12563	0.92853	1.00000	0.92822	-0.94480
AGIN	-0.16174	0.99549	0.92822	1.00000	-0.99856
AGFIN	0.15930	-0.99244	-0.94480	-0.99856	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99589	-0.29108	-0.92473	-0.00691	-0.37860	0.92614
SPP	-0.99589	1.00000	0.29744	0.91214	0.00073	0.37629	-0.90190
TX	-0.29108	0.29744	1.00000	0.18136	0.01607	0.25904	-0.19755
INT	-0.92473	0.91214	0.18136	1.00000	-0.07741	0.32172	-0.91658
OTHOP	-0.00691	0.00073	0.01607	-0.07741	1.00000	0.02010	0.00476
UINV	-0.37860	0.37629	0.25904	0.32172	0.02010	1.00000	-0.43010
OBINV	0.92614	-0.90190	-0.19755	-0.91658	0.00476	-0.43010	1.00000
ACQB	-0.01497	0.02025	0.11184	-0.01497	-0.00006	0.24366	-0.00057
ISEQ	-0.02461	0.01038	0.05944	-0.03004	-0.00199	-0.27308	-0.00280
OBDEBT	0.61454	-0.62817	-0.23183	-0.59339	0.07152	-0.44204	0.63138
PDEBT	-0.93260	0.90858	0.19351	0.91941	-0.03095	0.38500	-0.99631
DEV	-0.05834	0.06354	0.50940	-0.02322	-0.00631	0.15519	0.02771
EPS	-0.12884	0.12467	-0.19581	0.17535	-0.00086	0.01307	-0.15443

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.01497	-0.02461	0.61454	-0.93260	-0.05834	-0.12884
SPP	0.02025	0.01038	-0.62817	0.90858	0.06354	0.12467
TX	0.11184	0.05944	-0.23183	0.19351	0.50940	-0.19581
INT	-0.01497	-0.03004	-0.59339	0.91941	-0.02322	0.17535
OTHOP	-0.00006	-0.00199	0.07152	-0.03095	-0.00631	-0.00086
UINV	0.24366	-0.27308	-0.44204	0.38500	0.15519	0.01307
OBINV	-0.00057	-0.00280	0.63138	-0.99631	0.02771	-0.15443
ACQB	1.00000	-0.09602	-0.37802	0.00164	0.04988	-0.02354
ISEQ	-0.09602	1.00000	-0.13310	0.00867	0.05746	-0.08620
OBDEBT	-0.37802	-0.13310	1.00000	-0.63633	-0.04938	-0.08329
PDEBT	0.00164	0.00867	-0.63633	1.00000	-0.03185	0.16256
DEV	0.04988	0.05746	-0.04938	-0.03185	1.00000	-0.32400
EPS	-0.02354	-0.08620	-0.08329	0.16256	-0.32400	1.00000

1995

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.14277	0.44245	-0.18389	0.03288
NETCF	0.14277	1.00000	0.07980	0.20810	0.29949
AGOP	0.44245	0.07980	1.00000	-0.28450	-0.18998
AGIN	-0.18389	0.20810	-0.28450	1.00000	-0.73772
AGFIN	0.03288	0.29949	-0.18998	-0.73772	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99917	-0.46743	-0.32871	0.00214	-0.01838	0.03575
SPP	-0.99917	1.00000	0.46023	0.31802	-0.02261	0.01399	-0.03193
TX	-0.46743	0.46023	1.00000	0.01688	0.02412	0.11242	-0.08290
INT	-0.32871	0.31802	0.01688	1.00000	-0.12959	-0.22879	-0.05865
OTHOP	0.00214	-0.02261	0.02412	-0.12959	1.00000	0.08559	-0.08483
UINV	-0.01838	0.01399	0.11242	-0.22879	0.08559	1.00000	-0.71880
OBINV	0.03575	-0.03193	-0.08290	-0.05865	-0.08483	-0.71880	1.00000
ACQB	-0.00384	0.00117	0.05572	0.01914	-0.01908	0.01123	-0.00433
ISEQ	-0.04731	0.03979	0.06710	0.02369	-0.01032	-0.07927	-0.03542
OBDEBT	0.20992	-0.20877	-0.11488	-0.16870	0.00162	-0.40080	0.17642
PDEBT	-0.28595	0.27996	0.07058	0.61308	0.00146	0.14184	-0.42331
DEV	-0.05314	0.04289	0.49348	0.01734	-0.04614	0.09944	-0.04809
EPS	-0.08453	0.09219	-0.13393	0.10198	0.15658	-0.10970	0.03131

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.00384	-0.04731	0.20992	-0.28595	-0.05314	-0.08453
SPP	0.00117	0.03979	-0.20877	0.27996	0.04289	0.09219
TX	0.05572	0.06710	-0.11488	0.07058	0.49348	-0.13393
INT	0.01914	0.02369	-0.16870	0.61308	0.01734	0.10198
OTHOP	-0.01908	-0.01032	0.00162	0.00146	-0.04614	0.15658
UINV	0.01123	-0.07927	-0.40080	0.14184	0.09944	-0.10970
OBINV	-0.00433	-0.03542	0.17642	-0.42331	-0.04809	0.03131
ACQB	1.00000	-0.17759	-0.13396	0.03054	0.03642	-0.12839
ISEQ	-0.17759	1.00000	0.01382	-0.00196	0.07777	-0.09537
OBDEBT	-0.13396	0.01382	1.00000	-0.64945	-0.13006	0.06094
PDEBT	0.03054	-0.00196	-0.64945	1.00000	0.06135	0.05762

DEV	0.03642	0.07777	-0.13006	0.06135	1.00000	-0.29435
EPS	-0.12839	-0.09537	0.06094	0.05762	-0.29435	1.00000

1996

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	-0.10043	0.23303	-0.02419	-0.15352
NETCF	-0.10043	1.00000	-0.29291	0.15246	0.54606
AGOP	0.23303	-0.29291	1.00000	0.03257	-0.67979
AGIN	-0.02419	0.15246	0.03257	1.00000	-0.58785
AGFIN	-0.15352	0.54606	-0.67979	-0.58785	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99879	-0.26335	-0.33069	0.02488	-0.30728	0.24110
SPP	-0.99879	1.00000	0.24149	0.29542	-0.02378	0.29998	-0.20297
TX	-0.26335	0.24149	1.00000	0.37854	0.09008	0.18494	-0.28737
INT	-0.33069	0.29542	0.37854	1.00000	0.02698	0.13259	-0.83816
OTHOP	0.02488	-0.02378	0.09008	0.02698	1.00000	-0.00199	0.04318
UINV	-0.30728	0.29998	0.18494	0.13259	-0.00199	1.00000	-0.37394
OBINV	0.24110	-0.20297	-0.28737	-0.83816	0.04318	-0.37394	1.00000
ACOB	0.00339	-0.00486	0.09432	0.00750	-0.00742	0.00244	0.01363
ISEO	-0.04998	0.04579	0.09099	0.00167	-0.07365	-0.04238	-0.00811
OBDEBT	0.30694	-0.30089	-0.64901	-0.41454	-0.02508	-0.20309	0.19505
PDEBT	-0.27158	0.23320	0.42965	0.91415	-0.04556	0.24278	-0.94434
DEV	-0.25347	0.23766	0.87207	0.29049	0.12805	0.19502	-0.18797
EPS	-0.03163	0.03464	-0.16983	0.09293	0.07454	-0.06170	-0.03754

	ACOB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	0.00339	-0.04998	0.30694	-0.27158	-0.25347	-0.03163
SPP	-0.00486	0.04579	-0.30089	0.23320	0.23766	0.03464
TX	0.09432	0.09099	-0.64901	0.42965	0.87207	-0.16983
INT	0.00750	0.00167	-0.41454	0.91415	0.29049	0.09293
OTHOP	-0.00742	-0.07365	-0.02508	-0.04556	0.12805	0.07454
UINV	0.00244	-0.04238	-0.20309	0.24278	0.19502	-0.06170
OBINV	0.01363	-0.00811	0.19505	-0.94434	-0.18797	-0.03754
ACOB	1.00000	0.00916	-0.00699	-0.01164	0.03889	-0.07630
ISEO	0.00916	1.00000	-0.00920	0.00316	0.05730	-0.17611
OBDEBT	-0.00699	-0.00920	1.00000	-0.44004	-0.74814	-0.02081
PDEBT	-0.01164	0.00316	-0.44004	1.00000	0.35403	0.04890
DEV	0.03889	0.05730	-0.74814	0.35403	1.00000	-0.09290
EPS	-0.07630	-0.17611	-0.02081	0.04890	-0.09290	1.00000

1997

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.16873	0.23251	-0.00442	-0.09993
NETCF	0.16873	1.00000	0.11312	0.12409	0.39338
AGOP	0.23251	0.11312	1.00000	-0.39195	-0.48549
AGIN	-0.00442	0.12409	-0.39195	1.00000	-0.41030
AGFIN	-0.09993	0.39338	-0.48549	-0.41030	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99365	-0.22998	-0.29886	-0.06828	0.00785	-0.00134
SPP	-0.99365	1.00000	0.20602	0.27728	0.01123	-0.01828	-0.00015
TX	-0.22998	0.20602	1.00000	0.03884	0.05742	0.08207	-0.15655
INT	-0.29886	0.27728	0.03884	1.00000	-0.03571	-0.35483	0.30023
OTHOP	-0.06828	0.01123	0.05742	-0.03571	1.00000	0.04068	-0.04709
UINV	0.00785	-0.01828	0.08207	-0.35483	0.04068	1.00000	-0.90544
OBINV	-0.00134	-0.00015	-0.15655	0.30023	-0.04709	-0.90544	1.00000
ACOB	-0.01117	0.00867	0.12164	0.02483	-0.00310	0.03030	-0.01366
ISEQ	-0.09635	0.08493	0.14632	0.02241	-0.04970	-0.01593	-0.07382
OBDEBT	0.35945	-0.37580	-0.11219	0.01271	-0.03086	-0.22211	0.12443
PDEBT	-0.24290	0.23054	0.14448	0.17269	0.02692	0.10353	-0.15993
DEV	-0.06629	0.05049	0.48470	0.01862	-0.02495	0.12891	-0.23256
EPS	0.00033	0.01919	-0.15083	0.05889	0.11433	-0.07603	0.07079

	ACOB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.01117	-0.09635	0.35945	-0.24290	-0.06629	0.00033
SPP	0.00867	0.08493	-0.37580	0.23054	0.05049	0.01919
TX	0.12164	0.14632	-0.11219	0.14448	0.48470	-0.15083
INT	0.02483	0.02241	0.01271	0.17269	0.01862	0.05889
OTHOP	-0.00310	-0.04970	-0.03086	0.02692	-0.02495	0.11433
UINV	0.03030	-0.01593	-0.22211	0.10353	0.12891	-0.07603
OBINV	-0.01366	-0.07382	0.12443	-0.15993	-0.23256	0.07079
ACOB	1.00000	-0.15216	-0.15278	-0.02805	0.01549	-0.00502
ISEQ	-0.15216	1.00000	0.03959	-0.08742	0.05628	-0.13386
OBDEBT	-0.15278	0.03959	1.00000	-0.57935	-0.07830	-0.04172
PDEBT	-0.02805	-0.08742	-0.57935	1.00000	0.15971	0.02387
DEV	0.01549	0.05628	-0.07830	0.15971	1.00000	-0.01755
EPS	-0.00502	-0.13386	-0.04172	0.02387	-0.01755	1.00000

1992-1997

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	-0.01463	0.47450	-0.27712	-0.12497
NETCF	-0.01463	1.00000	0.05296	0.07155	0.31973
AGOP	0.47450	0.05296	1.00000	-0.29372	-0.47497
AGIN	-0.27712	0.07155	-0.29372	1.00000	-0.60071
AGFIN	-0.12497	0.31973	-0.47497	-0.60071	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.99475	-0.59745	-0.50937	0.00984	-0.34250	0.38911
SPP	-0.99475	1.00000	0.58352	0.49874	-0.01729	0.32998	-0.33796
TX	-0.59745	0.58352	1.00000	0.33163	-0.01105	0.28215	-0.06590
INT	-0.50937	0.49874	0.33163	1.00000	-0.03309	0.20135	-0.25652
OTHOP	0.00984	-0.01729	-0.01105	-0.03309	1.00000	-0.04555	0.01630
UINV	-0.34250	0.32998	0.28215	0.20135	-0.04555	1.00000	-0.28555
OBINV	0.38911	-0.33796	-0.06590	-0.25652	0.01630	-0.28555	1.00000
ACQB	-0.18964	0.17307	0.46433	0.10787	-0.01170	0.20355	-0.00655
ISEQ	0.03228	-0.03748	-0.02916	-0.00761	0.00201	-0.25531	0.00626
OBDEBT	0.27060	-0.28439	-0.24313	-0.18253	0.01256	-0.28810	0.20968
PDEBT	-0.45432	0.40254	0.14668	0.29919	-0.03715	0.24570	-0.95062
DEV	-0.30169	0.28607	0.68204	0.06698	-0.00166	0.19548	-0.03235
EPS	0.21596	-0.19282	-0.67876	-0.06955	0.03728	-0.17306	-0.02083

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.18964	0.03228	0.27060	-0.45432	-0.30169	0.21596
SPP	0.17307	-0.03748	-0.28439	0.40254	0.28607	-0.19282
TX	0.46433	-0.02916	-0.24313	0.14668	0.68204	-0.67876
INT	0.10787	-0.00761	-0.18253	0.29919	0.06698	-0.06955
OTHOP	-0.01170	0.00201	0.01256	-0.03715	-0.00166	0.03728
UINV	0.20355	-0.25531	-0.28810	0.24570	0.19548	-0.17306
OBINV	-0.00655	0.00626	0.20968	-0.95062	-0.03235	-0.02083
ACQB	1.00000	-0.03351	-0.25113	0.06199	0.33599	-0.52952
ISEQ	-0.03351	1.00000	-0.01907	-0.01181	-0.03382	-0.03449
OBDEBT	-0.25113	-0.01907	1.00000	-0.40076	-0.39880	0.09806
PDEBT	0.06199	-0.01181	-0.40076	1.00000	0.13840	-0.00914
DEV	0.33599	-0.03382	-0.39880	0.13840	1.00000	-0.47819
EPS	-0.52952	-0.03449	0.09806	-0.00914	-0.47819	1.00000

TAD: Total Asset Deflator

1992

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	-0.30703	0.71320	-0.67922	0.60406
NETCF	-0.30703	1.00000	-0.26704	0.33889	-0.19983
AGOP	0.71320	-0.26704	1.00000	-0.76439	0.64205
AGIN	-0.67922	0.33889	-0.76439	1.00000	-0.97708
AGFIN	0.60406	-0.19983	0.64205	-0.97708	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.92327	-0.25677	-0.39927	0.02197	0.11902	0.17175
SPP	-0.92327	1.00000	0.17936	0.32930	-0.03612	-0.04919	-0.48361
TX	-0.25677	0.17936	1.00000	-0.04294	0.01984	-0.05505	0.02603
INT	-0.39927	0.32930	-0.04294	1.00000	-0.05104	-0.13801	-0.00308
OTHOP	0.02197	-0.03612	0.01984	-0.05104	1.00000	0.03056	-0.00092
UINV	0.11902	-0.04919	-0.05505	-0.13801	0.03056	1.00000	0.00252
OBINV	0.17175	-0.48361	0.02603	-0.00308	-0.00092	0.00252	1.00000
ACQB	-0.07696	0.04973	0.13618	0.02412	-0.00870	-0.02684	0.01350
ISEQ	-0.15379	0.03979	0.08739	0.13915	-0.13221	-0.80118	-0.01529
OBDEBT	0.08352	-0.06373	-0.12472	-0.17914	0.00016	-0.05265	0.00801
PDEBT	-0.16459	0.45554	-0.01451	0.00840	-0.00791	0.02930	-0.92817
DEV	-0.13436	0.06830	0.45257	-0.05834	-0.00153	0.02881	-0.00120
EPS	-0.03644	0.32182	-0.08912	-0.17482	0.06558	0.16088	-0.72147

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.07696	-0.15379	0.08352	-0.16459	-0.13436	-0.03644
SPP	0.04973	0.03979	-0.06373	0.45554	0.06830	0.32182
TX	0.13618	0.08739	-0.12472	-0.01451	0.45257	-0.08912
INT	0.02412	0.13915	-0.17914	0.00840	-0.05834	-0.17482
OTHOP	-0.00870	-0.13221	0.00016	-0.00791	-0.00153	0.06558
UINV	-0.02684	-0.80118	-0.05265	0.02930	0.02881	0.16088
OBINV	0.01350	-0.01529	0.00801	-0.92817	-0.00120	-0.72147
ACQB	1.00000	0.01140	-0.05487	-0.00414	0.04672	-0.03667
ISEQ	0.01140	1.00000	-0.04982	-0.04498	0.08794	-0.22056
OBDEBT	-0.05487	-0.04982	1.00000	-0.06652	-0.41011	0.00669
PDEBT	-0.00414	-0.04498	-0.06652	1.00000	0.02116	0.74397
DEV	0.04672	0.08794	-0.41011	0.02116	1.00000	-0.09000
EPS	-0.03667	-0.22056	0.00669	0.74397	-0.09000	1.00000

1993

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.19759	0.65320	-0.56625	-0.12981
NETCF	0.19759	1.00000	0.39171	-0.13059	0.33134
AGOP	0.65320	0.39171	1.00000	-0.80851	-0.21559
AGIN	-0.56625	-0.13059	-0.80851	1.00000	-0.21264
AGFIN	-0.12981	0.33134	-0.21559	-0.21264	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.91268	-0.20657	-0.31948	-0.04075	0.09431	0.31785
SPP	-0.91268	1.00000	0.11939	0.18314	-0.04131	-0.06651	-0.53591
TX	-0.20657	0.11939	1.00000	0.10984	-0.00348	0.16097	-0.10637
INT	-0.31948	0.18314	0.10984	1.00000	0.03849	-0.21238	0.14613
OTHOP	-0.04075	-0.04131	-0.00348	0.03849	1.00000	-0.04376	-0.01905
UINV	0.09431	-0.06651	0.16097	-0.21238	-0.04376	1.00000	-0.53774
OBINV	0.31785	-0.53591	-0.10637	0.14613	-0.01905	-0.53774	1.00000
ACQB	-0.01879	0.00461	0.01075	0.04761	0.01062	-0.02145	0.01932
ISEQ	-0.20960	0.10005	0.10553	0.07556	0.02766	-0.11310	-0.05941
OBDEBT	-0.01812	-0.01369	0.00280	-0.08994	-0.02145	-0.09930	0.01657
PDEBT	-0.06620	0.02418	-0.01323	0.21013	0.03379	0.01744	-0.02646
DEV	-0.08592	0.01084	0.28178	-0.07859	-0.02431	0.01663	-0.06255
EPS	-0.27583	0.49476	-0.04908	-0.08882	-0.00753	0.01024	-0.48190

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.01879	-0.20960	-0.01812	-0.06620	-0.08592	-0.27583
SPP	0.00461	0.10005	-0.01369	0.02418	0.01084	0.49476
TX	0.01075	0.10553	0.00280	-0.01323	0.28178	-0.04908
INT	0.04761	0.07556	-0.08994	0.21013	-0.07859	-0.08882
OTHOP	0.01062	0.02766	-0.02145	0.03379	-0.02431	-0.00753
UINV	-0.02145	-0.11310	-0.09930	0.01744	0.01663	0.01024
OBINV	0.01932	-0.05941	0.01657	-0.02646	-0.06255	-0.48190
ACQB	1.00000	-0.04053	-0.13229	0.01540	0.01821	-0.01171
ISEQ	-0.04053	1.00000	-0.05374	-0.09133	0.19004	-0.11922
OBDEBT	-0.13229	-0.05374	1.00000	-0.44314	0.01472	-0.02557
PDEBT	0.01540	-0.09133	-0.44314	1.00000	-0.08191	0.00626
DEV	0.01821	0.19004	0.01472	-0.08191	1.00000	-0.09711

EPS	-0.01171	-0.11922	-0.02557	0.00626	-0.09711	1.00000

1994

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.10990	0.32418	0.50938	-0.51381
NETCF	0.10990	1.00000	0.05093	0.22520	0.20249
AGOP	0.32418	0.05093	1.00000	0.12910	-0.71253
AGIN	0.50938	0.22520	0.12910	1.00000	-0.67668
AGFIN	-0.51381	0.20249	-0.71253	-0.67668	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.96848	-0.15127	-0.27313	-0.01528	0.07459	0.05358
SPP	-0.96848	1.00000	0.11280	0.24998	-0.06318	-0.04735	-0.05357
TX	-0.15127	0.11280	1.00000	-0.04345	-0.01951	-0.01952	-0.04084
INT	-0.27313	0.24998	-0.04345	1.00000	0.00933	-0.15474	-0.01297
OTHOP	-0.01528	-0.06318	-0.01951	0.00933	1.00000	-0.00650	-0.01364
UINV	0.07459	-0.04735	-0.01952	-0.15474	-0.00650	1.00000	-0.73098
OBINV	0.05358	-0.05357	-0.04084	-0.01297	-0.01364	-0.73098	1.00000
ACQB	0.00910	-0.01574	-0.00202	-0.01135	-0.00949	-0.01783	0.00132
ISEQ	-0.14373	0.05713	0.15891	0.15690	-0.06080	-0.44283	-0.01828
OBDEBT	-0.01371	-0.13532	0.03241	-0.16945	0.00032	-0.07177	0.04710
PDEBT	-0.16163	0.11840	-0.01274	0.21946	0.00861	-0.02738	-0.21708
DEV	-0.02777	-0.00069	0.54847	-0.05051	-0.00638	-0.02304	-0.05068
EPS	0.03591	0.04285	-0.08752	-0.21269	0.04015	0.38603	-0.02154

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	0.00910	-0.14373	-0.01371	-0.16163	-0.02777	0.03591
SPP	-0.01574	0.05713	-0.13532	0.11840	-0.00069	0.04285
TX	-0.00202	0.15891	0.03241	-0.01274	0.54847	-0.08752
INT	-0.01135	0.15690	-0.16945	0.21946	-0.05051	-0.21269
OTHOP	-0.00949	-0.06080	0.00032	0.00861	-0.00638	0.04015
UINV	-0.01783	-0.44283	-0.07177	-0.02738	-0.02304	0.38603
OBINV	0.00132	-0.01828	0.04710	-0.21708	-0.05068	-0.02154
ACQB	1.00000	-0.04524	-0.02237	0.00182	-0.00901	-0.01579
ISEQ	-0.04524	1.00000	0.07296	0.07956	0.10820	-0.68185
OBOEBT	-0.02237	0.07296	1.00000	-0.12355	0.01124	-0.15142
PDEBT	0.00182	0.07956	-0.12355	1.00000	0.00206	-0.09349
OEV	-0.00901	0.10820	0.01124	0.00206	1.00000	-0.04733
EPS	-0.01579	-0.68185	-0.15142	-0.09349	-0.04733	1.00000

1995

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.42916	0.60767	0.44709	-0.47219
NETCF	0.42916	1.00000	0.29341	0.65712	0.11453
AGOP	0.60767	0.29341	1.00000	0.18560	-0.67360
AGIN	0.44709	0.65712	0.18560	1.00000	-0.41893
AGFIN	-0.47219	0.11453	-0.67360	-0.41893	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.94108	-0.07289	-0.64034	0.00229	0.08955	0.04863
SPP	-0.94108	1.00000	0.04784	0.47247	-0.04008	-0.00009	-0.08295
TX	-0.07289	0.04784	1.00000	-0.08445	-0.01281	-0.03065	0.01349
INT	-0.64034	0.47247	-0.08445	1.00000	-0.01057	-0.04857	0.00939
OTHOP	0.00229	-0.04008	-0.01281	-0.01057	1.00000	-0.02064	-0.02319
UINV	0.08955	-0.00009	-0.03065	-0.04857	-0.02064	1.00000	-0.35796
OBINV	0.04863	-0.08295	0.01349	0.00939	-0.02319	-0.35796	1.00000
ACQB	-0.01874	0.00905	0.00568	0.01153	-0.00723	-0.04884	0.02183
ISEQ	-0.13631	0.04409	0.05490	0.06620	-0.12130	-0.37104	0.01626
OBDEBT	0.45423	-0.39841	0.01309	-0.71117	0.00747	-0.13722	-0.00237
PDEBT	-0.55595	0.35593	-0.01302	0.85163	0.00378	-0.00540	-0.11801
DEV	-0.02527	-0.00563	0.96437	-0.08111	-0.03254	-0.03643	0.01821
EPS	-0.02466	0.22766	0.06086	0.07506	0.04915	0.49769	-0.04887

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.01874	-0.13631	0.45423	-0.55595	-0.02527	-0.02466
SPP	0.00905	0.04409	-0.39841	0.35593	-0.00563	0.22766
TX	0.00568	0.05490	0.01309	-0.01302	0.96437	0.06086
INT	0.01153	0.06620	-0.71117	0.85163	-0.08111	0.07506
OTHOP	-0.00723	-0.12130	0.00747	0.00378	-0.03254	0.04915
UINV	-0.04884	-0.37104	-0.13722	-0.00540	-0.03643	0.49769
OBINV	0.02183	0.01626	-0.00237	-0.11801	0.01821	-0.04887
ACQB	1.00000	-0.01041	-0.07274	0.00502	-0.00370	-0.02925
ISEQ	-0.01041	1.00000	-0.02216	0.00892	0.05057	-0.33305
OBDEBT	-0.07274	-0.02216	1.00000	-0.71387	0.01981	-0.41525
PDEBT	0.00502	0.00892	-0.71387	1.00000	-0.01617	0.01048
DEV	-0.00370	0.05057	0.01981	-0.01617	1.00000	0.05788
EPS	-0.02925	-0.33305	-0.41525	0.01048	0.05788	1.00000

1996

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.46064	0.90289	0.01330	-0.67301
NETCF	0.46064	1.00000	0.39115	0.01627	-0.01464
AGOP	0.90289	0.39115	1.00000	-0.14050	-0.68082
AGIN	0.01330	0.01627	-0.14050	1.00000	-0.55377
AGFIN	-0.67301	-0.01464	-0.68082	-0.55377	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.93742	-0.20988	-0.46306	0.00579	0.13380	-0.06674
SPP	-0.93742	1.00000	0.12998	0.42534	-0.02278	-0.10491	0.00670
TX	-0.20988	0.12998	1.00000	0.04211	-0.05843	-0.02848	0.00747
INT	-0.46306	0.42534	0.04211	1.00000	-0.05182	-0.12688	0.02272
OTHOP	0.00579	-0.02278	-0.05843	-0.05182	1.00000	-0.03873	0.01410
UINV	0.13380	-0.10491	-0.02848	-0.12688	-0.03873	1.00000	-0.35639
OBINV	-0.06674	0.00670	0.00747	0.02272	0.01410	-0.35639	1.00000
ACQB	-0.00617	-0.00774	0.08550	0.03270	-0.01152	-0.00935	0.02102
ISEQ	-0.10525	-0.07605	0.18173	0.11642	-0.10880	-0.21962	0.04652
OBDEBT	0.42600	-0.57027	0.02135	-0.59860	0.00975	-0.08190	-0.00999
PDEBT	-0.32349	0.32742	-0.03071	0.63787	-0.02675	0.12028	-0.07621
DEV	-0.05125	0.00550	0.47071	-0.04920	-0.07599	0.04805	-0.10802
EPS	-0.16900	0.46860	-0.06192	0.00414	0.01849	0.01231	0.00391

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.00617	-0.10525	0.42600	-0.32349	-0.05125	-0.16900
SPP	-0.00774	-0.07605	-0.57027	0.32742	0.00550	0.46860
TX	0.08550	0.18173	0.02135	-0.03071	0.47071	-0.06192
INT	0.03270	0.11642	-0.59860	0.63787	-0.04920	0.00414
OTHOP	-0.01152	-0.10880	0.00975	-0.02675	-0.07599	0.01849
UINV	-0.00935	-0.21962	-0.08190	0.12028	0.04805	0.01231
OBINV	0.02102	0.04652	-0.00999	-0.07621	-0.10802	0.00391
ACQB	1.00000	0.00862	-0.00698	-0.01193	0.01791	-0.01576
ISEQ	0.00862	1.00000	0.16699	-0.12213	0.14283	-0.34251
OBDEBT	-0.00698	0.16699	1.00000	-0.80062	0.02582	-0.46059
PDEBT	-0.01193	-0.12213	-0.80062	1.00000	-0.03699	-0.01308
DEV	0.01791	0.14283	0.02582	-0.03699	1.00000	-0.06950
EPS	-0.01576	-0.34251	-0.46059	-0.01308	-0.06950	1.00000

1997

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.02296	0.23714	0.09927	-0.25032
NETCF	0.02296	1.00000	0.06081	0.32164	0.22763
AGOP	0.23714	0.06081	1.00000	-0.05509	-0.82428
AGIN	0.09927	0.32164	-0.05509	1.00000	-0.32940
AGFIN	-0.25032	0.22763	-0.82428	-0.32940	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.89777	-0.22702	-0.53866	-0.22370	0.05533	-0.08113
SPP	-0.89777	1.00000	0.12846	0.70387	-0.02738	-0.04291	0.05360
TX	-0.22702	0.12846	1.00000	-0.01135	0.07851	0.00289	-0.16426
INT	-0.53866	0.70387	-0.01135	1.00000	-0.02763	-0.08506	0.07374
OTHOP	-0.22370	-0.02738	0.07851	-0.02763	1.00000	-0.00639	0.00336
UINV	0.05533	-0.04291	0.00289	-0.08506	-0.00639	1.00000	-0.61849
OBINV	-0.08113	0.05360	-0.16426	0.07374	0.00336	-0.61849	1.00000
ACQB	0.01066	-0.01264	0.03444	-0.00423	-0.01499	-0.01075	-0.01441
ISEQ	-0.18214	0.10707	0.19756	0.06886	-0.06786	-0.18701	-0.06329
OBDEBT	0.41555	-0.67323	0.02028	-0.88534	0.01085	-0.02265	0.00001
PDEBT	-0.45176	0.65699	0.00519	0.87486	-0.01874	0.01718	-0.16641
DEV	-0.04533	-0.00411	0.44320	-0.01321	0.01042	0.01259	-0.16130
EPS	0.22887	-0.09758	-0.05791	-0.30062	0.03178	0.11245	-0.01018

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	0.01066	-0.18214	0.41555	-0.45176	-0.04533	0.22887
SPP	-0.01264	0.10707	-0.67323	0.65699	-0.00411	-0.09758
TX	0.03444	0.19756	0.02028	0.00519	0.44320	-0.05791
INT	-0.00423	0.06886	-0.88534	0.87486	-0.01321	-0.30062
OTHOP	-0.01499	-0.06786	0.01085	-0.01874	0.01042	0.03178
UINV	-0.01075	-0.18701	-0.02265	0.01718	0.01259	0.11245
OBINV	-0.01441	-0.06329	0.00001	-0.16641	-0.16130	-0.01018
ACQB	1.00000	-0.07795	-0.01084	-0.01939	-0.00314	0.00128
ISEQ	-0.07795	1.00000	-0.04980	0.03332	0.06810	-0.20878
OBDEBT	-0.01084	-0.04980	1.00000	-0.89917	0.00290	0.00228
PDEBT	-0.01939	0.03332	-0.89917	1.00000	0.01393	-0.19748
DEV	-0.00314	0.06810	0.00290	0.01393	1.00000	-0.02866
EPS	0.00128	-0.20878	0.00228	-0.19748	-0.02866	1.00000

1992-1997

	EPS	NETCF	AGOP	AGIN	AGFIN
EPS	1.00000	0.19643	0.59047	-0.21543	-0.09613
NETCF	0.19643	1.00000	0.18526	0.23170	0.05948
AGOP	0.59047	0.18526	1.00000	-0.23727	-0.35111
AGIN	-0.21543	0.23170	-0.23727	1.00000	-0.74391
AGFIN	-0.09613	0.05948	-0.35111	-0.74391	1.00000

	CST	SPP	TX	INT	OTHOP	UINV	OBINV
CST	1.00000	-0.92885	-0.12836	-0.44294	-0.08522	0.08521	0.05016
SPP	-0.92885	1.00000	0.08117	0.43529	-0.03048	-0.04596	-0.14608
TX	-0.12836	0.08117	1.00000	-0.02844	0.01272	-0.00435	-0.01443
INT	-0.44294	0.43529	-0.02844	1.00000	-0.02246	-0.09653	0.02055
OTHOP	-0.08522	-0.03048	0.01272	-0.02246	1.00000	-0.00923	-0.00173
UINV	0.08521	-0.04596	-0.00435	-0.09653	-0.00923	1.00000	-0.26549
OBINV	0.05016	-0.14608	-0.01443	0.02055	-0.00173	-0.26549	1.00000
ACQB	-0.00351	-0.00505	0.02307	0.00556	-0.00787	-0.01667	0.00480
ISEQ	-0.13872	0.03233	0.09037	0.09111	-0.06328	-0.37547	-0.01062
OBDEBT	0.30279	-0.44987	0.00876	-0.65733	0.00670	-0.05330	0.00186
PDEBT	-0.24897	0.30149	-0.00900	0.41932	-0.00732	0.01651	-0.65206
DEV	-0.03741	0.00208	0.77619	-0.04738	-0.00944	-0.00692	-0.02774
EPS	-0.03324	0.24411	-0.01298	-0.12015	0.02625	0.19053	-0.31422

	ACQB	ISEQ	OBDEBT	PDEBT	DEV	EPS
CST	-0.00351	-0.13872	0.30279	-0.24897	-0.03741	-0.03324
SPP	-0.00505	0.03233	-0.44987	0.30149	0.00208	0.24411
TX	0.02307	0.09037	0.00876	-0.00900	0.77619	-0.01298
INT	0.00556	0.09111	-0.65733	0.41932	-0.04738	-0.12015
OTHOP	-0.00787	-0.06328	0.00670	-0.00732	-0.00944	0.02625
UINV	-0.01667	-0.37547	-0.05330	0.01651	-0.00692	0.19053
OBINV	0.00480	-0.01062	0.00186	-0.65206	-0.02774	-0.31422
ACQB	1.00000	-0.03132	-0.02284	-0.00666	0.00354	-0.01465
ISEQ	-0.03132	1.00000	0.02228	-0.02538	0.07035	-0.28981
OBDEBT	-0.02284	0.02228	1.00000	-0.45345	0.00259	-0.17423
PDEBT	-0.00666	-0.02538	-0.45345	1.00000	-0.00566	0.22783
DEV	0.00354	0.07035	0.00259	-0.00566	1.00000	-0.01373
EPS	-0.01465	-0.28981	-0.17423	0.22783	-0.01373	1.00000

Appendix E: VIF Test of Multicollinearity

MED: Market Equity Deflator

Equation 4-3

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.585282	0.08375662	6.988	0.0001	0.00000000
AGOP	1	0.247546	0.12213003	2.027	0.0434	3.78795129
AGIN	1	-0.029975	0.11304165	-0.265	0.7910	5.04560497
AGFIN	1	0.038815	0.09423566	0.412	0.6806	3.50529611

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.620188	0.07097329	8.738	0.0001	0.00000000
AGOP	1	1.014851	0.10676830	9.505	0.0001	9.68708884
AGIN	1	-0.107177	0.19957294	-0.537	0.5915	1.17325123
AGFIN	1	0.998255	0.10431838	9.569	0.0001	9.87904507

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.547586	0.05911106	9.264	0.0001	0.00000000
AGOP	1	0.072629	0.16747219	0.434	0.6647	36.93627203
AGIN	1	-0.030578	0.12498626	-0.245	0.8068	1373.4068499
AGFIN	1	-0.025684	0.15959297	-0.161	0.8722	1770.9152524

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.171919	0.02762384	-6.224	0.0001	0.00000000
AGOP	1	0.731139	0.14382795	5.083	0.0001	1.75978209
AGIN	1	-0.099201	0.10842099	-0.915	0.3606	3.72177976
AGFIN	1	0.161520	0.10579990	1.527	0.1274	3.54862255

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.311901	0.04826586	6.462	0.0001	0.00000000
AGOP	1	0.985291	0.22261927	4.426	0.0001	3.01171919
AGIN	1	0.120382	0.16019242	0.751	0.4526	2.47538815
AGFIN	1	0.884039	0.14127961	6.257	0.0001	4.59713451

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.247746	0.03251380	7.620	0.0001	0.00000000
AGOP	1	0.684917	0.13368488	5.123	0.0001	2.90619611
AGIN	1	0.419144	0.13581028	3.086	0.0021	2.67081812
AGFIN	1	0.432217	0.11834350	3.652	0.0003	2.95763691

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.344395	0.02156638	15.969	0.0001	0.00000000
AGOP	1	0.690026	0.06100718	11.311	0.0001	4.00287644
AGIN	1	0.341529	0.05899654	5.789	0.0001	4.84997507
AGFIN	1	0.544960	0.05449177	10.001	0.0001	5.72254489

Equation 4-4

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.259649	0.08177243	3.175	0.0016	0.00000000
CST	1	0.119913	0.15519757	0.773	0.4402	187.02200691
SPP	1	0.143672	0.16510443	0.870	0.3848	156.56675971
TX	1	2.423976	1.49877420	1.617	0.1067	1.73942030

INT	1	-0.190341	0.22986919	-0.828	0.4082	4.73203525
OTHOP	1	-0.127242	0.18303296	-0.695	0.4874	1.19665822
UINV	1	-0.181438	0.13904042	-1.305	0.1927	2.68057579
OBINV	1	0.047108	0.12602147	0.374	0.7088	2.82641584
ACQB	1	2.749862	1.85444139	1.483	0.1390	1.11917123
ISEQ	1	2.019672	0.19045119	10.605	0.0001	1.15263320
OBDEBT	1	-0.011568	0.10870830	-0.106	0.9153	3.22096612
PDEBT	1	0.030008	0.08930928	0.336	0.7371	4.21947636
DEV	1	-3.143766	0.96832726	-3.247	0.0013	1.24806562

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.521526	0.07687045	6.784	0.0001	0.00000000
CST	1	0.526149	0.14358506	3.664	0.0003	417.40041668
SPP	1	0.522037	0.14619063	3.571	0.0004	396.87267377
TX	1	1.708643	1.39265061	1.227	0.2205	2.09858038
INT	1	0.420859	0.35847488	1.174	0.2410	4.52059235
OTHOP	1	0.561346	0.26821646	2.093	0.0369	1.36659201
UINV	1	-0.493354	0.22206979	-2.222	0.0268	11.27156981
OBINV	1	-0.541080	0.22488336	-2.406	0.0165	10.94544669
ACQB	1	1.022059	0.87914854	1.163	0.2456	1.01961070
ISEQ	1	1.790981	0.19339862	9.261	0.0001	1.27561791
OBDEBT	1	0.223209	0.21408703	1.043	0.2977	2.15043890
PDEBT	1	0.250366	0.20277984	1.235	0.2176	3.29804394
DEV	1	-0.154858	1.01228183	-0.153	0.8785	3.42323186

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.341614	0.06500875	5.255	0.0001	0.00000000
CST	1	0.269499	0.10939343	2.464	0.0141	651.85210746
SPP	1	0.251016	0.11060547	2.269	0.0237	448.95868388
TX	1	-3.493529	1.54921155	-2.255	0.0246	1.58067823
INT	1	-0.439671	0.50100451	-0.878	0.3806	12.15522426
OTHOP	1	0.731999	0.18127321	4.038	0.0001	1.51834674
UINV	1	0.064960	0.07705663	0.843	0.3996	4.01984360
OBINV	1	0.118362	0.05843800	2.025	0.0434	387.18814359
ACQB	1	0.483049	0.51145998	0.944	0.3454	1.59485512
ISEQ	1	0.753538	0.11821667	6.374	0.0001	2.14138631
OBDEBT	1	0.185180	0.08280334	2.236	0.0258	5.60760028
PDEBT	1	0.219009	0.07877203	2.780	0.0056	471.99086172
DEV	1	2.267256	1.42033817	1.596	0.1111	1.44090262

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.230218	0.02581149	-8.919	0.0001	0.00000000
CST	1	0.497303	0.11800859	4.214	0.0001	1444.5504876
SPP	1	0.502803	0.11811811	4.257	0.0001	1419.3647692
TX	1	0.336866	0.73388723	0.459	0.6464	1.91536507
INT	1	0.276212	0.36353886	0.760	0.4477	2.85399241
OTHOP	1	0.618485	0.18767646	3.295	0.0010	1.77344313
UINV	1	-0.085099	0.07403199	-1.149	0.2508	7.23692023
OBINV	1	-0.035273	0.07241408	-0.487	0.6264	7.25096544
ACQB	1	0.071345	0.27859532	0.256	0.7980	1.16963661
ISEQ	1	0.504416	0.12428092	4.059	0.0001	1.30166556
OBDEBT	1	0.254690	0.10795895	2.359	0.0186	5.99790931
PDEBT	1	0.091151	0.12738933	0.716	0.4746	8.21285005
DEV	1	-0.458865	0.56180049	-0.817	0.4144	1.53216778

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.203888	0.05427088	3.757	0.0002	0.00000000
CST	1	0.008690	0.18264698	0.048	0.9621	2885.6483098
SPP	1	-0.004000	0.18256322	-0.022	0.9825	2823.4828605
TX	1	0.269822	1.35774945	0.199	0.8425	5.00109142
INT	1	0.046808	0.56979988	0.082	0.9346	8.13369062
OTHOP	1	-0.702469	0.33925318	-2.071	0.0388	1.11609628
UINV	1	0.016589	0.11203610	0.148	0.8823	3.98800272
OBINV	1	0.072607	0.10594030	0.685	0.4934	77.21912428
ACQB	1	-0.697304	0.63980727	-1.090	0.2762	1.02507493
ISEQ	1	1.478259	0.17151864	8.619	0.0001	1.09045141
OBDEBT	1	0.024551	0.08164254	0.301	0.7637	15.64968035

PDEBT	1	0.072608	0.09244849	0.785	0.4325	109.67960661
DEV	1	-1.193110	0.66778449	-1.787	0.0745	6.92371635

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.029717	0.03687090	0.806	0.4205	0.00000000
CST	1	0.540494	0.12544527	4.309	0.0001	239.81213557
SPP	1	0.531473	0.12503944	4.250	0.0001	238.91383378
TX	1	-2.442344	1.06193043	-2.300	0.0218	1.50450365
INT	1	0.962375	0.55259741	1.742	0.0821	1.48463030
OTHOP	1	0.541729	0.14560397	3.721	0.0002	1.88471208
UINV	1	0.196109	0.13330841	1.471	0.1417	13.09374806
OBINV	1	0.212532	0.12887193	1.649	0.0996	12.50162328
ACQB	1	-0.886124	0.35029474	-2.530	0.0116	1.16364616
ISEQ	1	1.173945	0.14697502	7.987	0.0001	1.32866882
OBDEBT	1	0.222638	0.13972011	1.593	0.1115	3.24199000
PDEBT	1	0.093891	0.16532784	0.568	0.5703	2.52149223
DEV	1	-0.128831	0.58708340	-0.219	0.8264	1.49941328

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.213018	0.02450969	8.691	0.0001	0.00000000
CST	1	0.087733	0.03009651	2.915	0.0036	312.92759664
SPP	1	0.076613	0.03048578	2.513	0.0120	283.45465119
TX	1	2.465465	0.25675044	9.603	0.0001	3.54154924
INT	1	-0.343038	0.04463332	-7.686	0.0001	1.44989012
OTHOP	1	0.247515	0.08232036	3.007	0.0027	1.07284326
UINV	1	-0.071335	0.02857620	-2.496	0.0126	1.98812221
OBINV	1	0.052991	0.01633673	3.244	0.0012	27.39627902
ACQB	1	-0.583850	0.23133956	-2.524	0.0117	1.44989185
ISEQ	1	0.592651	0.04698394	12.614	0.0001	1.20387710
OBDEBT	1	0.050997	0.02423971	2.104	0.0355	4.77188583
PDEBT	1	0.094958	0.02206023	4.304	0.0001	39.38320269
DEV	1	-2.726613	0.23908221	-11.404	0.0001	2.51211348

Equation 4-5

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.692680	0.09293499	7.453	0.0001	0.00000000
EPS	1	-0.507586	0.29809838	-1.703	0.0894	1.02540581
NETCF	1	-0.035741	0.10600003	-0.337	0.7362	1.02540581

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.745081	0.07271039	10.247	0.0001	0.00000000
EPS	1	-0.419461	0.27022837	-1.552	0.1213	1.00314297
NETCF	1	0.960625	0.10977731	8.751	0.0001	1.00314297

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.475616	0.05631978	8.445	0.0001	0.00000000
EPS	1	0.223168	0.22433297	0.995	0.3203	1.00087105
NETCF	1	0.603532	0.20856663	2.894	0.0040	1.00087105

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.139104	0.02830263	-4.915	0.0001	0.00000000
EPS	1	0.455289	0.11553509	3.941	0.0001	1.01117893
NETCF	1	0.038525	0.08222218	0.469	0.6396	1.01117893

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.417660	0.06146407	6.795	0.0001	0.00000000
EPS	1	0.204258	0.25506229	0.801	0.4235	1.00025649
NETCF	1	0.098143	0.06299877	1.558	0.1197	1.00025649

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.286221	0.04294554	6.665	0.0001	0.00000000
EPS	1	0.351139	0.15375545	2.284	0.0227	1.02914324
NETCF	1	0.385072	0.15881554	2.425	0.0156	1.02914324

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.419366	0.02785668	15.054	0.0001	0.00000000
EPS	1	0.112846	0.04665678	2.419	0.0156	1.00064445
NETCF	1	0.012948	0.01576238	0.821	0.4114	1.00064445

Equation 4-6

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.582797	0.08464594	6.885	0.0001	0.00000000
EPS	1	-0.384058	0.27968812	-1.373	0.1705	1.04626802
AGOP	1	0.354804	0.14244224	2.491	0.0132	1.99722149
AGIN	1	-0.025513	0.11311601	-0.226	0.8217	4.23772662
AGFIN	1	0.040387	0.09548113	0.423	0.6725	3.37709507

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.647513	0.07210541	8.980	0.0001	0.00000000
EPS	1	-0.494596	0.25164160	-1.965	0.0500	1.03276638
AGOP	1	1.035412	0.10694898	9.681	0.0001	9.78066455
AGIN	1	-0.080318	0.19942080	-0.403	0.6873	1.17878621
AGFIN	1	1.027216	0.10503253	9.780	0.0001	10.07737435

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.538315	0.06139556	8.768	0.0001	0.00000000
EPS	1	0.138494	0.24573418	0.564	0.5733	1.03323295
AGOP	1	0.066314	0.16795941	0.395	0.6931	37.10139505
AGIN	1	-0.032869	0.12513664	-0.263	0.7929	1374.8573446
AGFIN	1	-0.029423	0.15983847	-0.184	0.8540	1773.9724230

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.176531	0.02824331	-6.250	0.0001	0.00000000
EPS	1	0.099451	0.12599416	0.789	0.4302	1.27443678
AGOP	1	0.680122	0.15772335	4.312	0.0001	2.11492280
AGIN	1	-0.106295	0.10882640	-0.977	0.3291	3.74733658
AGFIN	1	0.149624	0.10690061	1.400	0.1621	3.62059430

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.298241	0.04964581	6.007	0.0001	0.00000000
EPS	1	0.232772	0.19903250	1.170	0.2426	1.05943932
AGOP	1	0.955306	0.22402913	4.264	0.0001	3.05168878
AGIN	1	0.128459	0.16029661	0.801	0.4232	2.47999237
AGFIN	1	0.888815	0.14129923	6.290	0.0001	4.60097813

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.240212	0.03276105	7.332	0.0001	0.00000000
EPS	1	0.200319	0.11648422	1.720	0.0859	1.08618982
AGOP	1	0.623042	0.13825534	4.506	0.0001	3.11732241
AGIN	1	0.380659	0.13744783	2.769	0.0058	2.74354677
AGFIN	1	0.405088	0.11922055	3.398	0.0007	3.01034234

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.345521	0.02158358	16.009	0.0001	0.00000000

EPS	1	-0.050943	0.04095524	-1.244	0.2136	1.32737486
AGOP	1	0.706830	0.06247996	11.313	0.0001	4.19917076
AGIN	1	0.333750	0.05932225	5.626	0.0001	4.90448524
AGFIN	1	0.542870	0.05451319	9.958	0.0001	5.72799098

Equation 4-7

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.259999	0.08186214	3.176	0.0016	0.00000000
EPS	1	-0.114779	0.24977306	-0.460	0.6461	1.37688739
CST	1	0.122212	0.15544161	0.786	0.4322	187.21597552
SPP	1	0.145732	0.16533917	0.881	0.3787	156.68199823
TX	1	2.257689	1.54337339	1.463	0.1444	1.84060084
INT	1	-0.173433	0.23303436	-0.744	0.4572	4.85301755
OTHOP	1	-0.123087	0.18344874	-0.671	0.5027	1.19957234
UINV	1	-0.175355	0.13981502	-1.254	0.2106	2.70482455
OBINV	1	0.045956	0.12617911	0.364	0.7159	2.82753068
ACQB	1	2.676041	1.86333253	1.436	0.1518	1.12755186
ISEQ	1	2.026053	0.19115683	10.599	0.0001	1.15874770
OBDEBT	1	-0.007022	0.10927157	-0.064	0.9488	3.24758577
PDEBT	1	0.032046	0.08951328	0.358	0.7205	4.22985900
DEV	1	-3.159711	0.96996818	-3.258	0.0012	1.24966486

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.525021	0.07896343	6.649	0.0001	0.00000000
EPS	1	-0.054441	0.27575002	-0.197	0.8436	1.20953383
CST	1	0.530400	0.14534401	3.649	0.0003	426.77005793
SPP	1	0.526896	0.14840277	3.550	0.0004	408.09515069
TX	1	1.687821	1.39813369	1.207	0.2280	2.11059036
INT	1	0.413661	0.36070800	1.147	0.2521	4.56724961
OTHOP	1	0.564737	0.26905428	2.099	0.0364	1.37218638
UINV	1	-0.490255	0.22286230	-2.200	0.0283	11.32775790
OBINV	1	-0.537270	0.22595131	-2.378	0.0178	11.02589477
ACQB	1	1.009965	0.88222471	1.145	0.2529	1.02455100
ISEQ	1	1.785806	0.19537343	9.140	0.0001	1.29900299
OBDEBT	1	0.226020	0.21479015	1.052	0.2932	2.15993370
PDEBT	1	0.256712	0.20552649	1.249	0.2123	3.38070908
DEV	1	-0.193748	1.03233962	-0.188	0.8512	3.55258039

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.330337	0.06547143	5.046	0.0001	0.00000000
EPS	1	0.326629	0.23849925	1.370	0.1715	1.18641310
CST	1	0.265664	0.10933305	2.430	0.0155	652.27980220
SPP	1	0.248093	0.11052878	2.245	0.0252	449.12615637
TX	1	-3.340651	1.55186874	-2.153	0.0318	1.58889949
INT	1	-0.507828	0.50303163	-1.010	0.3132	12.27537430
OTHOP	1	0.714177	0.18158069	3.933	0.0001	1.52618603
UINV	1	0.055921	0.07727126	0.724	0.4696	4.04939000
OBINV	1	0.108490	0.05882986	1.844	0.0658	393.08951298
ACQB	1	0.495940	0.51109673	0.970	0.3323	1.59539624
ISEQ	1	0.755005	0.11811753	6.392	0.0001	2.14156235
OBDEBT	1	0.183079	0.08274472	2.213	0.0274	5.60952849
PDEBT	1	0.206658	0.07921777	2.609	0.0094	478.18855700
DEV	1	2.747413	1.46175761	1.880	0.0608	1.52885492

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.238042	0.02599897	-9.156	0.0001	0.00000000
EPS	1	0.221393	0.10442029	2.120	0.0344	1.30393764
CST	1	0.420888	0.12305846	3.420	0.0007	1580.0863997
SPP	1	0.425528	0.12328227	3.452	0.0006	1555.3016575
TX	1	0.314176	0.73181213	0.429	0.6679	1.91577477
INT	1	0.148467	0.36744561	0.404	0.6863	2.93284813
OTHOP	1	0.486285	0.19724058	2.465	0.0140	1.97034616
UINV	1	-0.095259	0.07397015	-1.288	0.1983	7.26741975
OBINV	1	-0.046484	0.07239497	-0.642	0.5211	7.28985385
ACQB	1	0.117454	0.27862788	0.422	0.6735	1.17680581
ISEQ	1	0.505998	0.12391850	4.083	0.0001	1.30171276
OBDEBT	1	0.234330	0.10806966	2.168	0.0305	6.04564226
PDEBT	1	0.075008	0.12724354	0.589	0.5558	8.24235946
DEV	1	-0.268703	0.56728707	-0.474	0.6359	1.57144867

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.167470	0.05535052	3.026	0.0026	0.00000000
EPS	1	0.602202	0.20434946	2.947	0.0033	1.13557158
CST	1	0.004091	0.18158516	0.023	0.9820	2885.8613958
SPP	1	-0.009114	0.18150348	-0.050	0.9600	2823.7410363
TX	1	1.011777	1.37308649	0.737	0.4615	5.17508718
INT	1	-0.079954	0.56809726	-0.141	0.8881	8.18059106
OTHOP	1	-0.770617	0.33806034	-2.280	0.0230	1.12134335
UINV	1	0.042846	0.11173646	0.383	0.7015	4.01352235
OBINV	1	0.088679	0.10546162	0.841	0.4007	77.42617128
ACQB	1	-0.610593	0.63674446	-0.959	0.3380	1.02726854
ISEQ	1	1.556775	0.17258420	9.020	0.0001	1.11707443
OBDEBT	1	0.040455	0.08134414	0.497	0.6191	15.71887230
PDEBT	1	0.085767	0.09201606	0.932	0.3516	109.93850348
DEV	1	-1.288995	0.66467466	-1.939	0.0529	6.94034746

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.011766	0.03686799	0.319	0.7497	0.00000000
EPS	1	0.367210	0.10104521	3.634	0.0003	1.17593853
CST	1	0.401757	0.13003473	3.090	0.0021	262.43178354
SPP	1	0.392886	0.12963817	3.031	0.0025	261.54604742
TX	1	-2.035673	1.05820663	-1.924	0.0548	1.52151840
INT	1	0.691890	0.55260735	1.252	0.2110	1.51206019
OTHOP	1	0.381645	0.15085459	2.530	0.0116	2.06039616
UINV	1	0.126988	0.13345837	0.952	0.3417	13.36520585
OBINV	1	0.140244	0.12923988	1.085	0.2783	12.80495323
ACQB	1	-0.939550	0.34742032	-2.704	0.0070	1.16573348
ISEQ	1	1.173956	0.14563842	8.061	0.0001	1.32866882
OBDEBT	1	0.164527	0.13936985	1.181	0.2382	3.28523650
PDEBT	1	0.022018	0.16501382	0.133	0.8939	2.55824083
DEV	1	-0.426665	0.58748889	-0.726	0.4679	1.52917159

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.209837	0.02454109	8.550	0.0001	0.00000000
EPS	1	0.123067	0.05966172	2.063	0.0392	2.47851286
CST	1	0.077334	0.03052465	2.533	0.0113	325.12736976
SPP	1	0.065041	0.03103141	2.096	0.0362	296.97475713
TX	1	2.787167	0.30207569	9.227	0.0001	4.90903607
INT	1	-0.357348	0.04499285	-7.942	0.0001	1.47488404
OTHOP	1	0.231647	0.08263483	2.803	0.0051	1.08217928
UINV	1	-0.074496	0.02858522	-2.606	0.0092	1.99148235
OBINV	1	0.048575	0.01646340	2.951	0.0032	27.85170250
ACQB	1	-0.445225	0.24044294	-1.852	0.0642	1.56788199
ISEQ	1	0.596818	0.04699981	12.698	0.0001	1.20596676
OBDEBT	1	0.046865	0.02431523	1.927	0.0540	4.80667246
PDEBT	1	0.088328	0.02226988	3.966	0.0001	40.17702845
DEV	1	-2.755570	0.23939064	-11.511	0.0001	2.52125669

TAD: Total Asset Deflator

Equation 4-3

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.671439	0.09835324	6.827	0.0001	0.00000000
AGOP	1	0.656871	0.71373165	0.920	0.3580	2.22244447
AGIN	1	-0.194670	0.59712647	-0.326	0.7446	3.78085467
AGFIN	1	0.280867	0.52123226	0.539	0.5903	5.59357243

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.727153	0.07833965	9.282	0.0001	0.00000000
AGOP	1	0.759214	0.38107494	1.992	0.0469	5.28998543
AGIN	1	0.832789	0.43989038	1.893	0.0590	5.28297579
AGFIN	1	1.568609	0.41522359	3.778	0.0002	1.91873280

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.582149	0.08945192	6.508	0.0001	0.00000000
AGOP	1	0.266092	0.49785312	0.534	0.5932	3.81124086
AGIN	1	-0.088483	0.44709303	-0.198	0.8432	3.46114711
AGFIN	1	0.233665	0.43194244	0.541	0.5888	6.91327820

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.054651	0.14568054	0.375	0.7077	0.00000000
AGOP	1	0.756438	0.52062006	1.453	0.1467	1.86934704
AGIN	1	-0.057127	0.37610438	-0.152	0.8793	1.23852096
AGFIN	1	0.433921	0.43987348	0.986	0.3243	2.18916205

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.354382	0.07669091	4.621	0.0001	0.00000000
AGOP	1	1.508190	0.36409029	4.142	0.0001	6.88482591
AGIN	1	0.599664	0.44598633	1.345	0.1792	2.12595141
AGFIN	1	1.652778	0.39637776	4.170	0.0001	7.80600822

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.321596	0.04471406	7.192	0.0001	0.00000000
AGOP	1	0.411990	0.18358410	2.244	0.0251	4.97748813
AGIN	1	0.455349	0.18553627	2.454	0.0144	1.78979317
AGFIN	1	0.357997	0.17091585	2.095	0.0366	5.56637168

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.455999	0.03731822	12.219	0.0001	0.00000000
AGOP	1	0.525385	0.14935924	3.518	0.0004	3.12149536
AGIN	1	0.448717	0.13939179	3.219	0.0013	6.12788242
AGFIN	1	0.515993	0.14427189	3.577	0.0004	6.59606299

Equation 4-4

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.896889	0.13947648	6.430	0.0001	0.00000000
CST	1	0.132506	0.70009082	0.189	0.8500	35.93049120
SPP	1	0.466037	0.73841883	0.631	0.5283	33.46434012
TX	1	5.569938	6.10659555	0.912	0.3623	1.40333260
INT	1	-2.970347	1.88771973	-1.574	0.1164	1.38992768
OTHOP	1	1.931235	0.96345215	2.004	0.0457	1.11059997
UINV	1	-1.099960	0.60671658	-1.813	0.0706	3.67008019
OBINV	1	-0.464376	0.70800346	-0.656	0.5123	1.40501837
ACQB	1	0.252040	5.52248836	0.046	0.9636	1.03302268
OBDEBT	1	0.091922	0.72740961	0.126	0.8995	1.36738147
PDEBT	1	0.159879	0.19792502	0.808	0.4197	1.10103187
ISEQ	1	-0.319406	0.40150802	-0.796	0.4268	4.63699248
DEV	1	1.294693	3.91020302	0.331	0.7407	1.68796902

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.851790	0.12549222	6.788	0.0001	0.00000000
CST	1	0.498711	0.39104398	1.275	0.2029	20.75167870
SPP	1	0.459967	0.36745906	1.252	0.2113	28.62368491
TX	1	5.242177	3.08682811	1.698	0.0902	1.20591945
INT	1	4.577062	2.84740092	1.607	0.1087	1.36859968
OTHOP	1	0.246234	0.75822432	0.325	0.7455	1.23338190
UINV	1	0.527451	0.46528406	1.134	0.2576	3.42336209
OBINV	1	0.366368	0.42395860	0.864	0.3880	6.75815981
ACQB	1	3.532800	2.25982714	1.563	0.1187	1.03976794
OBDEBT	1	0.961491	0.69613456	1.381	0.1679	1.58308087
PDEBT	1	0.720868	0.76553579	0.942	0.3469	1.52743772
ISEQ	1	1.081387	0.42247569	2.560	0.0108	1.52276893
DEV	1	5.012797	3.36649467	1.489	0.1372	1.26420378

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.380330	0.11914082	3.192	0.0015	0.00000000
CST	1	0.082887	0.42123771	0.197	0.8441	50.35915832
SPP	1	0.119085	0.42096095	0.283	0.7774	49.32823002
TX	1	-0.576464	5.94546895	-0.097	0.9228	1.51584849
INT	1	-4.829209	2.95893114	-1.632	0.1033	1.26781654
OTHOP	1	0.698883	0.76614347	0.912	0.3621	1.39123951
UINV	1	-0.096626	0.39484916	-0.245	0.8068	5.19566064
OBINV	1	-0.025431	0.39902244	-0.064	0.9492	4.22782355
ACQB	1	-5.051289	1.87747747	-2.690	0.0074	1.02721042
OBDEBT	1	0.058379	0.41309374	0.141	0.8877	2.30137105
PDEBT	1	-0.362756	0.53825649	-0.674	0.5007	1.46396824
ISEQ	1	0.395839	0.32336877	1.224	0.2215	2.65618317
DEV	1	-4.230544	2.40636075	-1.758	0.0793	1.45887587

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.380330	0.11914082	3.192	0.0015	0.00000000
CST	1	0.082887	0.42123771	0.197	0.8441	50.35915832
SPP	1	0.119085	0.42096095	0.283	0.7774	49.32823002
TX	1	-0.576464	5.94546895	-0.097	0.9228	1.51584849
INT	1	-4.829209	2.95893114	-1.632	0.1033	1.26781654
OTHOP	1	0.698883	0.76614347	0.912	0.3621	1.39123951
UINV	1	-0.096626	0.39484916	-0.245	0.8068	5.19566064
OBINV	1	-0.025431	0.39902244	-0.064	0.9492	4.22782355
ACQB	1	-5.051289	1.87747747	-2.690	0.0074	1.02721042
OBDEBT	1	0.058379	0.41309374	0.141	0.8877	2.30137105
PDEBT	1	-0.362756	0.53825649	-0.674	0.5007	1.46396824
ISEQ	1	0.395839	0.32336877	1.224	0.2215	2.65618317
DEV	1	-4.230544	2.40636075	-1.758	0.0793	1.45887587

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.366293	0.21435867	-1.709	0.0880	0.00000000
CST	1	1.602475	0.75692645	2.117	0.0347	28.91988900
SPP	1	1.379417	0.73879819	1.867	0.0624	28.01221920
TX	1	-6.513538	8.70667928	-0.748	0.4547	1.44851968
INT	1	4.086748	6.11871455	0.668	0.5044	1.56501417
OTHOP	1	0.537800	1.39496503	0.386	0.7000	1.14036962
UINV	1	-0.275282	0.41973813	-0.656	0.5122	1.68264397
OBINV	1	-0.616997	0.70155130	-0.879	0.3795	1.69614855
ACQB	1	1.497189	3.96566580	0.378	0.7059	1.03556676
OBDEBT	1	0.785840	0.82642726	0.951	0.3420	2.23571520
PDEBT	1	-1.125617	1.27173944	-0.885	0.3765	1.91161793
ISEQ	1	0.667080	0.58094740	1.148	0.2513	1.54941203
DEV	1	-5.041628	5.98133317	-0.843	0.3996	1.42408911

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.253982	0.10772634	2.358	0.0187	0.00000000

CST	1	1.467668	0.34803978	4.217	0.0001	39.58070708
SPP	1	1.407102	0.33956494	4.144	0.0001	48.56688323
TX	1	3.659418	3.79274111	0.965	0.3350	1.40878160
INT	1	3.449456	3.01555581	1.144	0.2531	2.28664296
OTHOP	1	1.722905	0.87487587	1.969	0.0493	1.11073399
UINV	1	0.421819	0.36666901	1.150	0.2504	1.43938816
OBINV	1	0.669078	0.22697511	2.948	0.0033	1.61722905
ACQB	1	-0.045261	1.98812761	-0.023	0.9818	1.02159726
OBDEBT	1	1.386745	0.44746909	3.099	0.0020	13.20439618
PDEBT	1	1.532272	0.51017047	3.003	0.0028	7.92980480
ISEQ	1	1.898706	0.34204057	5.551	0.0001	2.03710393
DEV	1	0.315338	1.46906860	0.215	0.8301	1.36145315

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.288297	0.06651996	4.334	0.0001	0.00000000
CST	1	0.562300	0.21224303	2.649	0.0083	32.00224555
SPP	1	0.554832	0.20840405	2.662	0.0079	37.72419972
TX	1	-1.246187	2.29167246	-0.544	0.5868	1.43479689
INT	1	3.403340	1.58589176	2.146	0.0322	8.41008959
OTHOP	1	0.578211	0.23983607	2.411	0.0162	3.19367110
UINV	1	0.570954	0.22738396	2.511	0.0123	2.64116923
OBINV	1	0.350822	0.21447330	1.636	0.1024	3.28573659
ACQB	1	-0.604081	0.69021981	-0.875	0.3818	1.05395476
OBDEBT	1	0.540410	0.21668952	2.494	0.0129	21.41028463
PDEBT	1	0.095532	0.29188474	0.327	0.7435	10.24887854
ISEQ	1	0.340853	0.21250453	1.604	0.1092	1.69012211
DEV	1	0.122760	0.80431518	0.153	0.8787	1.33369024

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.389815	0.05028577	7.752	0.0001	0.00000000
CST	1	0.484673	0.14448004	3.355	0.0008	20.34017097
SPP	1	0.465485	0.14060731	3.311	0.0009	21.67767411
TX	1	1.346524	1.72797354	0.779	0.4359	2.60571516
INT	1	0.498531	1.10815241	0.450	0.6528	2.44551994
OTHOP	1	0.668962	0.24986904	2.677	0.0075	1.34774653
UINV	1	0.278633	0.14015882	1.988	0.0469	1.76709582
OBINV	1	0.308691	0.11975295	2.578	0.0100	4.47284118
ACQB	1	-0.524283	0.87210017	-0.601	0.5478	1.01670452
OBDEBT	1	0.360839	0.15251554	2.366	0.0180	4.67918508
PDEBT	1	0.310314	0.13416789	2.313	0.0208	4.45226563
ISEQ	1	0.621075	0.14357307	4.326	0.0001	1.69611391
DEV	1	-0.454867	0.83394049	-0.545	0.5855	2.58206890

Equation 4-5

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.718332	0.09683740	7.418	0.0001	0.00000000
NETCF	1	0.347272	0.51465412	0.675	0.5002	1.10407857
EPS	1	0.079404	0.06780817	1.171	0.2423	1.10407857

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.780753	0.07616636	10.251	0.0001	0.00000000
NETCF	1	1.071718	0.36807227	2.912	0.0038	1.04062609
EPS	1	-0.008936	0.07249006	-0.123	0.9019	1.04062609

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.627740	0.08558534	7.335	0.0001	0.00000000
NETCF	1	0.051490	0.42216539	0.122	0.9030	1.01222532
EPS	1	0.125444	0.12643104	0.992	0.3216	1.01222532

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.110432	0.14046724	0.786	0.4321	0.00000000

NETCF	1	0.118420	0.35728227	0.331	0.7404	1.22575641
EPS	1	0.084249	0.14727060	0.572	0.5675	1.22575641

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.440365	0.07400796	5.950	0.0001	0.00000000
NETCF	1	1.327564	0.40468036	3.281	0.0011	1.02914664
EPS	1	-0.211117	0.21975105	-0.961	0.3370	1.02914664

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.339528	0.04318841	7.862	0.0001	0.00000000
NETCF	1	0.398446	0.16037129	2.485	0.0132	1.00015340
EPS	1	0.231884	0.08248570	2.811	0.0051	1.00015340

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.465091	0.03711388	12.531	0.0001	0.00000000
NETCF	1	0.455073	0.13840401	3.288	0.0010	1.04013346
EPS	1	0.030030	0.03283310	0.915	0.3604	1.04013346

Equation 4-6

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.692456	0.09953775	6.957	0.0001	0.00000000
EPS	1	0.133581	0.10104752	1.322	0.1870	1.17148211
AGOP	1	0.534528	0.71903452	0.743	0.4577	2.25988230
AGIN	1	-0.194808	0.59655935	-0.327	0.7442	3.78085479
AGFIN	1	0.359252	0.52410218	0.685	0.4935	5.66609644

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.732774	0.07867146	9.314	0.0001	0.00000000
EPS	1	0.076474	0.09385196	0.815	0.4156	1.76300640
AGOP	1	0.670207	0.39655600	1.690	0.0917	5.72432092
AGIN	1	0.869627	0.44236801	1.966	0.0499	5.33873480
AGFIN	1	1.588277	0.41607668	3.817	0.0002	1.92521146

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.572563	0.08934339	6.409	0.0001	0.00000000
EPS	1	0.297505	0.15286895	1.946	0.0522	1.48707321
AGOP	1	0.120312	0.50211169	0.240	0.8107	3.89799362
AGIN	1	-0.347595	0.46532559	-0.747	0.4554	3.76976834
AGFIN	1	0.246670	0.43081405	0.573	0.5672	6.91494188

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.058508	0.14598512	0.401	0.6887	0.00000000
EPS	1	0.090634	0.18599218	0.487	0.6262	1.95437488
AGOP	1	0.601747	0.61004086	0.986	0.3243	2.56348429
AGIN	1	-0.142860	0.41542960	-0.344	0.7310	1.50919763
AGFIN	1	0.416664	0.44156699	0.944	0.3457	2.20333349

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.348703	0.07670478	4.546	0.0001	0.00000000
EPS	1	-0.203953	0.13355653	-1.527	0.1272	6.76103882
AGOP	1	2.172897	0.56724142	3.831	0.0001	16.74463845
AGIN	1	0.810817	0.46650494	1.738	0.0827	2.33070801
AGFIN	1	1.841904	0.41489841	4.439	0.0001	8.56957140

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.341730	0.04505622	7.585	0.0001	0.00000000
EPS	1	0.224743	0.08538356	2.632	0.0087	1.06881586
AGOP	1	0.424577	0.18348886	2.314	0.0210	4.82958958
AGIN	1	0.405592	0.18582694	2.183	0.0294	1.81176878
AGFIN	1	0.387907	0.17050783	2.275	0.0232	5.43310186

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.458998	0.03760034	12.207	0.0001	0.00000000
EPS	1	0.026570	0.04050515	0.656	0.5119	1.58258938
AGOP	1	0.473890	0.16874343	2.808	0.0050	3.98362421
AGIN	1	0.440292	0.13999404	3.145	0.0017	6.17989650
AGFIN	1	0.502183	0.14581194	3.444	0.0006	6.73648961

Equation 4-7

1992

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.872721	0.14158603	6.164	0.0001	0.00000000
EPS	1	0.089831	0.10941661	0.821	0.4122	1.30680829
CST	1	0.558365	0.79591676	0.702	0.4834	46.51238656
SPP	1	0.871315	0.83208052	1.047	0.2957	42.57021580
TX	1	5.776154	6.09955008	0.947	0.3442	1.40362812
INT	1	-2.503123	1.93398535	-1.294	0.1963	1.46321884
OTHOP	1	2.374873	1.02356001	2.320	0.0209	1.25735345
UINV	1	-0.812486	0.63521275	-1.279	0.2016	4.03337582
OBINV	1	0.119571	0.79804058	0.150	0.8810	1.79033880
ACQB	1	0.465773	5.51547035	0.084	0.9327	1.03350458
OBDEBT	1	1.114332	0.95810775	1.163	0.2455	2.37900803
PDEBT	1	1.525880	0.90537377	1.685	0.0927	3.54898497
ISEQ	1	0.208858	0.51524787	0.405	0.6854	7.65830106
DEV	1	1.292218	3.92032434	0.330	0.7419	1.70118403

1993

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.850633	0.12552575	6.777	0.0001	0.00000000
EPS	1	0.085773	0.09546387	0.898	0.3694	1.80886586
CST	1	0.407619	0.40405402	1.009	0.3136	22.14595726
SPP	1	0.357790	0.38472920	0.930	0.3529	31.36400206
TX	1	5.233096	3.08750730	1.695	0.0908	1.20593237
INT	1	4.683730	2.85048549	1.643	0.1011	1.37097780
OTHOP	1	0.184669	0.76147619	0.243	0.8085	1.24345013
UINV	1	0.551112	0.46612841	1.182	0.2377	3.43432349
OBINV	1	0.394206	0.42517998	0.927	0.3543	6.79423754
ACQB	1	3.532708	2.26031226	1.563	0.1188	1.03976794
OBDEBT	1	0.953280	0.69634398	1.369	0.1717	1.58335361
PDEBT	1	0.695107	0.76623673	0.907	0.3648	1.52957933
ISEQ	1	1.108613	0.42365147	2.617	0.0092	1.53059944
DEV	1	5.118494	3.36927169	1.519	0.1294	1.26574682

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.300867	0.12220399	2.462	0.0142	0.00000000
EPS	1	0.469404	0.17789377	2.639	0.0086	2.06311768
CST	1	0.068895	0.41877691	0.165	0.8694	50.36723405
SPP	1	0.079439	0.41873786	0.190	0.8496	49.39182026
TX	1	-0.236958	5.91166302	-0.040	0.9680	1.51656689
INT	1	-3.513275	2.98338787	-1.178	0.2395	1.30426188
OTHOP	1	0.645273	0.76187767	0.847	0.3974	1.39222955
UINV	1	-0.229959	0.39575021	-0.581	0.5615	5.28176782
OBINV	1	-0.117212	0.39818175	-0.294	0.7686	4.26033335
ACQB	1	-4.780169	1.86918610	-2.557	0.0108	1.03032372
OBDEBT	1	0.162494	0.41253890	0.394	0.6938	2.32261852
PDEBT	1	-0.345320	0.53510999	-0.645	0.5190	1.46419153
ISEQ	1	0.815841	0.35870349	2.274	0.0234	3.30743826
DEV	1	-4.462174	2.39372155	-1.864	0.0629	1.46084047

1994

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.391950	0.21623252	-1.813	0.0704	0.00000000
EPS	1	0.258323	0.28369915	0.911	0.3629	4.50854401
CST	1	0.960587	1.03442845	0.929	0.3535	53.99680784
SPP	1	0.728269	1.02828014	0.708	0.4791	54.24961766
TX	1	-6.659136	8.70937112	-0.765	0.4448	1.44900810
INT	1	2.650360	6.31962505	0.419	0.6751	1.66900804
OTHOP	1	0.107404	1.47305650	0.073	0.9419	1.27126392
UINV	1	-0.466295	0.46929328	-0.994	0.3208	2.10281938
OBINV	1	-0.770472	0.72161066	-1.068	0.2861	1.79402635
ACQB	1	1.569488	3.96701794	0.396	0.6925	1.03598179
OBDEBT	1	1.000458	0.85949325	1.164	0.2449	2.41751992
PDEBT	1	-1.206936	1.27504962	-0.947	0.3442	1.92104218
ISEQ	1	0.648778	0.58137661	1.116	0.2649	1.55126622
DEV	1	-5.615715	6.01530642	-0.934	0.3509	1.43990753

1995

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	-0.391950	0.21623252	-1.813	0.0704	0.00000000
EPS	1	0.258323	0.28369915	0.911	0.3629	4.50854401
CST	1	0.960587	1.03442845	0.929	0.3535	53.99680784
SPP	1	0.728269	1.02828014	0.708	0.4791	54.24961766
TX	1	-6.659136	8.70937112	-0.765	0.4448	1.44900810
INT	1	2.650360	6.31962505	0.419	0.6751	1.66900804
OTHOP	1	0.107404	1.47305650	0.073	0.9419	1.27126392
UINV	1	-0.466295	0.46929328	-0.994	0.3208	2.10281938
OBINV	1	-0.770472	0.72161066	-1.068	0.2861	1.79402635
ACQB	1	1.569488	3.96701794	0.396	0.6925	1.03598179
OBDEBT	1	1.000458	0.85949325	1.164	0.2449	2.41751992
PDEBT	1	-1.206936	1.27504962	-0.947	0.3442	1.92104218
ISEQ	1	0.648778	0.58137661	1.116	0.2649	1.55126622
DEV	1	-5.615715	6.01530642	-0.934	0.3509	1.43990753

1996

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.238869	0.10836751	2.204	0.0279	0.00000000
EPS	1	-0.186005	0.14976754	-1.242	0.2147	8.46617737
CST	1	1.983779	0.54196327	3.660	0.0003	96.05550877
SPP	1	1.924878	0.53760368	3.580	0.0004	121.83604996
TX	1	4.427023	3.84123298	1.153	0.2495	1.44622336
INT	1	3.686781	3.02036822	1.221	0.2227	2.29583253
OTHOP	1	1.993242	0.90119902	2.212	0.0273	1.17954744
UINV	1	0.524256	0.37568436	1.395	0.1633	1.51228119
OBINV	1	0.780813	0.24406851	3.199	0.0014	1.87152381
ACQB	1	0.038705	1.98846077	0.019	0.9845	1.02277960
OBDEBT	1	1.398965	0.44739353	3.127	0.0018	13.21078634
PDEBT	1	1.456528	0.51359491	2.836	0.0047	8.04322243
ISEQ	1	2.018660	0.35528043	5.682	0.0001	2.19966889
DEV	1	0.374932	1.46924902	0.255	0.7987	1.36290683

1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.286301	0.06659232	4.299	0.0001	0.00000000
EPS	1	0.043132	0.05663941	0.762	0.4466	2.13470954
CST	1	0.538188	0.21465750	2.507	0.0124	32.71403553
SPP	1	0.525598	0.21197417	2.480	0.0134	39.00336132
TX	1	-1.247036	2.29238936	-0.544	0.5866	1.43479723
INT	1	4.040551	1.79354235	2.253	0.0246	10.74992006
OTHOP	1	0.557009	0.24152118	2.306	0.0214	3.23668205
UINV	1	0.584982	0.22819978	2.563	0.0106	2.65849235
OBINV	1	0.364933	0.21533905	1.695	0.0906	3.31024617
ACQB	1	-0.574267	0.69154476	-0.830	0.4066	1.05734360
OBDEBT	1	0.605848	0.23316906	2.598	0.0096	24.77518430
PDEBT	1	0.163192	0.30519487	0.535	0.5930	11.19789684
ISEQ	1	0.372042	0.21648042	1.719	0.0861	1.75286062
DEV	1	0.127774	0.80459364	0.159	0.8739	1.33377957

1992-1997

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|	Variance Inflation
INTERCEP	1	0.386070	0.05036139	7.666	0.0001	0.00000000
EPS	1	0.058105	0.04431235	1.311	0.1899	1.89542865
CST	1	0.386004	0.16288711	2.370	0.0179	25.85864975
SPP	1	0.359559	0.16214765	2.217	0.0267	28.83445451
TX	1	1.303174	1.72810374	0.754	0.4508	2.60666918
INT	1	0.738048	1.12298853	0.657	0.5111	2.51198123
OTHOP	1	0.580325	0.25882518	2.242	0.0250	1.44640493
UINV	1	0.248322	0.14203730	1.748	0.0805	1.81517107
OBINV	1	0.292306	0.12039031	2.428	0.0152	4.52155282
ACQB	1	-0.543087	0.87212418	-0.623	0.5335	1.01697950
OBDEBT	1	0.331975	0.15407967	2.155	0.0313	4.77668113
PDEBT	1	0.269956	0.13763870	1.961	0.0499	4.68660707
ISEQ	1	0.625623	0.14359950	4.357	0.0001	1.69710398
DEV	1	-0.483382	0.83413421	-0.580	0.5623	2.58382508