# CHAPTER ONE

# INTRODUCTION, PURPOSE AND IMPORTANCE OF THE STUDY

## 1.1 INTRODUCTION

Since the early 90s, the accounting profession has experienced pressure to increase the usefulness of accounting reporting. Accounting standards were criticised because they were prepared without reference to an acceptable theoretical framework. Therefore, in the Unites States of America (USA) the Financial Accounting Standard Board (FASB) embarked on a project to develop standards to contribute towards the development of an accounting framework for financial accounting and reporting. The first publication was launched in the USA in 1973 and resulted in the development of a conceptual framework. In July 1989, the International Accounting Standards Committee (IASC) issued a document entitled, Framework for the Preparation and Presentation of Financial Statements. During November 1990, the Accounting Practices Board (APB) accepted this framework in South Africa for financial reporting purposes and it was issued as an Accounting Standard (AC), AC 000. According to AC 000, the primary objective of financial reporting is to provide financial information that is useful in economic decision-making (Opperman, Booysen, Koen & Vorster, 2003:2).

With the issue of AC 118, Cash Flow Information, in July 1988 entities were required to prepare information on cash flow as part of the notes to annual financial statements. However, with the revision of AC 118 in June 1996 and to be in accordance with the International Accounting Standard (IAS) 7, entities were required to prepare cash flow statements in accordance with the requirements of the standard and to present them as an integral part of their financial statements.

Cash flow ratios have the potential to increase the usefulness of the cash flow statement and financial reporting. The cash flow statement can determine the ability of operations to generate future cash flows, cover obligations from internally generated funds and indicate reliance on outside financing. Cash flow ratios can also be used as a liquidity measure to predict financial failure and ultimately, bankruptcy (SAICA, 1996:1).

Traditionally, however, ratios were used for financial analysis. These ratios were categorised to measure liquidity, asset and debt management and profitability. With the inclusion of the cash flow statement in financial reporting, new and useful information became available for inclusion in a financial analysis. Cash flow information derived from other sources has also been employed for some time in ratios constructed to predict financial variables and to evaluate performance. Many authors (Beaver, 1966; Giacomino & Mielke, 1988; Carslaw & Mills, 1991; Figlewicz & Zeller, 1991) have stressed the importance of including cash flow ratios that are derived from the cash flow statements in financial analyses. However, to date, there is no consensus on a comprehensive set of cash flow ratios for the evaluation of the cash flow statement.

Information from the cash flow statement can be used to assess the quality of earnings, liquidity and financial flexibility and to help forecast cash flows. Cash flow information should give a better indication of the liquidity of an entity because nothing is more liquid than cash. According to Carslaw and Mills (1991:63), a set of cash flow ratios used in conjunction with the traditional balance sheet and income statement ratios could be of more value to determine the financial strengths and weaknesses of an entity.

## 1.2 STATEMENT OF THE PROBLEM

Analysts use ratios for a financial analysis and to predict the financial variables of an entity. These ratios are grouped into liquidity, profitability, asset management

and debt management categories. With the financial analysis of an entity, the cash flow statement can be more reliable than balance sheet and income statement information. Balance sheet data is static since it measures a single point in time, which is the balance sheet date. The income statement, on the other hand, contains many non-cash transactions. The cash flow statement, however, is dynamic. It records the changes in the other statements over a period and focuses on the cash available for operations and investments (Mills & Yamamura, 1998:53).

The net working capital, current and quick ratios are used to evaluate the liquidity of an entity but many authors (Lee, 1982; Dambolena & Shulman, 1988; Stanko & Zeller, 1993; Mills & Yamamura, 1998) agree that these ratios are not enough for liquidity prediction. Financial distress will result when obligations cannot be met and there is no access to additional financing. Current and quick ratios can be positive and profits can increase, while at the same time, an entity can be in severe financial distress. This was evident in the failure of W.T. Grant (Largay & Stickney, 1980; Zeller & Stanko, 1994b) and Laker Airlines (Lee, 1982).

Cash flow studies show the value of cash flow data in contrast to traditional accrual ratios in predicting financial distress. Many authors (Giacomino & Mielke, 1988, 1993; Carslaw & Mills, 1991, 1993; Stanko & Zeller, 1993; Zeller & Stanko, 1994b; Mills & Yamamura, 1998) also suggest the use of cash flow ratios for financial analysis. Cash flow information can be useful, but if the information is not used, the users of financial statements will not be analyzing available data properly. In order to effectively analyze financial statements, a set of cash flow ratios must be developed and traditional ratios re-explored, using information obtained from the cash flow statement. Cash flow ratios used in conjunction with traditional accrual ratios should lead to the enhancement of a financial analysis. The objective of this study was to determine the usefulness of the cash flow statement using cash flow ratios.

## 1.3 OBJECTIVES OF THE STUDY

The primary objective of this study was to establish the usefulness of the cash flow statement to predict financial failure. In other words, whether the use of cash flow ratios derived from the cash flow statement had the potential to predict financial failure. An early warning of possible financial distress could thus ultimately help to prevent subsequent failure. Cash flow information could also be useful in complementing the information already provided by accrual accounting. The usefulness of cash flow information also includes its ability to generate cash flows from internal sources, to service obligation from internal cash flows and to rely on outside financing.

The second objective of this study was to investigate suggested cash flow ratios. Many authors, Beaver (1966), Lee (1982), Dambolena and Shulman (1988), Stanko and Zeller (1993) and Mills and Yamamura (1998), suggest the use of cash flow ratios for financial analysis. Some of these ratios were developed recently and used in reported financial statements or suggested as important in countries where the cash flow statement has been in use for some time. It was the intention of the study to first compile a complete list of cash flow ratios available.

The third objective of the study was to suggest a list of cash flow ratios to be included in a financial analysis. These ratios were used to evaluate entities de-listed or suspended owing to financial failure and to compare the mean values of the ratios with those of financially sound non-failed entities. Financial statements for five years will be evaluated by means of suggested cash flow ratios. The objective was to determine if the potential exists to predict financial failure.

To achieve the primary objectives, the following secondary objectives were addressed:

- To investigate cash flow ratios suggested as important by different authors and used by banks and credit-rating agencies.
- To determine a set of cash flow ratios derived from the cash flow statements.
- To identify failed and non-failed entities in an empirical study.
- To evaluate the entities on the basis of the identified cash flow ratios.
- To analyze results and the determination of potential failure.

Cash flow ratios, if used in conjunction with traditional accrual ratios, should lead to a better understanding of the financial strengths and weaknesses of an entity.

## 1.4 IMPORTANCE OF THE STUDY

The study provides a review of the relevance of cash flow information to predict financial failure. Since the pioneering work of Beaver (1966), many authors have embarked on the development of similar models to predict bankruptcy (Altman, 1968; Deakin, 1972; Blum, 1974; Libby, 1975; Altman & Brenner, 1981; Clark & Weinstein, 1983; Aziz, Emanuel & Lawson, 1988).

Earlier studies (Altman, 1968; Beaver, Kennelly & Voss, 1968; Ball & Foster, 1982) showed that traditional ratios possess the ability to predict bankruptcy. Entities with weak financial ratios were more likely to fail than those with stronger financial indicators. Although most of the models were conducted prior to the issue of the cash flow statement, this study considered the earlier models. The aim of the study was to determine if cash flow ratios derived from the cash flow statement could complement information already provided by accrual accounting and be used to predict financial distress. It was the intention of the study to show that the integration of cash flow data with accrual accounting data could provide a superior measure over accrual accounting data alone for predicting business failure.

The principal objective of the cash flow statement is to assist users of financial statements to determine the ability of an entity to generate future cash flows, meet obligations, pay dividends and rely on external financing. As there is no consensus on a comprehensive set of cash flow ratios for analyzing the cash flow statement, this study will investigate the cash flow ratios suggested by different authors. From these ratios, a set of cash flow ratios will be developed to serve the objectives of the cash flow statement and will be included in a financial analysis.

An empirical study was conducted on entities de-listed or suspended from 2000 to 2004 owing to financial failure. The entities were evaluated using the suggested cash flow ratios to determine if they had the potential to predict financial failure. Non-failed entities in the same sectors were also selected and evaluated using the same cash flow ratios. The non-failed entities were further evaluated using the K-score to determine their financial strength. The mean values of the ratios of the failed and the non-failed entities, that were financially sound, were compared to determine whether they had the potential to predict financial failure. If the potential existed, the aim was also to determine if particular ratios were stronger predictors of financial distress.

Foster (1986), Giacomino and Mielke (1988, 1993), Carslaw and Mills (1991, 1993), Figlewicz and Zeller (1991), Stanko and Zeller (1993), Zeller and Stanco (1994b), Rujoub, Cook and Hay (1995) and Mills and Yamamura (1998) also suggested that ratios be used by financial analysts to measure financial strength and profitability. While there is no general consensus on appropriate cash flow ratios, the following are some of the studies on cash flow ratios that were investigated for the development of a suggested list of cash flow ratios:

### 1.4.1 Earlier studies of cash flow models

Beaver (1966), Gentry and Newbold (1985), Gentry, Newbold and Whitford (1985) and Aziz *et al.* (1988) developed cash flow models to measure bankruptcy. These models were based on the fundamental financial principle that the value of an entity equals the net present value of its expected future cash flow. Cash flow from operations in these studies was calculated as net income plus depreciation, amortization and depletion.

### 1.4.2 Relative performance evaluation

Relative performance evaluation is one aspect that can be measured with cash flow ratios. Giacomino and Mielke (1993) suggest nine cash flow ratios that measure the sufficiency of cash flows to serve obligations as they become due, and the efficiency of an entity to generate cash flows relative to other years and other entities. The use of these ratios was suggested as important and used as liquidity ratios by other authors such as Carslaw and Mills (1993), Zeller and Stanko (1994a, b), Rujoub *et al.* (1995) and Mills and Yamamura (1998).

### 1.4.3 Re-calculation of traditional ratios

Traditional operating cash flow ratios were re-explored by Zeller and Stanko (1994b). Cash flows from operations obtained from the cash flow statement were used as a component of the ratios instead of net income calculated from the previous statement of changes in financial position. Among these ratios are cash flow to sales, total assets and total debt (Giaomino & Mielke, 1988, 1993; Figlewicz & Zeller, 1991; Carslaw & Mills, 1993; Zeller & Stanko, 1994b; Rujoub *et al.,* 1995; Mills & Yamamura, 1998).

### 1.4.4 Newly derived cash flow ratios

Many authors have suggested new cash flow ratios that can be used as liquidity ratios (Giacomino & Mielke, 1988, 1993; Foster, 1989; Carslaw & Mills, 1991, 1993; Figlewicz & Zeller, 1991; Zeller & Stanko, 1994a, b; Rujoub *et al*., 1995; Mills & Yamamura, 1998). Many of the cash flow ratios that have been used by analysts and lenders have appeared in international annual reports. They have also been proposed in countries where the cash flow statement has been used for a number of years.

### 1.4.5 Objectives of the cash flow statement

The list of cash flow ratios suggested by this study was selected from ratios identified as important by various authors to serve the objectives of the cash flow statement (SAICA, 1996). The objectives of the cash flow statement are to measure its ability to generate future cash flows to meet obligations, to rely on outside financing and to calculate the difference between net income and cash flows.

This study developed cash flow ratios that can be used in conjunction with the traditional balance sheet and income statement ratios. Together, they should lead to a better understanding of the financial strengths and weaknesses of an entity.

## 1.5 RESEARCH METHODOLOGY

### 1.5.1 Design

Secondary resources such as textbooks, financial accounting standards and accounting journals were used as the basis for studying cash flow standards, the cash flow statement, ratios and the needs of the users of financial statements. In

particular, secondary resources such as Struwig and Stead (2001) were consulted to ensure that the research methodology was the most appropriate for this study. From this information, suggested cash flow ratios were developed to analyze the cash flow statement.

The primary resources used were the financial statements of listed entities. The financial statements of the entities that were suspended or de-listed owing to financial failure from 2000 to 2004 were evaluated using the suggested cash flow ratios. Financial statements of non-failed entities in the same sectors were selected and evaluated using the same cash flow ratios. The results of the ratios of the failed and non-failed entities were compared to determine if they had the potential to predict financial failure.

Entities in the financial sector were excluded from the evaluation. According to Mossman, Bell and Swartz (1998:3) and in other studies (Gilbert, Menon & Swartz, 1990:162; Ohlson, 1980), financial institutions were excluded as their ratios and cash flows were always substantially different from those entities in other industries, even when they were in no danger of failure.

### 1.5.2 Research methods

Studies on cash flows were investigated including the pioneering work of Beaver in 1966 and other studies (Gombola & Ketz, 1983; Gentry & Newbold, 1985; Gombola, Haskins, Ketz & Williams, 1987), which emphasized cash flow information prior to the issue of AC 118. From these studies, a set of cash flow ratios was developed for cash flow statement analysis.

A list of recent entities suspended or de-listed owing to financial failure was then obtained from the Johannesburg Securities Exchange (JSE) as well as the financial statements for five years were obtained from the Bureau of Financial Analysis (BFA) at the University of Pretoria. The entities were analyzed using the

suggested cash flow ratios to determine if financial failure could be predicted. The aim was to obtain at least five financial statements, preferably from 1996, the year in which AC 118 was implemented. This approach is supported by authors such as Beaver (1966), Aziz *et al.* (1988) and Laitinen (1994) who used five years in their studies to determine financial failure prediction. They also compared the results of failed and non-failed entities to determine if particular ratios had stronger failure predictability than others. The aim was also to determine whether the ratios weakened over this period.

### 1.5.3 Analysis of data

The cash flow ratios of entities were analyzed to determine if financial failure could have been predicted. This was done by analyzing five years of financial statements of failed and non-failed entities by means of selected cash flow ratios. Non-failed entities were included in the analysis to determine whether the ratios of failed entities were weaker than the ratios of non-failed entities. If this enabled financial failure to be timeously predicted, possible bankruptcy could also be prevented.

## 1.6 PLAN OF THE STUDY

This study consists of seven chapters as follows:

**Chapter One: Introduction, purpose and importance of the study**

The first chapter addresses the title, statement of the problem, objectives, importance of the study, plan and research methodology of the study.

**Chapter Two: The cash flow statement in financial reporting**

Chapter two presents a study of the development of the accounting framework internationally and in South Africa. A study was also made of the development of the cash flow statement in South Africa. The contents of the statement is discussed and compared with other cash flow statements.

**Chapter Three: Analyzing financial statements**

In this chapter, the analysis of financial statements is discussed. A study is presented of the importance of cash flow information and cash flow ratios to measure liquidity and the need to develop cash flow ratios for financial analysis.

**Chapter Four: Cash flow ratios for financial analysis**

Chapter four describes available cash flow ratios suggested by various authors as being important for financial analysis. The first study investigated, after the pioneering work of Beaver (1966), was published in 1988. If later studies suggested similar ratios to earlier studies, the later studies were excluded. However most of the studies stressed the value of cash flow information over traditional accrual accounting to predict liquidity

**Chapter Five: Developing a set of cash flow ratios for financial analysis**

From the studies investigated in chapter four, a list of eight cash flow ratios was suggested to be included in a financial analysis. Cash flow ratios could also serve as liquidity ratios. It is suggested that the list of cash flow ratios be used in conjunction with the traditional balance sheet and income statement ratios to serve as a better indicator of the financial strengths and weaknesses of an entity.

**Chapter Six: Research methodology and analysis of results**

The research methodology is described in chapter six. The selection of the sample, the selection of variables and the analysis of results are discussed.

The list of cash flow ratios described in chapter five was used to evaluate failed and non-failed entities. A list of entities de-listed or suspended from 2000 to 2004 owing to financial difficulties was obtained from the JSE. Non-failed entities in the same sectors were randomly selected for use in the evaluation. Financial statements for the last five years of the failed and non-failed entities were obtained from the BFA. The mean value of each ratio was calculated for failed and non-failed ratios for each year prior to failure to be used in a comparison. Prior to this, the K-score was used to determine if the non-failed entities were financially sound. Only non-failed entities that were not having financial difficulties were included in the comparison. The cash flow ratios of the failed and non-failed entities were compared to determine if the possibility to predict financial failure existed and if certain ratios were better predictors of failure than others. Entities in the property investment, financing, insurance, banking and financial sectors were excluded from the evaluation as their financial ratios differed from other entities even during times when no financial difficulties are present.

**Chapter seven: Summary, conclusions and recommendations**

In chapter seven, a summary is given of the study. Conclusions are made and possible recommendations are discussed. The use of the ratios produced in this study will help to develop tools for analyzing financial statements. The developing of benchmarks was suggested to serve as an industry norm and for comparison of individual entities. The ratios should also provide a starting point for further analysis and a foundation for common usage. To date there is little agreement on which ratios provide the most relevant measures. Only time and experimentation

with various measures will reveal which ratios best capture the quality of the liquidity and financial flexibility of an entity.

# CHAPTER TWO

# THE CASH FLOW STATEMENT IN FINANCIAL REPORTING

## 2.1 INTRODUCTION

Accounting may be defined as a service activity, a descriptive and analytical discipline, and an information system. Kieso and Weygandt (1992:3) describe the essential characteristics of accounting as the identification, measurement and communication to interested parties of financial information about economic entities. Therefore, the primary objective of financial reporting is to supply users of financial statements with information useful for effective economic decision-making (Opperman *et al*., 2003:2). Financial statements are the principal means through which financial information is communicated to those outside an entity.

In this chapter, the development of an accounting framework and the cash flow statement will be discussed. Reference will also be made to financial reporting and financial statements. According to FASB (1978a:par 5), the difference between financial reporting and statements is explained as follows:

> Although financial reporting and financial statements have essentially the same objectives, some useful information is better provided by financial statements and some is better provided, or can only be provided, by means of financial reporting other than financial statements. … but they draw no clear distinction between financial reporting and financial statements ….

Financial reporting has been one of the most widely discussed subjects in the accounting field since the early 90s. A continuous flow of publications criticised, commented, recommended and discussed the inadequacy of financial reporting. The users of financial statements made constant pleas to the accounting profession to enhance the usefulness of financial reporting (Van der Schyf, 1983:49-50).

Chapter two also considers financial reporting developments in other countries. The USA seems to have contributed the most towards financial reporting development and, since 1970, numerous publications have been issued that were seen by Van der Schyf (1983:53) as “the milestone documents along the profession’s rocky path in a quest for the basics of financial reporting”.

The FASB, appointed by the American Institute of Certified Public Accountants (AICPA) in 1973, embarked on a line of publications that were later to become accounting standards. The first publication was called Statement of Financial Accounting Concepts (SFAC) No 1 and was issued in 1978.

Before the formation of the APB in 1973, there were no existing standards in South Africa that indicated what constituted generally accepted accounting practice. One of the functions of the APB was to consider draft statements of Generally Accepted Accounting Practice (GAAP) prepared by the (then) National Council of Chartered Accountants (NCCA) which is now called The South African Institute of Chartered Accountants (SAICA). The APB had to prepare, issue and publish statements that were considered by them as GAAP (Meskin, 1985a:550).

In July 1989 the IASC issued a document entitled Framework for the Preparation and Presentation of Financial Statements. During November 1990, this framework was accepted by the APB as an accounting framework in South Africa for financial reporting purposes and was issued as AC 000. The primary objective of AC 000 is to provide financial information that is useful in economic decision-making (Koen & Van der Laan, 1992:2).

The cash flow statement is relatively new in the accounting world. It was first published as an addendum to the balance sheet or as a source and application of funds statement. With the development of the accounting framework, the cash flow statement became an integral part of the financial statement and financial reporting.

Chapter two discusses the development of the cash flow statement and its objectives. The cash flow statement used in South Africa is also compared with the cash flow statements of other countries.

## 2.2 THE DEVELOPMENT OF AN ACCOUNTING FRAMEWORK FOR FINANCIAL REPORTING

The development of the accounting framework started with pressure from the users of financial statements to increase the quality and usefulness of financial reporting. Financial reporting was based on financial standards that may be seen as the means to account for certain business transactions. Each standard is part of GAAP that serves as the accounting law of a country (Horngren, Harrison & Robinson, 1996:490).

Accounting standards may be defined as authoritative and are generally accepted as practical guidelines. They prescribe the recording and measuring of financial information in the annual financial statements. The aim, therefore, is to enhance the usefulness of reported financial statements for economic decision-making purposes (Opperman, Booysen, Koen & Vorster, 1995:2).

In an attempt to establish a foundation upon which financial accounting and reporting standards could be based, the accounting profession identified a set of objectives for financial reporting. These are necessary to provide information that is useful for investment and credit decisions and for assessing cash flow prospects. They also supply information about an entity's resources, claims to those resources and changes in those resources (Kieso & Weygandt, 1992:6). The FASB believes that accounting information can be useful in decision-making only if it is relevant, reliable and comparable (Horngren *et al*., 1996:491).

The main criticism against accounting standards is that they were prepared without reference to an acceptable theoretical framework. To lessen this criticism and to maintain the initiative in the setting of standards, the accounting profession in the USA initiated intensive research into the development of a conceptual framework (Opperman *et al*., 1995:2).

### 2.2.1 The development of a conceptual framework in the United States of America

Shortly after its formation in 1973, the FASB began a project to develop a conceptual framework. The FASB's goal was to develop a constitution that will define the nature and function of financial accounting. This project provided a framework for the various accounting concepts and principles that are used to prepare financial statements (Horngren *et al*., 1996:491).

The FASB described its purpose for the conceptual framework project as the establishment of a coherent system of interrelated objectives and concepts that are expected to lead to consistent financial accounting and reporting. These concepts are expected to guide the selection of events to be accounted for, the measurement of those events as well as the means of their summarization and their communication to interested users. The conceptual framework should enable investors, creditors and others to obtain increased understanding of and confidence in financial reporting. A conceptual framework developed on these objectives would help narrow the range of acceptable accounting methods as well as promote increased comparability of financial information (Bernstein, 1989:44).

A conceptual framework would, firstly, be useful for standard setting that would build on and relate to an established body of concepts and objectives. The result would be a coherent set of standards and rules because they shared the same foundation. The framework should increase financial statement users'

understanding of and confidence in financial reporting, and it should enhance comparability among different financial statements. Secondly, new and emerging practical problems should be more quickly solvable by referring to an existing framework of basic theory.

The FASB believes that without conceptual underpinnings, measures provided by accounting and financial reporting are essentially matters of judgement and personal opinion. Therefore, more precise definitions in the framework are expected to narrow subjectivity, circumscribe the areas for applying judgements and provide a frame of reference for those judgements (Bernstein, 1989:44).

In 1976, the FASB issued a three-part discussion memorandum entitled Conceptual Framework for Financial Accounting and Reporting: Elements of Financial Statements and Their Measurement. It set forth the major issues to be addressed in establishing a conceptual framework that would be the basis for setting accounting standards and for resolving financial reporting controversies. Since the publication of the document, the FASB has issued numerous statements of financial accounting concepts in its project to develop a framework for financial reporting (Kieso & Weygandt, 1992:33). Although the concepts were issued individually they form a coherent system of interrelated objectives and concepts and are, therefore, used collectively in financial reporting.

Most entities recognise the need for more uniform standards between countries as the objectives of financial reporting in one country may often differ from those in other countries. In addition the institutional structures between countries are often not comparable and strong national tendencies are pervasive (Kieso & Weygandt, 1992:22). Therefore, several organisations are working to achieve worldwide harmony in accounting standards. Chief among these organisations is the IASC. Since its creation in 1973, the same year as the formation of the FASB, the IASC has had the support of the accounting professions in the United States, most of the British Commonwealth countries, Japan, France, Germany,

the Netherlands and Mexico. As the IASC has no authority to require compliance with its accounting standards, it must rely on the cooperation of the various national accounting professions. However, since its formation, the IASC has succeeded in narrowing certain differences in international accounting standards (Horngren *et al*., 1996:709).

### 2.2.2 The development of a framework for financial reporting in South Africa

Before the formation of the APB in 1973, there were no written rules in South Africa indicating what constituted GAAP. What existed were general rules that had evolved over the course of time. These were supported by textbook writers and guided members of the accountancy profession. Published statements of other countries were also an available resource to the South African accounting profession. One of the functions of the APB was to consider the draft statements of GAAP prepared by the NCCA. The APB had to prepare, issue and publish statements that were considered by them as GAAP (Meskin, 1985a:550).

The accounting profession in the USA embarked on intensive research into the development of a conceptual framework to assist the IASC in developing, reviewing and harmonising regulations, accounting standards and procedures. It also attempted to provide a foundation that set out the objectives and concepts that underlie the preparation and presentation of financial statements (Wingard & Becker, 2001:1). In developing and reviewing statements, the framework also guided the APB and the Accounting Practices Committee (APC) of the SAICA. Users of financial statements may now rely on the framework when interpreting financial statements.

With the formation of the FASB an Objectives of Financial Statements Study Group was launched in the USA in 1973 to development a conceptual framework for financial reporting. This was followed internationally by the IASC issuing a

document during July 1989 entitled: Framework for the preparation and presentation of financial statements (Opperman *et al.,* 1995:2). As a result of its representation on the Board of the IASC, SAICA participated in developing the framework and accepted the document during November 1990 as a framework for South African reporting purposes. It was issued as AC 000 (Opperman *et al.,* 2003:2).

AC 000 describes the objectives of the framework and financial statements and addresses the underlying assumptions of financial statements. The framework also sets out the qualitative characteristics that make accounting information useful, the definitions of the elements of financial statements, and the measurement and recognition concepts that accountants use in establishing and applying accounting standards. These measurement and recognition concepts encompass the use of assumptions, principles and constraints that describe the present reporting environment (Kieso & Weygandt, 1992:33).

#### 2.2.2.1 The objectives of the accounting framework

Opperman *et al.* (2003:2) identifies some of the objectives to be achieved by the framework:

- to support the development of future international accounting standards.
- to provide a basis for reducing the number of alternative accounting practices.
- to assist national accounting standard setting bodies in developing national standards.
- to assist the compilers of annual financial statements in dealing with topics that have yet to form the subject of an international accounting standard.
- to assist auditors in forming an opinion as to whether financial statements conform to GAAP of the IASC.

- to assist users of financial statements to interpret the information reported therein.
- to provide parties with information about the approach of the IASC to the formulation of international accounting standards.

#### 2.2.2.2 The objectives of financial statements

The main objective of financial statements is to provide information about the financial position (balance sheet), performance (income statement) and changes in financial position (cash flow statement) of an entity that is useful to a wide range of users in making economic decisions (Opperman *et al.,* 2003:3). The users of financial statements are, *inter alia*, interested in the ability of an entity to generate cash and cash equivalents and the need to utilise these cash flows. Accordingly, a cash flow statement must be presented as an integral part of a financial statement (Wingard & Becker 2001:335).

The financial position of an entity will be affected by the control exercised over its economic resources, financial structure, liquidity and solvency, and capacity to adapt to the changes in its business environment. Information on the performance or profitability of an entity is required to evaluate changes in the economic resources that are likely to control the future. Information regarding the changes in the financial position of an entity is useful in evaluating the investing, financing and operating activities during a reporting period (Opperman *et al.,* 1995:3).

#### 2.2.2.3 Underlying assumptions of financial statements

When preparing financial statements two broad basic assumptions have to be dealt with, namely, the accrual basis and the going concern concept (Opperman *et al.,* 1995:3).

With the accrual basis, the assumption is that the effect of transactions and other events must be recognised when they occur. They must be recorded and reported on in the accounting periods and financial statements to which they relate. The going- concern concept, on the other hand, assumes that the entity will continue to be in operational existence for the foreseeable future.

#### 2.2.2.4 Qualitative characteristics of financial statements

Qualitative characteristics are the attributes that make the information in the financial statement useful to users. The four qualitative characteristics are understandability, relevance, reliability and comparability (Opperman *et al.,* 1995:3-4).

The information provided in financial statements should be readily understood by the users. It is also assumed that the users have a reasonable knowledge of business, economic and accounting activities as well as a willingness to study the information with reasonable diligence.

Information is of relevance when it influences the economic decisions of the users by helping them evaluate past, present and future events, or confirm, or correct their past evaluations. The relevance of information is also affected by its nature and materiality. For information to be material, its omission or misstatement could be seen to influence the economic decisions of financial statement users.

For information to be regarded as reliable it has to be free from material errors and bias; and users can rely on it representing what is reasonably expected. The reliability of information is influenced by the following considerations:

- Faithful representation;
- Substance over form;
- Neutrality;

- Prudence; and
- Completeness.

The financial statements of an entity must be comparable over time in order to identify trends in its financial position and performance. The comparability of financial statements may be enhanced by the:

- Consistency of an accounting treatment of similar/like transactions and other events;
- Disclosure of accounting policies applied by an entity;
- Disclosure of changes in accounting policies and their effect; and
- Presentation of comparative figures of the preceding periods.

Constraints may be found in the relevance and reliability of information. These are identified as:

- Timeliness of information;
- Balance between benefit and the cost of information supplied; and
- Trade-off between qualitative characteristics of information. If this occurs, the main objective of financial statements should be maintained.

Financial statements are described as presenting a true and fair view of, or as presenting fairly, the financial position, performance and changes in financial position of an entity. Such financial statements are the result of the application of principal qualitative characteristics and of appropriate accounting standards.

#### 2.2.2.5 Elements of financial statements

Financial statements describe the financial effects of transactions and other events by grouping them into broad classes according to their economic characteristics. These classes are referred to as the elements of financial

statements. The elements, which are directly related to the measurement of a financial position, are according to Opperman *et al.* (2003:5):

- Assets, that are resources controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the entity;
- Liabilities, which represent the obligations of an entity arising from past events, the settlement of which is expected to result in an outflow of resources from the entity; and
- Equity, which is the net interest in the assets of an entity after deduction of all liabilities.

The elements that are directly related to the measurements of profitability of an entity are:

- Income, which is the increase in economic benefits during an accounting period in the form of an inflow of assets, or a decrease of liabilities that result in an increase in equity, except contributions from owners.
- Expenses, which are decreases in economic benefits during an accounting period in the form of outflow of assets, or increases in liabilities that result in decreases in equity, other than distributions to owners.

The revaluation or restatement of assets and liabilities that give rise to an increase or decrease in equity meet the definition of income and expenses. However, they will not be included in the income statement under capital maintenance but in the balance sheet as reserves.

#### 2.2.2.6 Recognition of the elements of financial statements

An item that meets the definition of an element should be recognised if it is probable that any future economic benefit associated with the item will flow to, or from the entity. An item should also be recognised as an element if it has a cost or value that can be measured with reliability (Opperman *et al.,* 2003:5).

#### 2.2.2.7 Measurement of the elements of financial statements

When measuring the elements of financial statements the bases of measurement may include (Opperman *et al.,* 2003:6):

- Historical cost;
- Current cost;
- Realisable value; and
- Present value.

The framework for the preparation and presentation of financial statements is briefly discussed by Opperman *et al*. (2003:2-6). South African accounting standards that are based on AC 000 will ensure that standards are linked to the primary objectives of financial reporting, namely, the provision of financial information that is useful for economic decision making.

The authority of overseas pronouncements, including those issued by the IASC, also need to be considered. Such pronouncements may provide guidance as to what constitutes GAAP in South Africa. As South African statements of GAAP are currently being harmonised with IAS, these statements will deviate from IAS only where particular South African circumstances exist that are recognised in South African statements. However, the aim is to keep these deviations to a minimum (Meskin, 1985a:552).

## 2.3 THE DEVELOPMENT OF THE CASH FLOW STATEMENT

Traditional measures of cash flows and working capital from operations were often highly correlated with earnings. Thus earlier studies have relied on alternative measures of calculating cash flow such as net income plus depreciation and amortization, and working capital from operations (Bowen, Burgstahler & Daley, 1986:724; Mahoney, Sever & Theis, 1988:27; Aziz & Lawson, 1989:56).

A publication of FASB (1979:par 8) maintained that decision makers form estimates of future cash flows by using earnings rather than cash flow data. Furthermore, it stated that historical earnings were superior to historical cash flows in predicting future cash flows based on evidence from earlier studies on cash flows.

Over the years, the cash flow statement had different names depending on what was deemed to be important. The Source and Application of Funds Statement was first introduced in South Africa with the Companies Act (Act No. 61 of 1973) that became effective from I January 1974. This study will review the development of the cash flow statement in South Africa with brief references to international and American statements.

### 2.3.1 The Companies Act No. 61 of 1973

According to Schedule 4, paragraph 44, the Companies Act (Act No. 61 of 1973) required the submission of a statement of source and application of funds as part of the annual financial statement either annexed to the balance sheet or presented separately. The financial statement had to be prepared according to GAAP as issued by the APB (Meskin, 1985a:455, 1985b:855).

A statement had to be prepared from information contained in the balance sheet, the income statement and notes to the financial statements. However, certain information not contained in those statements could be presented in the funds' statement, for example, the net movement in long-term liabilities (Meskin, 1985b:915).

As part of the statement of source and application of funds, guideline 4.001 incorporated a working capital variation statement. This statement is an analysis of changes in working capital items. Increases and decreases in working capital have to be listed showing the net working capital to be disclosed in the funds statement (Cilliers, Rossouw, Botha & Grobbelaar, 1987:120).

The word funds was not defined in the Act so it was possible to prepare a funds statement where funds could either be cash or near cash, or working capital or something of a similar nature. In addition, funds was not defined, the assumption could be made that they referred to working capital. In practice, however, working capital was used as a basis to draw up the funds' statement (Everingham & Hopkins, nd:370). Meskin (1985b:915) agrees that funds refers to working capital according to the wording of paragraphs 44(1) (f) and 44(2) (g).

Paragraph 44 of Schedule 4 specified derived and applied funds to include at least the following (Meskin, 1985b:914):

- Net income (before taxes, dividends, internal provisions and retentions;
- Specified fixed and other non-current asset disposal;
- Shares, loans and debenture proceeds;
- Loan repayments and advances made;
- Net working capital reductions;
- Meetings of any loss;
- Specified fixed and other non-current asset acquisition;
- Loan and debenture redemption;

- Loans and advances made and the purposes for which they were made;
- Tax liabilities;
- Dividends paid and proposed; and
- Net working capital increases.

The main objection to the working capital concept of funds is that transactions that did not directly affect working capital were omitted from the statement. Therefore, important information that affected changes in the resources of an entity were not included in the funds statement. A call was then made for an all financial resources concept of funds (Faul *et al.*, 1982:626). Paragraph 4 of IAS 7 recommended that the particular use of the term funds be defined (Meskin, 1985b:915).

### 2.3.2 Discussion Paper 8

In 1985, the APC issued Discussion Paper (DP) 8 under the title Cash Flow Information. South Africa followed the international recognition of the need for a statement of changes in financial position based on a cash flow basis (Moore, 1988:22).

DP 8 moved away from a funds statement based on working capital to a cash based statement. A statement prepared on a cash basis will produce additional information to the users of financial statements for investment, credit and other economic decisions (Jooste, 1997:50).

The proposed cash flow statement recommended in DP 8 was to be a substitute and improvement on the funds statement. The new statement had to include taxes and dividends paid as well as obligations toward taxes and dividends proposed for the year (Jooste, 1997:50).

The content of DP 8 has largely been retained in Exposure Draft (ED) 63. It was of significance as it represented a swing away from a statement based on working capital to that of cash.

### 2.3.3 Exposure Draft 63

In March 1986, the APB issued ED 63, entitled Cash Flow Information. It recommended the preparation of the funds' statement on a cash basis and defined cash as cash at bank or on hand and cash equivalents such as short-term money market instruments and fixed deposits (Moore, 1988:22).

The objectives of ED 68 were to provide users of financial statements with meaningful information on cash generated and utilised by an enterprise. No specific objections were specified as with its successor AC 118 (Moore, 1988:35).

The difference between ED 63 and its predecessor was that ED 63 included net borrowings in the statement. The net borrowings included new loans received during a period as well as repayments made. However, Moore (1988:23) agrees with Everingham and Hopkins (nd:367) that the inclusion of items such as long-term loans within the definition of net borrowings appears to have been a retrogressive step away from the cash flow statement. The additional information disclosed was intended to be information concerning the financial strength of an entity (Jooste, 1997:51-52).-

ED 63 was followed in July 1988 with the issue of AC 118 with the same title and cash flow information. Apart from the name, it was in the true sense, a statement of sources and application of funds.

### 2.3.4 Accounting Statement 118

In the USA, the FASB adopted the Statement of Financial Accounting Standard (SFAS) 95 in 1987 that mandated the Statement of Cash Flow as an integral part of the financial statement. The statement of cash flow was designed to bridge the information gap between traditional accrual accounting and an understanding of the cash flow activities of an entity. A gap existed because accrual accounting failed to provide relevant information to assess the amount, timing and uncertainty of future cash flows. Its predecessor, the Statement of Changes in Financial Position (SCFP), had not specified the primary categories of cash flow activity and the term cash had not been defined. With SFAS 95, the primary categories of cash flow are defined as operating, investing and financing activities. SFAS 95 also defines cash to include cash equivalents with maturities of 90 days or less, such as treasury bills, commercial paper and money market funds (Zeller & Stanko, 1994b: 55).

South Africa was one of five countries, according to Wallace and Collier (1991:44), that required entities to issue a cash flow statement. Other countries that issued such standards were Canada (September, 1985), New Zealand (October, 1987), the USA (November, 1987), and the United Kingdom (UK) and Republic of Ireland (September, 1991).

AC 118 was issued in July 1988 by the SAICA. A statement of cash flow information was required to replace and improve the statement of sources and application of funds. According to Schedule 4 of the Companies Act (Act No. 61 of 1973), certain specific information was to be supplied as an addendum to the balance sheet. In this case the balance sheet, income statement and cash flow statement would supply the specific information (Cilliers, Rossouw, Mans, Grobbelaar, Van Schalkwyk, Stegmann, Wesson & Van der Merwe, 1995:480).

The objectives of the statement of cash flow information was to provide users of financial statements with information concerning the source and applications of all financial resources (cash funds) during an accounting period, in particular cash generated or utilised by operations, investing activities and financing activities (Cilliers, Rossouw, Grobbelaar, Mans & Van den Berg, 1992:125-126).

Cash is defined as cash on hand in the bank and cash equivalents, such as money market instruments. Investment activities are those activities relating to the acquisition and disposal of fixed assets and investments, including advances not falling within the definition of cash. Financing activities are activities resulting in changes in the size and composition of the debt and equity. Operating activities include all transactions and other events that are non-investing and non-financing activities. Cash flows from operating activities are generally the cash effects of transactions and other events that enter into the determination of income (SAIC, 1996:par .04-07).

No fixed format was suggested for the statement of cash flow information. Depending on the particular circumstances of the entity and where appropriate, a logical hierarchy of what to disclose may be the following (Cilliers *et al.*, 1992:411):

- Cash generated by operations, disclosing separately cash generated by operations, investment income and changes in the non-cash components of working capital;
- Cash effects of finance costs and taxation;
- Cash effects of distributions to owners;
- Cash effects of investing activities; and
- Cash effects of financing activities.

According to Everingham and Hopkins (nd:367), AC 118 suggested a statement of cash flows that included all financial resources, with the inclusion of all

significant transactions affecting an entity during the year. This meant that a transaction such as acquiring an investment in exchange for shares would be included in the statement although there was no cash flow.

AC 118 called for the inclusion of non-cash transactions in the statement of cash flow information. The 1992 Schedule 4 of the Companies Act (Act No. 61 of 1973) required, in accordance with current international practice, that a cash flow statement be included in the annual financial statements (Cilliers *et al.*, 1992:125). This was followed by the issue of ED 101 in South Africa.

Despite the name of the statement, AC 118 in fact required a statement of sources and uses of all financial resources and not a cash flow statement (Everingham & Hopkins, nd:366). Comparing AC 118 with ED 101 and noting the differences, may best explain the contents of AC 118 (see 2.3.4). ED 101 was, therefore, proposed as the new accounting standard for the cash flow statement.

### 2.3.5 Exposure Draft 101

In June 1995, ED 101, Cash Flow Statement was issued by the SAICA indicating that South Africa recognised the international need for a statement based on cash flows.
In a study by Mielke and Giacomino (1987:151) before IAS 7 was revised, a proposal was made to the IASC to consider drafting a new IAS that would require entities to:

- Use a cash concept of funds;
- Use cash, bank deposits, and short-term, highly liquid investments as the definition of cash;
- Disclose operating activities separately (at a minimum) and give additional consideration to separation of investing and financing activities;
- Use the indirect method of reporting cash from operations;

- Disclose all-financial-resources transactions in footnote form;
- Provide separate line-item disclosure for dividends; and
- Disclose the effect of foreign currency adjustments, interest payments, extraordinary items and taxes.

IAS 7 was revised and issued in 1992. ED 101 followed the revised international accounting standard in 1995 and ED 10 was to become the new accounting standard for cash flow statements in South Africa.

As the content of ED 101 has largely been retained in AC 118 (revised) (see 2.3.5), ED 101 was significant because it followed IAS 7 (revised) and moved away from an all-financial resources approach to a cash flow approach for cash flow statements.

When comparing AC 118 with ED 101, the shortcomings of AC 118 become more apparent. The main differences between the two standards are as follows (Cilliers *et al.*, 1995:549-560):

- The proposed new standard supports a pure cash flow approach whereas AC 118 had an all-financial resources approach. For example, AC 118 discloses the issuing of shares to obtain an interest in another entity as a financial activity, and the acquisition of the interest in the other entity as an investment activity. In the new statement, this transaction will not be included in the cash flow statement because there is no cash flow involved. Information concerning this transaction will be disclosed elsewhere in the financial statement.
- The proposed new standard encourages the reporting of cash flows from operating activities using the direct method whereby major classes of gross cash receipts and payments are disclosed. Otherwise, the indirect method, as in AC 118, will be allowed. According to the indirect method, the net profit or loss is adjusted for the effects of transactions of a non-

cash nature, any deferrals or accruals of past or future operating cash receipts or payments, and items of income or expense associated with investing or financing cash flows.

- The proposed standard allows that certain cash flows be disclosed on a net basis. The following are examples of cash flows reported on a net basis:

  - Cash receipts and payments of value added tax;
  - Cash receipts and payments on behalf of others when the cash flows reflect the activities of the other party rather than those of the entity, for example:

    - Acceptance and repayment of a bank's demand deposits;
    - Funds held for customers by an investment entity; and
    - Rents collected on behalf of, and paid over to, the owners of properties.

  - Cash receipts and payments for items in which the turnover is quick, the amounts are large, and the maturities are short, such as:

    - Principal amounts relating to credit card customers;
    - Purchase and sale of investments; and
    - Other short-term borrowings, for example, those that have maturity periods of three months or less.

  - The disclosure requirements in the proposed new standard are more comprehensive than those of AC 118. Disclosures required by the new standard and not by AC 118 are:

- Components of cash and cash equivalents and a reconciliation of the amount in the cash flow statement of the entity with the equivalent items reported in the balance sheet; and
- The significant cash amounts and cash equivalent balances held by the entity that are not available for use by the group, together with a commentary by management.

ED 101 was followed by the issue of AC 118 (revised) Cash Flow Statement in June 1996.

### 2.3.6 Accounting Standard – AC 118 (revised)

The new proposed accounting statement, which was first issued as ED 101, was issued in May 1996 as AC 118 (revised), effective from July 1996.

GAAP statement AC 118 (revised) (hereafter referred to as AC 118) provides guidance on preparing a cash flow statement and on what should be included in each of the components referred to in paragraph 50 of Schedule 4 of the Companies Act (Act No. 61 of 1973) (Meskin, nd:1152).

Paragraph 50 of the Companies Act (Act No. 61 of 1973) requires that annual financial statements include a cash flow statement showing, where applicable, the following items (Meskin, nd:1151):

- Cash generated by operations;
- Investment income;
- Non cash components of working capital changes;
- Cash effects of finance costs and taxation;
- Cash effects of dividends paid;
- Cash effects of investing activities; and

- Cash effects of financing activities.

AC 118 (SAICA, 1996:par 02) outlines the objectives of a cash flow statement as the provision of information about the historical changes in cash and cash equivalents of an enterprise, by classifying cash flows during the period into operating, investing and financing activities. The reconciliation required by AC 118 between cash generated by operations and operating income as shown in the income statement is usually shown by way of a note to the cash flow statement. The items in this reconciliation will usually comprise non-cash items of income and expense such as depreciation and the profits or losses on disposal of fixed assets. Operating income includes amounts such as interest that should be included under investment income or finance costs, and also forms part of the reconciliation (Meskin, nd:1152).

The contents of AC 118 are discussed in 2.3.6.1.

### 2.3.6.1 The objectives of the cash flow statement

The first objective of the cash flow statement is to supply information about the cash flows of an entity that provides users of financial statements with a basis to assess the ability of an entity to generate cash and cash equivalents and the needs of the entity to utilise those cash flows. The economic decisions that are taken by users require an evaluation of the ability of an entity to generate cash and cash equivalents, and the timing and certainty of their generation (SAICA, 1996:par 01).

Furthermore, the objective of the statement is to require the provision of information about the historical changes in cash and cash equivalents of an entity by means of a cash flow statement. Cash flows during a period must be classified as operating, investing and financing activities (SAICA, 1996:par 02).

### 2.3.6.2 The scope of the cash flow statement

An entity is required to prepare a cash flow statement in accordance with the requirements of the standard and to present it as an integral part of its financial statement for each period for which financial statements are presented. The users of financial statements are interested in how an entity generates and uses cash and cash equivalents. All entities need cash for essentially the same reasons, namely, to conduct their operations, pay obligations and provide returns to investors (SAICA, 1996:par 03-04).

### 2.3.6.3 The benefits of cash flow information

The advantage of a cash flow statement, when used in conjunction with the rest of the financial statement, is that it provides information that enables users to evaluate the changes in the net assets of an enterprise, its financial structure (including its liquidity and solvency) and its ability to affect the amounts and timing of cash flows in order to adapt to changing circumstances and opportunities. Cash flow information is useful for assessing the ability of an enterprise to generate cash and cash equivalents and it also enables users to develop models to assess and compare the present value of future cash flows of different entities. It also enhances the comparability of the reporting of operating performance by different entities because it eliminates the effects of applying different accounting criteria for the same transactions and events (SAICA, 1996:par 05).

Historical cash flow information is often used as an indicator of the amount, timing and certainty of future cash flows. It is also useful in checking the accuracy of past assessments of future cash flows and for examining the relationship between profitability and net cash flow and the impact of changing prices (SAICA, 1996:par 06).

### 2.3.6.4 Definitions

AC 118 (1996:par 07) describes the following terms used in the cash flow statement and defines their meanings:

- Cash comprises cash on hand and demand deposits.
- Cash equivalents are short term, highly liquid investments that are readily convertible to known amounts of cash and are subject to an insignificant risk of changes in value.
- Cash flows are inflows and outflows of cash and cash equivalents.
- Operating activities are the principal revenue-producing activities of an entity and other activities that are not investing or financing activities.
- Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents.
- Financing activities are activities that result in changes in the size and composition of the equity capital and borrowings of the enterprise.

### 2.3.6.5 Presentation of the cash flow statement

The cash flow statement should report cash flows during the period classified by operating, investing and financing activities. This must be presented in a manner that is most appropriate to the operations of the reporting entity. Classification by activity provides information that allows users to assess the impact of these activities on the financial position of an entity and the amount of its cash and cash equivalents. This information may also be used to evaluate the relationships among those activities (SAICA, 1996:par 12-13).

A single transaction may include cash flows that are classified differently. For example, when the cash repayment of a loan includes both interest and capital, the interest element may be classified as an operating activity and the capital element as a financing activity (SAICA, 1996:par 14).

### 2.3.6.6 Reporting cash flows from operating activities

When reporting cash flows from operating activities an entity should use one of the following methods (SAICA, 1996:par 20-24):

- The direct method, whereby major classes of gross cash receipts and gross cash payments are disclosed; or
- The indirect method, whereby net profit or loss is adjusted for the effects of transactions of a non-cash nature, any deferrals or accruals of past or future operating cash receipts or payments, and items of income or expenses associated with investing or financing cash flows.

Entities are encouraged to report cash flows from operating activities using the direct method. The direct method provides information that may be useful in estimating future cash flows that are not available under the indirect method. Under the direct method, information about major classes of gross cash receipts and payments may be obtained either from:

- The accounting records of an entity, or
- By adjusting sales, cost of sales and other items in the income statement for:

    - Changes during the period in inventories, operating receivables and payables;
    - Other non-cash items; and
    - Other items for which the cash effects are investing or financing cash flows.

Under the indirect method, the net cash flow from operating activities is determined by adjusting net profit or loss for the effects of:

- Changes during the period in inventories and operating receivables and payables;
- Non-cash items such as depreciation, provisions, deferred taxes, unrealised foreign currency gains and losses, undistributed profits of associates and minority interests; and
- All other items for which the cash effects are investing or financing cash flows.

Alternatively, the net cash flow from operating activities may be presented under the indirect method by showing the revenues and expenses disclosed in the income statement and the changes during the period in inventories and operating receivables and payables.

A reconciliation between the net profit before taxation reported in the income statement and the cash generated from operations should be given as a note to the financial statements if this information is not provided in the body of the cash flow statement. Such reconciliation should disclose the movements in inventories, receivables and payables related to operating activities, and other differences between cash flows and profits separately.

#### 2.3.6.7 Reporting cash flows from investing and financing activities

An entity should report major classes of gross cash receipts and gross cash payments arising from investing and financing activities separately, except where cash flows are reported on a net basis (SAICA, 1996:par 25).

#### 2.3.6.8 Reporting cash flows on a net basis

Cash flows arising from the following operating, investing or financing activities may be reported on a net basis (SAICA, 1996:par 26):

- Cash receipts and payments on behalf of others when the cash flows reflect the activities of the other party rather than those of the entity; and
- Cash receipts and payments for items in which the turnover is quick, the amounts are large and the maturities are short.

The disclosure requirements of AC 118 incorporate all of the requirements of Schedule 4. The following are the disclosure requirements of AC 118 (Wingard & Becker, 2001:350-351):

- Cash flows during the period classified by operating, investing and financing activities;
- Reconciliation between the net profit before taxation reported in the income statement and the cash generated by operations, given as a note to the financial statement if this information is not provided in the body of the cash flow statement. This reconciliation should disclose the movements in inventories, receivables and payables related to operating activities, and other differences between cash flows and profits separately;
- Major classes of gross cash receipts and gross cash payments arising from investing and financing activities;
- Cash flows associated with extraordinary items classified as arising from operating, investing or financing activities and separately disclosed;
- Separate disclosure of cash flows from interest and dividends received and paid. Each should be classified in a consistent manner from period to period as operating, investing or financing activities;
- Cash flows arising from taxes on income, separately disclosed and classified as cash flows from operating activities, unless they can be specifically identified with financing and/or investing activities;
- Aggregate cash flows arising from acquisitions and from disposals of subsidiaries or other business units separately disclosed and classified as investing activities; and

- In aggregate, in respect of both acquisitions and disposals of subsidiaries or other business units during the period, each of the following:

    - Total purchase or disposal consideration;
    - Portion of the purchase or disposal consideration discharged by means of cash and cash equivalents;
    - Amount of cash and cash equivalents in the subsidiary or business unit acquired or disposed of; and
    - Amount of the assets and liabilities, other than cash or cash equivalents in the subsidiary or business unit acquired or disposed of, summarised by each major category.

- Investing and financing transactions that do not require the use of cash or cash equivalents should be excluded from a cash flow statement. Such transactions should be disclosed in the notes to the financial statement in a way that provided all the relevant information about these investing and financing activities;
- Components of cash and cash equivalents and a reconciliation of the amounts in the cash flow statement with the equivalent items reported in the balance sheet;
- Amount of significant cash and cash equivalent balances held by the entity that are not available for use by the group, together with a commentary by management; and
- Disclosures of the following are encouraged:
    - Undrawn borrowing facilities indicating any restrictions on the use thereof;
    - Aggregate amounts of cash flows from each of the operating, investing and financing activities related to interests in joint ventures;
    - Aggregate amount of cash flows that represent increases in operating capacity; and

- Amount of the cash flows arising from the operating, investing and financing activities of each reported industry and geographical segment.

The issuing of AC 118 followed the issuing of IAS 7 on cash flow statements in 1992. The objectives of IAS 7 were to produce and publish standards to apply when reporting financial information and to promote worldwide acceptance and use thereof.

Globalisation of international capital markets has increased the need to improve financial reporting. The wide reporting variations among countries reduce the reliability and effectiveness of financial analysis of trans-national corporations. These variations affect the usefulness of balance sheet and income statement disclosures, and to a lesser degree, the statement of cash flows. Therefore, one of the IASC mayor goals is to promote the international harmonization of accounting practices (Mielke & Giacomino, 1987:143-144).

However, when comparing the South African standard on cash flow statements with the international standard, no major differences could be found. In body and format, the two statements seemed to be identical.

## 2.4 RE 118 IN COMPARISON TO OTHER CASH FLOW STANDARDS

Interest continues to grow in the development of international accounting standards. The chairman of the FASB noted that the FASB would support an objective that sought to create superior international standards that would then gradually supplement national standards, as the superior standards become universally accepted (Kieso & Weygandt, 1992:22).

The globalisation of business entities and capital markets is creating much interest in establishing common, international accounting standards. However, there are probably too many vast cultural, social, and political differences for

complete international standardisation of financial reporting. In order to address the differences, the International Federation of Accountants (IFAC), an organisation of accountancy bodies from more than 75 countries, fostered cooperation among accountants, with the result that the number of differences between countries is decreasing. International standards are also being formulated and published by the IASC (Horngren *et al.,* 1996*:* 504).

Although the differing laws, customs, business practices and social standards among nations will always require some differences in financial reporting, similarities among nations allow for a degree of uniformity (Mielke & Giacomino, 1987:144).

### 2.4.1 International Accounting Standard 7 (revised)

IAS 7 (revised), issued in 1992, is the authoritative international standard on reporting cash flows and supersedes IAS 7, Statement of Changes in Financial Position. In comparing of AC 118 with IAS 7, the following major differences were found (Wingard & Becker, 2001:353; Cilliers *et al.*, 1995:550):

- AC 118 requires reconciliation between the profit before taxation and the cash generated by operations to be given as a note to the financial statements where this information is not provided in the body of the cash flow statement. IAS 7, however, does not have such a requirement. The disclosure of this reconciliation is compulsory for reporting entities in both the UK and the USA to ensure that different cash flow statements may be compared.
- It is a requirement in AC 118 when disclosing payments for acquisition of property, plant and equipment to distinguish between the replacement and addition to property, plant and equipment. This is not a requirement of IAS 7, although IAS 7 suggests that the separate disclosure will be useful

for the users to determine whether there is adequate investment in the conservation of operating capacity or not.

AC 118 and IAS 7 do not have consensus on the classification of interest paid and interest and dividends received. Interest paid and interest and dividends received are usually classified as operating cash flows for a financial institution. However, there is no consensus on the classification of these cash flows for other entities. They may be classified as operating cash flows because they enter into the determination of net profit or loss. Alternatively, they may be classified as financing and investing cash flows respectively, because they are costs of obtaining financial resources or returns on investments (IASC, 1992:par 33; SAICA, 1996:par 38).

Dividends paid may be classified as a financing cash flow because they are the cost of obtaining financial resources. Alternatively, dividends paid may be classified as a component of cash flows from operating activities in order to assist users to determine the ability of an entity to pay dividends out of operating cash flows (IASC, 1992:par 34; SAICA, 1996:par 39).

### 2.2.4 Statement of Financial Accounting Standard 95

SFAS No. 95, Statement of Cash Flows, was issued in November 1987 by the FASB to become effective after 15 July 1988 (FASB, 1987:10). When comparing AC 118 and SFAS 95, a difference was found with the classification of interest and dividends paid and received as AC 118 has no definite classification of the items and SFAS 95 has specific classifications (FASB, 1999:S25. par 114-125):

- Paragraph 114 specifies cash inflows from investing activities, as receipts from sales of equity instruments of other entities (other than

certain equity instruments carried in a trading account) and from returns of investment in those instruments;

- Paragraph 116 states that financing activities include obtaining resources from owners and providing them with a return on, and a return of their investment;
- Paragraph 117 states that cash receipts from contributions and investment income that by donor stipulation are restricted for the purposes of acquiring, constructing, or improving property, plant, equipment, or other long-lived assets or establishing or increasing a permanent endowment or term endowment, are classified as cash inflows from financing activities;
- Paragraph 118 includes payments of dividends or other distributions to owners as a cash outflow for financing activity;
- Paragraph 119 classifies cash flows from operating activities as the transactions and other events that enter into the determination of net income. This includes interest and dividends received (par 120) and cash payments to lenders and other creditors for interest (par 121);
- Interest and dividends that are donor restricted for long-term purposes (as noted in paragraphs 116 and 117) are not part of operating cash receipts.

According to Giacomino and Mielke (1988:54-55) and Nurnberg (1993:60), SFAS 95 would be more effective if it did not allow different reporting formats. Furthermore, although SFAS 95 requires classification of cash flows as operating, investing and financing activities, it does not incorporate the additional breakdowns separating sources from uses of cash. It combines the sources and uses that mask the distinctions between processes of an entity generating cash flows and expending those cash flows in a variety of transactions.

### 2.4.3 Financial Reporting Standard 1

Financial Reporting Standard (FRS) 1, Cash Flow Statements of the Accounting Standards Board in the UK, was issued in 1996. This standard specifies that an entity's cash flow statement should list its cash flows for the period classified under the following standard headings (ASB, 1996:par c):

- Operating activities;
- Returns on investments and servicing of finance;
- Taxation;
- Capital expenditure and financial investments;
- Acquisitions and disposals;
- Equity dividends paid;
- Management of liquid resources; and
- Financing.

The format of FRS on cash flows differs from the other cash flow statements, SFAS 95, IAS 7 and AC 118. However, in FRS 1, cash flows are reported as operating, investments and servicing of finance, taxation, capital expenditure and financial investment (ASB. 1996:4).

FRS 1 is specific about the classification of interest and dividends. Interest and dividends received must be reported under cash inflow returns on investments and servicing of finance. Cash outflows from returns on investments and servicing of finance include interest paid (even if capitalised), dividends paid on non-equity shares, and dividends paid to minority interests (ASB, 1996:par 14-15).

Based on the preceding examination of the different cash flow statements, it seems that a reasonable degree of harmonization may already exist in practice.

There are still alternatives available and no remarkable difference present in the current contents and formats.

The development of a cash flow statement arose from pressure brought to bear on USA' entities in the 1960s to present a funds' statement as part of their annual financial statements. Various differences arose in the method of information presentation and many of the differences were due to varying interpretations placed on the term funds. Even today, differences arise and a measure of confusion still exists with regard to the meaning of the term and the objective of a funds statement (Everingham & Hopkins, nd:367).

## 2.5 THE OBJECTIVES OF THE CASH FLOW STATEMENT

It seems that the objectives of the cash flow statement are in agreement with the main objective of the financial framework and financial statement. Wingard and Becker (2001:1) state that the accounting framework is an attempt to provide a foundation that sets out the objectives and concepts that underlie the preparation and presentation of financial statements.

In 1973, the Objectives of Financial Statements Study Group (The Trueblood Committee) reported its conclusions in the Objectives of Financial Statements. The basic objective of financial statements was to provide information useful for making economic decisions. Two other objectives, amongst others, were also identified according to Bernstein (1994:44), namely:

- To provide information useful to investors and creditors for predicting, comparing, and evaluating potential cash flows to them in terms of amount, timing and related uncertainty; and
- To provide users with information for predicting, comparing, and evaluating enterprise earning power.

The objectives of the cash flow statement, according to AC 118 (SAICA, 1996:par 01-02) read as follows:

> Information about the cash flows of an enterprise is useful in providing users of financial statements with a basis to assess the ability of the enterprise to generate cash and cash equivalents and the needs of the enterprise to utilise those cash flows. The economic decisions that are taken by users require an evaluation of the ability of an enterprise to generate cash and cash equivalents, and the timing and certainty of their generation.
>
> The objective of this [the cash flow] statement is to require the provision of information about the historical changes in cash and cash equivalents of an enterprise by means of a cash flow statement, which classifies cash flows during the period from operating, investing and financing activities.

The users of financial statements are interested in how an entity generates and uses cash and cash equivalents. This is the case regardless of the nature of the activities and irrespective of whether or not cash can be viewed as the product of the entity, as may be the case with a financial institution. Entities need cash for essentially the same reasons although their principal revenue-producing activities might be different. They need cash to conduct their operations, to pay their obligations and to provide returns to their investors. Accordingly, all entities are required to present a cash flow statement (SAICA, 1996:par 04).

The cash flow statement explains the reasons for the change in cash during a period. With the information supplied by the cash flow statement, the users of financial statements will be able to use and evaluate the information for economic decision-making purposes.

## 2.6 THE USE OF RATIOS IN ANALYZING THE CASH FLOW STATEMENT

Prior to the introduction of the new cash flow standards, traditional operating cash flow ratios were employed for financial analysis. The cash flow from

operations had to be estimated from the statement of changes in financial position and suffered from the inherent limitations of cash flow reporting not based on the cash flow statement. The primary categories of cash flow activities had not been specified and the term cash had not been defined. Therefore ratios lacked comparability over time and across entities (Zeller & Stanko, 1994b:51).

The first ratio ever to be recorded was the current ratio that was used to measure liquidity. Ratios were originally developed as short-term credit analysis devices and can be traced as far back as the late 19th century. Since then, analysts have developed many financial ratios that are widely used by practitioners and academics (Giacomino & Mielke, 1993:55). With the requirement to prepare a cash flow statement as part of financial reporting, a need has arisen for cash flow ratios. Useful cash flow ratios may be derived from the cash flow statement. Operating cash flow ratios may also provide a more complete picture of an entity's ability to generate sufficient operating cash flow to service its debt and equity obligations and to fund asset acquisitions (Zeller & Stanko, 1994b:51).

If cash flow information is useful but unused, the logical conclusion is that the analysts are not analysing available data properly. While there is no general consensus on appropriate cash flow ratios, this study will explore the relative utility of newly derived cash flow ratios in financial analysis and will determine if the potential exists to predict financial failure.

## 2.7 SUMMARY

In this chapter, an overview was given of the development of the accounting framework. The accounting profession experiences increased pressure from the users of financial statements to increase the quality of financial reporting. A study was made of the inputs by the IASC and the FASB with the aim of developing an accounting framework for financial reporting.

The objectives of financial reporting and the users of the financial statement were discussed. Furthermore, the development of the cash flow statement was discussed, and a comparison was made between AC 118, IAS 7 and SFAS 95. It was found that there is much conformity between these statements.

An examination was made of the usefulness of the cash flow statement and a brief review was given of the importance of cash flow ratios for financial analysis. The main focus of the cash flow statement is to determine whether an entity can generate positive cash flows from its normal operations. However, this does not provide a full assessment of the liquidity and viability of an entity. The cash flow statement must be related to other figures in the financial statement to arrive at an adequate picture of the cash generating ability of an entity. Ratio analysis is a useful and efficient tool for analysing financial information. To date, neither text writers nor analysts have developed ratios for effective evaluation of the cash flow statement. Such ratios, used in conjunction with traditional balance sheet and income statement ratios, should lead to a better understanding of the financial strengths and weaknesses of an entity.

This chapter discussed the development of the cash flow statement with reference to the need for cash flow ratios to be used in a financial analysis. In chapter three, a study will be made of the usefulness of cash flow for financial analysis. The aim of this study is to suggest a set of cash flow ratios with the potential to predict financial failure.

# CHAPTER THREE

# ANALYSING FINANCIAL STATEMENTS

## 3.1 INTRODUCTION

In chapter two, the development of the accounting framework and the cash flow statement were discussed. The single largest source of quantitative information used by all analysers is the financial statement. Financial statements portray the operating performance and financial position of an entity at the end of an accounting period and are the principal means through which financial information is communicated to users outside an entity.

Since its proposal, the cash flow statement has been greatly supported. The cash flow statement is useful for financial reporting as it reveals information about the ability to generate future cash flows. The inclusion of the cash flow statement in financial statements revealed the need to develop cash flow ratios for analysing the cash flow statement.

Ratios are traditionally used to analyse financial statements. They are grouped into liquidity, asset and debt management and profitability categories to assist analysts to predict liquidity, the probability of loan defaults and share prices. With the inclusion of cash flow statements in financial reporting, new information became available to supplement data derived from the balance sheet and income statement (Giacomino & Mielke, 1993:55).

According to Giacomino and Mielke (1993:55), most cash flow studies show the value of cash flows especially in the prediction of bankruptcy and financial distress. Carslaw and Mills (1991:63) note that the balance sheet and income statement in conjunction with the cash flow statement should lead to a better understanding of the financial strengths and weaknesses of an entity. If cash flow

information is useful but unused, the logical conclusion is that the business world is not analysing available data properly.

Chapter three makes a study of the approach and methods adopted by users to analyse financial statements. It also focuses on the importance of the cash flow statement for financial analysis and the need for cash flow ratios for the evaluation of the cash flow statement. Together these link with the main objective of the study, namely, the usefulness of the cash flow statement to predict financial failure. The aim of this study was to determine if cash flow ratios calculated from the cash flow statement had the potential to predict financial failure. Such ratios, if used in conjunction with traditional accrual ratios, should lead to a better understanding of the financial strengths and weaknesses of an entity.

## 3.2 ANALYSING FINANCIAL STATEMENTS

Financial statements provide historical information on the financial position and performance of an entity. The primary objective of financial statement analysis is to determine the best possible estimates of and predictions about future conditions and performance (Bernstein, 1994:27).

Analysing financial statements involves examining and processing financial information for the purpose of making specific information available, while interpretation is aimed at determining the causes and consequences of the results of the analysis. Ratio analysis is the most noted and useful tool for financial analysts as it provides symptoms and clues to underlying conditions of an entity. It also expresses the relationship between two different figures in simple terms that can be used to compare and measure comparative figures. The efficient interpretation of these ratios can indicate areas that require further analysis and examination (Cilliers, Mans, Grobbelaar, Van Schalkwyk, Bosman, & Stegmann, 1997:par. 5.10-5.12). However, not all financial statements are

readily comparable as different policies and extraordinary items may cause financial statements to be incomparable.

The analysis of financial statements may be undertaken for several purposes. However, before assessing any problem, it is important to determine for whom and for what purpose the analysis will be done. When determining the state of an entity's financial health, the balance sheet is used as a gauge to make the assessment. The income statement reflects the results of the entity's operations and financial transactions and the cash flow statement indicates cash inflow and outflow during a financial period.

Since financial accounting data is the product of a whole range of conventions, measurements and judgements, their apparent precision and exactness can be misleading (Bernstein, 1994:28). Therefore, weaknesses of financial statements should be identified when evaluating an entity. The information disclosed in financial statements is based on historical costs that must be analysed to determine the future prospects of an entity. The information is also summarized and drafted in accordance with GAAP that requires only the minimum information to be disclosed.

Horngren, Harrison & Robinson, (1995:1212) point out that trade creditors rely on published information and reports from credit agencies, as annual reports are issued well after the events being reported on have occurred. More timely information is often available from company press releases and articles in the business press. Horngren *et al.* (1995) claim that financial statement analysis is useful because past performance is often a good indicator of future performance. Therefore, the current position of an entity is the base on which future performance must be built, for trends in the past may continue in the future.

### 3.2.1 The function of financial statement analysis

The objective of financial statement analysis is to assist users of financial statements in the process of making useful economic decisions. It is an evaluation process aimed at evaluating current and previous financial positions and results to make the best estimates and assessments for future positions and results.

For effective analysis of financial statements, the analyst must understand the economics of the industry in which an entity competes, the particular strategies it has chosen to compete in, and its financial statements and notes to the financial statements. The financial statements have to be analysed and separated from nonrecurring and unusual items and be prepared according to GAAP. Analysts should also be aware that earnings may include nonrecurring gains and losses, or that selected principles may have been chosen, as they appear more profitable or less risky than economic conditions would otherwise suggest (Stickney & Brown, 1999:4-5).

The demands for financial statements arise from a diverse set of parties each with its own focus of attention. The financial statement is a subset of information and may serve several different roles at the same time. It is also unlikely that all parties will unanimously agree on a ranking of items to be disclosed in financial statements (Foster, 1986:15).

From an investor's viewpoint, predicting future financial performance is what financial statement analysis is all about. The internal financial analyst requires information for internal management and control of the current financial conditions and results to facilitate decision-making and improve future performance (Bernstein, 1994:27).

The lender will be interested in the cash flow and the financial position, while the credit analyst will need to determine future fund flows and the resulting financial condition as a means of assessing the risks inherent in a particular credit extension. An external analysis will be less comprehensive than an internal analysis, especially since the analyst usually only has the published financial statements available that contain limited information (BFA, 1989:1).

Financial analysts use the financial statement to assess profitability and risk. Assessing an entity's ability to deal with risk, particularly those elements of risk with measurable financial consequences, will permit the analyst to estimate the likelihood that the firm will experience financial difficulties in the future (Stickney & Brown, 1999:50). A frequent application of financial statement analysis is of value to an entity since it translates information into stock prices. Recommendations are given on stock prices; either to hold, sell or buy, depending on whether the stock price is too low, too high or "about right" (Stickney & Brown, 1999:50).

Financial statement analysis includes the study of relationships within a set of financial statements at a point in time and with trends in these relationships over time. For this purpose, several tools or techniques have been developed to assist the financial analyst.

### 3.2.2 Techniques for financial statements analysis

Throughout the years various techniques have been developed and made available for analysing financial statements. Some commonly used tools are (Foster, 1986:58-80; Bernstein, 1994:67; Cilliers *et al.,* 1997:5.10; Stickney & Brown, 1999:32-35):

- Comparative financial statements;
- Index-number trend series;

- Common size financial statements;
- Percentage change statements;
- Ratio analysis; and
- Specialised analysis:

    - Cash forecasts;
    - Analysis and changes in financial position;
    - Changes in gross profit percentage; and
    - Break-even analysis.

Evaluation of the tools must always be considered against one or more of the following comparative measures (Cillers *et al.,* 1997:5.10):

- Pre-determined standard or objective;
- Corresponding analyses for previous periods;
- Corresponding analyses of the industry or other entities in the industry; and
- Empirically accepted standards that include the experience and professional judgement of the analyser.

Although the above-mentioned tools could be seen as equally important in analysing the financial statement, this study concentrates particularly on the use of ratio analysis, which ties in with its main objective of measuring the usefulness of the cash flow statement through cash flow ratios in predicting financial failure.

### 3.2.3 The use of ratios in financial analysis

The most widely discussed technique of financial statement analysis is ratio analysis (Foster, 1986:58). It is a useful and efficient tool for synthesizing large quantities of information from diverse operations (Carslaw & Mills, 1993:14). At the turn of the century, according to Beaver (1966), ratio analysis was in its

embryonic state. It began with the development of a single ratio, namely, the current ratio that measures liquidity.

Ratio analysis provides the analyser with symptoms and clues to underlying conditions. It expresses the relationship between two different figures in simple terms, in meaningful relationships and measures comparative figures. If ratios are interpreted properly, it can indicate areas requiring further analysis and examination (Cilliers *et al.,* 1997:5.10-11).

Ratios analysis involves all the techniques that give an indication of an entity's performance and the state of its financial affairs. In general, financial ratios may be divided into different basic categories, namely (Crawford-Lucas, 1992:58; Cilliers *et al.*, 1997:5.10-11; Brigham & Daves, 2002:230; Lovemore & Brummer, 2003:89):

- Liquidity ratios;
- Asset management ratios;
- Debt management ratios;
- Profitability ratios; and
- Market ratios.

Liquid assets trade in an active market and can be quickly converted into cash at the going market price. Therefore, liquidity ratios are used to determine whether an entity will be able to pay off debts as they come due within a period. Asset management ratios are used to measure how effectively an entity is managing its assets, whereas debt management ratios measure the extent to which an entity uses debt financing (Brigham & Daves, 2002:216-221). Profitability ratios measure how well an entity is performing in the short term and show the combined effects of liquidity, asset management and debt on operating results.

Another category of ratios is the market value ratios that relate the share price of an entity to its earnings, cash flow and book value per share. They give management an indication of the past performance and future prospects of an entity. If the results of the liquidity, asset management, debt management and profitability ratios are good, the market value ratios will be high and share prices will probably be as high as can be expected (Brigham & Daves, 2002:216-221). The financial ratios, classified into five different groups, are summarised in Table 3.1. The table lists the ratios and their components.

**TABLE 3.1**

SUMMARY OF FINANCIAL RATIOS

| SUMMARY OF FINANCIAL RATIOS | | |
|---|---|---|
| NO | FINANCIAL RATIOS | COMPONENTS |
| LIQUIDITY RATIOS | | |
| 1. | Current ratio | Current assets<br>Current liabilities |
| 2. | Quick ratio | Current assets – inventory<br>Current liabilities |
| 3. | Net working capital | Current assets-Current liabilities |
| ASSET MANAGEMENT RATIOS | | |
| 4. | Inventory turnover ratio | Cost of sales<br>Inventory |
| 5. | Day's sales outstanding ratio | Receivables<br>Average sales per day |
| 6. | Fixed asset turnover ratio | Turnover<br>Net fixed assets |
| 7. | Total asset turnover ratio | Turnover<br>Total assets |
| DEBT MANAGEMENT RATIOS | | |
| 8. | Debt ratio | Total debt<br>Total assets |
| 9. | Debt to equity ratio | Long-term debt<br>Equity |
| 10. | Interest cover ratio | Earnings before interest and tax<br>Interest |

| SUMMARY OF FINANCIAL RATIOS | | |
|---|---|---|
| NO | FINANCIAL RATIOS | COMPONENTS |
| DEBT MANAGEMENT RATIOS | | |
| 11. | Fixed charge coverage ratio | Earnings before interest, leases<br>Interest, leases, debt repayment and preference dividends |
| PROFITABILITY RATIOS | | |
| 12. | Return on sales ratio | Net income to shareholders<br>Turnover |
| 13. | Return on assets ratio | Net income to shareholders<br>Total assets |
| 14. | Return on equity ratio | Net income to ordinary share<br>Equity |
| 15. | Return on capital employed ratio | Earnings<br>Equity and long-term debt |
| 16. | Return on equity | Profit after preference shares<br>Equity |
| MARKET VALUE RATIOS | | |
| 17. | Price earnings ratio | Price per share<br>Earnings per share |
| 18. | Price cash flow ratio | Price per share<br>Cash flow per share |
| 19. | Market book value ratio | Market price per share<br>Book value per share |

Source: Adapted from Crawford-Lucas (1992:58), Cilliers *et al.*, (1997:5.10-11), Brigham & Daves (2002:230) and Lovemore & Brummer (2003:89).

Table 3.1 gives a summary of five general categories of financial ratios that can be used for financial statement analysis. When analysing an entity each of these groups indicates something about the financial affairs of the entity.

However, independently, ratios have limited usefulness. At least one ratio from each group has to be calculated to form some idea of the financial position of an entity. When the ratios calculated are compared with an entity's ratios over past years or with ratios of other entities and with industry averages, they become more valuable (Giacomino & Mielke, 1993:56; Siegel, 1998:52).

Ratio analysis is a technique for identifying certain relationships between items and key trends in these relationships. The comparison of results with other entities operating in the same financial period and industry is known as cross-sectional analysis. This entails taking a cross-section of the industry's results and comparing it with the results of an entity in the industry (Foster, 1986:58; Canadian Institute of Chartered Accountants (CICA), 1993:xi).

Traditionally, analysts have evaluated financial statements using financial ratios. Therefore any text or corporate reporting or any analyst's report contains ratios comparing information from the balance sheet and income statement. To date, no group of cash flow ratios has been developed for evaluating the cash flow statement. Such ratios, used in conjunction with traditional balance sheet and income statement ratios, should lead to a better understanding of the financial strengths and weaknesses of an entity (Carslaw & Mills, 1991:91).

### 3.2.4 The users of financial statements

Financial statements are produced for various users who may be internal or external. Internal users are normally employed by an entity, part of management and responsible for producing financial statements. Management often needs financial information for the execution of decision-making, planning and control responsibilities. The analysis made by the board of directors is known as internal analysis and this is obtained from internal financial statements. All departments in an entity will be analysed to identify important weaknesses and all levels of management make use of the internal analysis (Danos & Imhoff, 1983:5).

External users of accounting information are those interested parties whose decisions relate to the entity, but who are not employed by the entity to direct its activities or utilize its resources. External users of information include investors, customers, suppliers and taxing authorities. The entity that these users are evaluating is the subject of the accounting information (Mueller & Kelly, 1991:3).

The information needs of external and internal users are not necessarily different. For example, both user groups are interested in the financial statement. However, managers of entities typically have access to detailed information that supports and supplements the financial statement which is ordinarily not made available to external users. Accounting policy-making bodies set a minimum level of disclosure required for external users, whereas internal users generally can obtain any information they feel is required for internal decision-making. External reports, therefore, are more general, less detailed and more constrained than those available to internal users (Danos & Imhoff, 1983:6).

There are seven categories of users listed in AC 000. These users together with a summary of their information needs are set out below (Wingard & Becker, 2001:3-4):

- Investors – assessment of risk and return;
- Employees – assessment of ability of employer to provide remuneration, retirement benefits and employment opportunities (concerned with stability and profitability of employer);
- Lenders – assessment of repayment of loans and related interest;
- Suppliers and other trade creditors – assessment of payment of balances owing;
- Customers – assessment of entity's ability to continue;
- Government – regulation of activities of the enterprise, determination of national resource allocation and tax policies, and compilation of statistics; and
- Public – assessment of contribution to local economy and range of activities.

Wingard and Becker (2001:4) acknowledge that financial statements cannot meet the needs of all these users but argue that the provision of financial

statements that meet the needs of investors will also meet most of the needs of other users.

## 3.3 ANALYSIS OF THE CASH FLOW STATEMENT

In chapter two, the development of the cash flow statement was discussed. Since its proposal, the cash flow statement has been greatly supported. Financial statement users have argued in favour of the disclosure of detailed information on an entity's current operating cash flows. Therefore, the cash flow statement was designed to bridge the information gap between traditional accrual accounting and an understanding of the cash flow activities of an entity. A gap existed because accrual accounting failed to provide relevant disclosure to assess the amount, timing and uncertainty of future cash flows. Such disclosures will allow users to better assess the ability of an entity to generate positive future net cash flows, to meet obligations and to assess the need for external financing. It will also assist users of financial statements in their assessment of liquidity, viability and financial adaptability.

An analysis of the cash flow statement will indicate the accuracy of past assessment of future cash flows and the relationship between profitability and net cash flow. The greater the amount of future net cash inflows from operations, the greater the ability of an entity to withstand adverse changes in operating conditions. A cash flow statement highlights the liquidity and the management of working capital of an entity and enables users to be better informed about the performance of management during an accounting period.

Cash flow information, when used in conjunction with the rest of the financial statement, provides information that enables users to evaluate the changes in net assets of an entity, its financial structure and its ability to respond to changing circumstances and opportunities. A cash flow statement is useful in assessing the ability of an entity to generate cash and enables users to develop models for

assessment and comparison of future cash flows of different entities. In addition, comparability of operating performance by different entities is enhanced because cash flow information eliminates the effects of using different accounting treatments for the same transactions and events (Everingham, Kleynhans & Posthumus, 2003:222). For example, two similar entities may use different accounting methods to depreciate fixed assets. These entities would both report different earnings but their choice of depreciation methods would have no effect on their cash flows.

A cash flow analysis can be used to address an entity's cash flow dynamics and it should throw light on questions such as (Palepu, Healy & Bernard, 2000:9.24):

- Is the strength of internal cash flow generation positive or negative? Negative because the entity is growing, or operations are unprofitable, or is the entity having difficulty managing its working capital properly?
- Were short-term financial obligations such as interest payment met with operating cash flows?
- Was the amount of cash invested in growth financed by internal cash flows, or did it rely on external financing?
- Were dividends paid from internal free cash flow, or did these rely on external financing?
- Is the type of external financing on which an entity relies short- or long-term debt?
- Does the entity have excess cash flow after making capital investments?

Cash flow ratios can be used to answer such questions. A cash flow analysis focuses on a firm's liquidity, solvency and financial flexibility, since debt obligations are met with cash. This will result in adequate lines of credit, unrestricted cash availability, debt maturity schedules with respect to financing requirements and the willingness to issue shares. This allows an analyst to

examine an entity's liquidity, and how the entity is managing its operating, investment and financing cash flows (Palepu *et al.*, 2000:9.24).

### 3.3.1 The usefulness of cash flow information

The primary objective of this study was to evaluate the usefulness of the cash flow statement to predict financial failure by means of cash flow ratios. The prediction of failure is one of the suggested uses of the cash flow statement although users may have different uses for the cash flow statement.

Shareholders will use the cash flow statement as it records the changes in the other statements and focuses on what shareholders really care about: the cash available for operations and investments. Investors are interested in the dividends they will receive and the market value of their investments. They are, therefore, more interested in the cash flow than in the earnings of their investment (Heyns, Hamman & Smit, 1999:122). Bernard and Stober (1989) observed that stock prices react more favourably to larger cash flows than larger earnings.

Small businesses often prepare a business plan in order to obtain financing or for expansions. A business plan has multiple uses and, according to Crawford-Lucas (1992:54), the cash flow statement can be the life and breath of a business plan. It will inform an entrepreneur where the cash will come from. Durham (1997) indicates that the cash flow statement is one of the most important tools for planning future expenditures of non-profitable entities.

Clark (1996:18) agrees with Guira (1999:14) that the cash flow must be computed monthly. It is the lifeblood of an entity and by monitoring the cash flow an entity's future growth will be guided more effectively and revenue problems may be prevented. Scott (1996) points out that the income statement is not a

predictor of an entity's cash situation but the cash flow statement shows what is happening with cash flow.

Cash flow on hand is the measure by which real estate investments are valued. When asset conditions change and more in-depth analysis is needed, cash flow results are more revealing since it is important to know where the cash flows are coming from and where they are being spent or distributed (Brown, 1996:176).

The statement of cash flows can be especially useful for financial analysis because non-cash items are separately identified and classified with respect to activities (operating, financing and investing). In addition, ratios derived from the cash flow statement can provide information useful for performance evaluation. Ratios can be computed and used to measure liquidity, asset and debt management, profitability and performance.

Giacomino and Mielke (1993:55) point out that most cash flow studies show the value of cash flow data in predicting bankruptcy and financial distress. Havel and Levine (1996:32) state that an entity will not go out of business because it reports net losses, but because it runs out of cash. Ozanian & Badenhausen (1998:246) believe that it is possible for an entity to report impressive earnings and yet be bleeding cash.

The ability to generate cash flow and future cash flow is, therefore, critical for the financial success of an entity. If an entity can generate sufficient cash out of internally generated funds to cover its current debt, pay interest and dividends and reinvest in assets, it should be able to survive. Cash flow from investing and financing activities can also be used to pay obligations, but operating activities are the primary source of an entity's funds. If an entity can cover all obligations, reinvest in assets and pay dividends out of internally generated funds, this indicates a financially healthy entity.

### 3.3.2 Cash flow information to measure liquidity

The principal objective of FRS 1, The Cash Flow Statement (ASB, 1996:par 1) is to assist users of financial statements in assessing an entity's liquidity, solvency and financial adaptability. Liquidity means assessing an entity's liquid assets and confirming its ability to generate cash from such assets. Solvency implies an entity's ability to meet its debts as they fall due and to provide adequate return to investors. Many authors, for example, Figlewicz and Zeller (1988), Mitchell, Goh & Forman (1995:47), Gallinger (2000:40) and Siegel (1998:52) agree that the use of cash flow information in liquidity ratios is as useful as adjusted income statement data.

The traditional approach to assessing an entity's liquidity and solvency is through traditional earnings, net working capital and ratios such as the current and quick ratios. The rationale for using the traditional approach is that the income from current assets should cover payments to current liabilities. Using current assets to pay current liabilities is also known as the working capital cycle. If a value of 1 is obtained for the ratios, the assumption can be made that an entity is liquid and can service debt obligations (Gallinger, 1997:25). McCosker (2000) suggests a ratio of 2:1, depending on whether the nature of transactions is cash or credit. The reason for suggesting stronger ratios is that there are many off-balance sheet items such as leases and purchase commitments that are not reflected in these ratios.

The conventional definitions of current assets and current liabilities are assumed to provide some information to users of financial statements on liquidity, but they are far from adequate in meeting the desired objectives (Hendriksen, 1982:283). In this regard, empirical research has shown that an entity can have positive current and quick ratios, yet have severe cash flow problems and can, in fact, be bleeding cash (Ozanian *et al*., 1998:246). Changes in the composition of the current assets and liabilities can also be overlooked when evaluating these ratios

(Carslaw & Mills, 1993:14). If cash flow information is not used to determine liquidity, the risk involved is that financial distress can go undetected. As for liquidity prediction, what is more liquid than cash?

Financial distress will result if an entity is unable to obtain additional financing and has insufficient cash available to cover interest expenses and service its debt obligations as they become due. The traditional test to indicate liquidity is when current assets exceed current liabilities. As Gallinger (1997) points out, high current and quick ratios should not be the reason for recommending credit. If the long-term liabilities and shareholder's equity exceed non-current assets in the same balance sheet, it can be concluded that long-term liabilities and shareholders equity are financing the net working capital. Interest bearing financing that is expensive, and equity capital that should be available for dividends, is used instead to finance net working capital. An analysis of liquidity from a cash conversion cycle perspective is different from a current and quick ratio perspective. From the above, it is evident that the higher values for the current and quick ratios are usually the result of a greater commitment of resources to less liquid forms of working capital.

According to Bary (1999), cash-earnings will become the key measure of financial performance for many entities. The traditional earnings ratios should be re-evaluated using cash-earnings as a component and not traditional earnings. Cash earnings are a better reflection of an entity's financial health because goodwill amortization that is included in traditional earnings, is a non-cash charge resulting from an accounting convention, such as GAAP, and not of an impairment of an entity's assets.

Auditors provide a means of reporting the likelihood of financial distress to relevant stakeholders. An auditor's use of ratios for cash-related analysis has been limited to current and quick ratios. Auditors only use the cash flow statement to verify balance sheet and income statement transactions (Mills &

Yamamura, 1998) and Zeller and Stanko (1994b:51-52) emphasize that auditors should spend less time with traditional ratios. For example, a traditional ratio analysis performed during an annual audit on the W.T. Grant Company did not reveal the serious liquidity problems that resulted in a bankruptcy filing shortly thereafter. W.T. Grant showed positive current ratios as well as positive earnings, but had a severely negative cash flow that rendered the entity unable to meet current debts and other commitments to creditors.

Largay and Stickney (1980) conducted a study on the reasons for the failure of the W.T. Grant Company. W.T. Grant was the largest retailer in America when it filed for bankruptcy. The authors showed that a traditional ratio analysis of Grant's financial statements would not have picked up financial problems. The share price was high and dividends were paid regularly. However, a careful analysis of the entity's cash flow would have revealed the financial problems as much as a decade before the collapse.

The profitability, turnover and liquidity ratios of W.T. Grant revealed downwards trends for over ten years. The solvency ratios showed increased liabilities and virtually no cash was generated during the ten years before bankruptcy. The entity also lost its ability to derive cash from operations and exhausted all possible liquid resources, relying heavily on outside financing. Cash flow was calculated as net income plus depreciation, which proved to be a very poor substitute for cash flow from operations. Although net income was stable and sales increased, the cash flow from operations was negative eight out of the ten years prior to bankruptcy.

Lee (1982) also showed that the failure of Laker Airways could also have been predicted by evaluating its cash flow. Lee (1982) evaluated the financial statements of Laker Airways to provide a summary of the entity's profitability and cash flow. It showed that it was the cash flow, or its lack thereof that caused the demise of Laker Airways. In 1976, the entity contributed 100% of cash flow from operations. This figure fell to 25% in 1980. Borrowings increased and 47% of

cash outflow was used to repay borrowings in 1976. In 1980, 74% of cash inflow was received from net borrowings that were spent on new aircrafts and not repayment of borrowings. Lee (1982) stressed the fact that no entity can survive if it cannot contribute to the majority of cash inflow needed to pay for capital investments, taxation, dividends and repayment of borrowings.

Hutcheson (2001) and Stancill (1987) agree that revenues do not repay loans and that cash does. Banks look at earnings leverage (cash flow to debt) rather than traditional leverage (debt to net worth). An entity may have a very low traditional leverage but still may not satisfy debt obligations because earnings are not resulting in a positive cash flow. Bankers lend cash to their clients, collect interest in cash and require debt repayments in cash, “nothing less, only cash” (Hull, 1990:198; Greenberg, Johnson & Ramesh, 1986:268).

In reviewing current literature, it was found that when it comes to liquidity analysis, cash flow information is more reliable than balance sheet or income statement information. The balance sheet is static for it measures a point in time; the balance sheet date. The income statement, on the other hand, includes many non-cash items such as pension contributions, depletions, depreciation and amortization. In contrast, the cash flow statement is dynamic as it records the changes in the other statements and focuses on what stakeholders really care about, the cash available for operations and investments (Mills & Yamamura, 1998; Mossman *et al.,* 1998).

Beaver (1966) was the first to recognise the importance of operating cash flow as a predictor of financial distress. As a result, comprehensive research was conducted to identify predictors of financial distress and in a study of failed and non-failed entities, Beaver (1966) concluded that the ability to predict failure was the strongest in the cash flow model. Therefore, operating cash flow had the strongest ability to predict financial distress.

Since the pioneering work of Beaver (1966), researchers have considered the ability of financial ratios and developed models to predict financial distress. Beaver *et al.* (1968) found that equity returns generally anticipated bankruptcy sooner than financial ratios, whereas Altman and Brenner (1981) concluded that bankrupt entities experienced decreasing capital market returns for at least three years prior to bankruptcy. Clark and Weinstern (1983) observed negative market results at least three years prior to bankruptcy.

Deakin (1972) and Blum (1974) also found that operating cash flow was one of the strongest predictors of financial distress. Net income plus depreciation and amortization scaled by total debt was believed to be a naïve measure of operating cash flow (Ward, 1994:547). According to Mossman *et al.* (1998), these studies did not emphasize cash flow data, as does the cash flow statement and were researched before the cash flow statement became compulsory.
Mossman *et al*. (1998) did a study of bankruptcy models based on financial statement ratios, cash flows, stock returns and returns standard deviation models between 1980 and 1990. It was found that the cash flow model, if considered in isolation, discriminates the most consistently two to three years before bankruptcy. Therefore, stakeholders might be particularly interested in cash flow variables as an early warning of potential financial difficulties. For example, Lee (1982) showed that the fall of Laker Airways was foreseeable on a cash flow basis.

Sharma (2001) conducted research on bankruptcy models and concluded that cash flow information contains potentially significant information content over accrual information in discriminating between bankrupt and non-bankrupt entities, particularly in determining the probability of bankruptcy. In addition, within financial analysis, the cash flow analysis is the most critical in the final determination of Standard and Poor's credit rating. Although earnings can be affected by various transactions, cash flow analysis is not affected by unusual

adjustments but provides a level of debt-servicing capabilities that is either stronger or weaker in comparison with earnings analysis (Kuffler & Leung, 1998).

Investors are interested in the dividends they will receive and the market value of their investments. They are therefore more interested in the cash flow than in the earnings of their investment (Heyns *et al*., 1999:122). Cash flow information will supplement traditional ratios by providing more information on relevant cash flows for an accounting period. It also provides information that the investor can incorporate to determine whether an entity can meet debts as they fall due. However, to date there has been no consensus on a comprehensive set of cash flow ratios for evaluating the cash flow statement.

This chapter indicated that many authors agree on the importance of cash flow information to determine liquidity. Cash flow ratios should, therefore, be developed and used in conjunction with traditional balance sheet and income statement ratios. A financial analysis using traditional and cash flow ratios should lead to a better understanding of the financial strengths and weaknesses of an entity. The structured accounting framework also enables comparability of cash flow ratios over time and among entities. This development is significant because reliable cash flow reporting is theoretically one of the best measures of an entity's financial health as debts are paid with cash.

## 3.4 CASH FLOW RATIOS FOR FINANCIAL ANALYSIS

The principle objective of the cash flow statement is to assist users of financial statements to assessing an entity's liquidity, solvency, viability and financial adaptability. A result of the cash flow statement is that potentially useful cash flow ratios can be derived from it. Ratio analysis is a useful and efficient tool for synthesizing large quantities of information from diverse operations (Carslaw & Mills, 1993:14).

Cash flows from investing and financing activities are important components, but cash flow from operations is the figure that represents the primary activities of an entity. Therefore, cash flow from operations should as far as possible be a component of cash flow ratios. In chapter four, a study will be made of cash flow ratios suggested by various authors. Many of these ratios are newly developed ratios from the cash flow statement (Mielke & Giacomino, 1988; Giacomino & Mielke, 1988, 1993; Carslaw & Mills, 1991, 1993; Rujoub *et al., 1995*). Some ratios were recalculated from traditional financial ratios using cash flow from operations derived from the cash flow statement as a component (Stanko & Zeller, 1993; Zeller & Stanco, 1994b). Some ratios have appeared in international financial statements, while others have been proposed as useful in countries where cash flow statements have been prepared for a period of time (Carslaw & Mills, 1993:14).

Cash flow ratios must serve the objectives set out in the cash flow statement, that is, to assess an entity's (Carslaw & Mills, 1991:63):

- Ability to generate future positive net cash flows;
- Ability to meet obligations and pay dividends, and the need for external financing;
- Reasons for differences between net income and net cash flows; and
- Effects on the financial position of both cash and non-cash investing and financing transactions during a period.

Many researchers agree on the importance of cash flow ratios for financial analysis but to date neither text writers nor analysts have developed a comprehensive set of ratios to effectively evaluate the cash flow statement. Such ratios will enhance financial analysis and provide a means to increase the ability to predict future cash flows. A more thorough examination of financial activities will provide significant insight into the ability of an entity to generate future cash flows. Ratios from the cash flow statement relating to profitability, liquidity and asset and debt management can also be formulated and analysed to enhance

traditional analysis. The end result is a more in-depth understanding of the financial health of an entity.

While there is no general consensus on appropriate cash flow ratios, chapter four will discuss ratios developed by authors and used by analysts for evaluating the cash flow statement.

## 3.5 SUMMARY

Gallinger and Poe (1995:684) state that the ability to analyze and understand financial statements is as much an art form as it is an application of several techniques. The technical side of financial analysis is straightforward: it is the calculation of a variety of financial ratios to provide insight into the financial condition of an entity. The artistic dimension of financial analysis is important because the accounting process relies to a great extent upon the application of judgement that introduces subjectivity and values.

In this chapter, an analysis of financial statements was firstly discussed. The objective of financial statement analysis is to assist the users of financial statements in the process of making useful economic decisions. Internal and external analysts use financial statements for different purposes and internal analysts have a larger and more detailed source of information available than external analysts.

The financial analyst also has many tools available for analysing financial statements. Ratio analysis is one of the most widely used tools for evaluating an entity. Ratios can be grouped into different categories to measure for liquidity, solvency, performance, leverage and coverage.

This chapter also discussed the importance of the cash flow statement for financial analysis and liquidity. The main aim of the cash flow statement is to determine the cash generating ability of an entity from primary operations. The

principal objective of the cash flow statement is to assist users to assess an entity's liquidity, solvency and financial adaptability.

Financial analysts use traditional balance sheet and income statement ratios to evaluate financial statements. Currently, there is no general consensus on a comprehensive set of cash flow ratios. The aim for this study is to suggest a set of cash flow ratios and to determine if such ratios have the potential to predict financial failure. The intention is not to overlook traditional ratios, but to complement these ratios. If cash flow ratios are used in conjunction with traditional ratios, they can lead to a better understanding of the financial strengths and weaknesses of an entity.

Chapter three also discussed the importance of the cash flow statement for financial analysis and the need for the development of cash flow ratios. Chapter four will discuss the cash flow ratios suggested by different researchers and certain of these ratios will be used in an evaluation to determine if they have the potential to predict financial failure.

# CHAPTER FOUR

# CASH FLOW RATIOS AVAILABLE FOR FINANCIAL ANALYSIS

## 4.1 INTRODUCTION

Chapter two discussed the development of the cash flow statement. Information on the cash flow of an entity used to be given in a note to the balance sheet, or in a statement of sources and application of funds. With the issuing of AC 118, the cash flow statement became an integral part of financial statements.

Chapter three addressed the analysis of financial statements. Ratio analysis seems to be the most widely used technique for analyzing financial statements. Traditional balance sheet and income statement ratios have been developed to evaluate entities for solvency, liquidity, profitability and financial health. Many authors agree on the importance of cash flow for financial analysis, but to date neither text writers nor analysts have developed a comprehensive set of ratios for evaluating cash flow statements.

As the primary objective of this study is to suggest a set of cash flow ratios for evaluating the cash flow statement, chapter four describes a theoretical investigation of available cash flow ratios derived from the cash flow statement. The aim is to suggest a list of cash flow ratios selected from the available ratios. Cash flow from operations is a component of each ratio as operating activities represent the primary activities of an entity. Furthermore, the ratios were to be tested to determine if they had the potential to predict financial failure.

In chapter four, the importance and usefulness of certain cash flow ratios will be discussed. Cash flow ratios with the ability to measure financial failure will be highlighted. The chapter starts with the earlier cash flow studies and does not discuss later studies if the ratios were already covered in an earlier study.

## 4.2 CASH FLOW RATIOS AVAILABLE FOR EVALUATING THE CASH FLOW STATEMENT

Gombola and Ketz (1983:113) found that differences in earlier and current studies on financial ratios were due to identification of cash flow measures. Cash flow measures represent a separate dimension of the performance of an entity, other than measures of performance. Previous studies (Beaver, 1966; Deakin, 1972; Blum, 1974; Libby, 1975) calculated cash flow as net income plus depreciation and amortization with the result that cash flow ratios were closely associated with traditional profitability ratios. However, when cash flow was measured as cash revenues from operations less cash expenses for operations the cash flow ratios were a totally separate and distinct factor. Any other ratio group, including the profitability ratios, did not capture this separate factor. The result also suggested that cash flow ratios may contain some information not found in profitability ratios. Therefore, cash flow ratios should not be overlooked in predictive or descriptive studies involving financial ratios.

Since its proposal in 1986 in the USA, there has been considerable support for the cash flow statement. Yet to date, there has been no agreement on a complete set of ratios for effectively evaluating the cash flow statement. Such ratios, if used in conjunction with traditional balance sheet and income statement ratios, should lead to a better understanding of the financial strengths and weaknesses of an entity (Carslaw & Mills, 1991:63).

Cash flow ratios have been suggested by different researchers as useful for analyzing the cash flow statement. The cash flow ratios suggested by each researcher will be discussed with regard to why the author found the ratios important for evaluating the cash flow statement. Many authors developed new cash flow ratios whereas other authors used the newly developed ratios in studies. Authors using cash flow from the cash flow statement also recalculated

traditional cash flow ratios. The possibility also exists that different authors developed the same ratios independently.

Not all the available studies on cash flow ratios are discussed in this chapter. Studies by Giacomino and Mielke (1988), Figlewicz and Zeller (1990) and Carslaw and Mills (1991) were some of the first on cash flow ratios after SFAC 95 became compulsory. Many of the ratios introduced by these authors were transformed or duplicated by other authors. Later studies are not discussed where ratios with the same components have already been covered in earlier studies. A table summarizing each suggested ratio and its component are included in the discussion.

## 4.3 CASH FLOW RATIOS SUGGESTED BY BEAVER (1966)

Beaver (1966) was the first researcher to stress the value of cash flow information for predicting financial failure. Cash flow was calculated as net income plus depreciation, depletion and amortization. The purpose of Beaver's study (1966) was to predict financial failure and he used three criteria to select thirty ratios. The first two criteria were based on popularity and performance and the third criteria was used to define the ratio in terms of a cash flow concept. The ratios were divided into six common element groups that included a group for cash flow ratios.

Beaver (1966) found it essential to include a cash flow model when predicting failure, as until then, cash flow ratios had not been tested. Beaver (1966) saw cash flow as a liquid-asset-flow and viewed an entity as a reservoir of liquid assets, supplied by inflows and drained by outflows. The solvency of an entity was defined in terms of the probability that the reservoir will be exhausted and the entity will be unable to pay obligations as they mature (Beaver, 1966:80).

Beaver (1966) identified four concepts of importance in the cash flow model: the size of the reservoir, the flow from operations, the debt and the expenditure of the entity. These factors had to be considered when predicting failure. Beaver (1966) also included four essential cash flow concepts as ratios in a cash flow model: cash flow to sales, assets, total debt and net worth ratios.

The cash flow ratios suggested by Beaver (1966) as predictors of failure are set out in Table 4.1. Cash flow, as one of the components of the ratios, was defined as net income plus depreciation, depletion and amortization.

**TABLE 4.1**

CASH FLOW RATIOS AS PREDICTORS OF FAILURE

| CASH FLOW RATIOS AS PREDICTORS OF FAILURE | | |
|---|---|---|
| NO. | LIST OF RATIOS | DEFINITIONS |
| GROUP 1 -CASH FLOW RATIOS | | |
| 1. | Cash flow to sales | Cash flow:<br>Net income plus depreciation, depletion and amortization |
| 2. | Cash flow to total assets | |
| 3. | Cash flow to total net worth | |
| 4. | Cash flow to total debt | |

Source: Adapted from Beaver (1966)

The cash flow ratios shown in Table 4.1 had previously been suggested in literature but were untested. Beaver (1966) suggests that the ratios be used as predictors of failure.

### 4.3.1 Cash flow to sales and asset ratios

Beaver (1966) implies that the larger the reservoir or the asset-base of an entity, the smaller the probability of failure. Also, the larger the net liquid-asset flow from

operations, that is, the primary source of cash flow, the smaller the likelihood of failure.

### 4.3.2 Cash flow to total debt ratio

The third factor of importance in predicting failure is the debt of an entity. The larger the amount of debt held, the greater the probability of failure.

### 4.3.3 Cash flow to total net worth

The fourth concept is the fund expenditure for operations. Beaver (1966) suggests that the larger the fund expenditures for operations, the greater the probability of failure.

In his study of failed and non-failed entities, Beaver (1966) concluded that the ability to predict failure was the strongest in the cash flow model. Accordingly, operating cash flow had the strongest ability to predict financial distress. When analyzing the results, Beaver (1966) found that the failed entities had lower cash flows than non-failed entities and smaller reservoirs of liquid assets. The failed entities also had less capacity to meet obligations and they also tended to incur more debt than the non-failed entities.

Since the pioneering work of Beaver (1966), many models have been developed as predictors of failure (Altman, 1968; Casey & Bartczak, 1984; Gentry & Newbold, 1985; Gentry *et al*., 1985, 1987; Aziz *et al*., 1989). Some authors developed new ratios or used existing ratios, such as those suggested by Beaver (1966). In a study by Blum (1974) the cash flow to total debt ratio of Beaver (1966) was found to be the best ratio (87 percent accurate) in predicting failure for seventy-nine failed entities.

## 4.4 CASH FLOW RATIOS SUGGESTED BY GIACOMINO AND MIELKE (1988, 1993)

Giacomino and Mielke issued two publications, in 1988 and 1993. In both these publications, the importance of cash flow information and the use of cash flow ratios were stressed. The authors also published a paper in 1987, suggesting improvements to the cash flow statement as a step toward international harmonization. The aim was to achieve identical cash flow statements worldwide.

### 4.4.1 Cash flow ratios to analyse corporate performance

Giacomino and Mielke (1988) also suggested the use of cash flow ratios to evaluate corporate performance. These ratios were developed shortly after the release of SFAS 95 that made the cash flow statement an integral part of financial reporting. With the promulgation of the cash flow statement, a structured format was provided for deriving useful ratios to complement traditional ratio analysis. Giacomino and Mielke (1988), Mielke and Giacomino (1988) and Zeller and Figlewicz (1988, 1990) seem to be among the first authors to suggest lists of cash flow ratios for evaluating the cash flow statement.

According to Giacomino and Mielke (1988), the cash flow statement enhances the ability to evaluate an entity's performance and financial health because it answers questions concerning the quality of earnings, sources of cash from operations, how debt repayments were made and to what extent there has been reliance on external financing.

Giacomilno and Mielke (1988) divided the cash flow ratios into four sets of ratios. These sets can be used to provide insight into management's cash management policies, performance and apparent priorities.

Table 4.2 supplies a summary of the ratios suggested by Giacomino and Mielke (1988) for evaluating corporate performance. The names of the ratios as well as the components, of which the ratios are made up, are included in the table.

**TABLE 4.2**

RATIOS BY GIACOMINO AND MIELKE (1988) FOR CORPORATE PERFORMANCE

| RATIOS BY GIACOMINO AND MIELKE (1988) TO MEASURE CORPORATE PERFORMANCE | | |
|---|---|---|
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| QUALITY OF EARNINGS RATIOS | | |
| 1. | Operating funds index | Net income<br>Funds from operations |
| 2. | Reinvestment | Capital investments<br>Depreciation+sale of assets |
| 3. | Capital investments per dollar of funds | Capital investments<br>Total sources of funds |
| 4. | Funds flow adequacy | Funds from operations<br>Capital investments+inventory additions+dividends+debt uses |
| FINANCIAL MANAGEMENT RATIOS | | |
| 5. | Funds sources component percentages | Individual sources<br>Total sources of funds |
| 6. | External financing index | Funds from operations<br>Total external financing sources |
| 7. | Productivity | Funds from operations<br>Capital investments |
| RATIOS BY GIACOMINO AND MIELKE TO MEASURE CORPORATE PERFORMANCE | | |
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| MANDATORY FUNDS FLOW RATIOS | | |
| 8. | Mandatory funds index | Funds for operations+funds applied to long-term debt<br>Total sources of funds |
| 9. | Long- term debt payment | Funds applied to long-term debt<br>Funds supplied by long-term debt |
| 10. | Percentage funds sources required for long- term debt | Funds applied to long-term debt<br>Total sources of funds |

| | | |
|---|---|---|
| 11. | Short/long term | Current debt sources or long-term debt sources<br>Total debt sources |
| DISCRETIONARY FUNDS FLOW RATIOS | | |
| 12. | Discretionary funds index | Discretionary funds uses<br>Total sources of funds |
| 13. | Discretionary uses | Individual discretionary uses (e.g. dividends)<br>Total discretionary uses |
| 14. | Dividend payout of funds from operations | Dividends<br>Funds from operations |

Source: Adapted from Giacomino and Mielke (1988:56)

The ratios set out in Table 4.2 will assist users of financial statements to evaluate corporate performance. Certain of these ratios were selected to develop a set of ratios for evaluating the cash flow statement. These are discussed below.

#### 4.4.1.1 Quality of earnings

The earnings of an entity are affected by the funds produced by operations. Adequate funds must be produced to support the current level of operations as well as to generate future earnings. An entity's quality of earnings may become more evident to the analyst if the extent to which an entity relies on non-fund items to generate income can be determined.

The operating funds index (ratio 1) will indicate to what extent an entity relies on non-cash items to generate income. It also shows the amount of income realised in cash. The reinvestment ratio (ratio 2) determines capital investment in relation to depreciation and cash from disposal of assets. Reinvestment in assets should at least be equal to depreciation to ensure sufficient replacement of assets.

The capital investment per dollar (rand) of funds ratio (ratio 3) shows the total sources of funds that were applied to capital investments, whereas the funds flow adequacy ratio (ratio 4) indicates what amount of operations provides additions

to assets, inventory, dividend payments and debt retirement. Entities need to maintain at least the current asset base to enhance future earnings.

#### 4.4.1.2 Financial management

Ratios derived from the cash flow statement can indicate an entity's financial policies and the degree to which it relies on outside financing for operations and growth.

Ratios 5 to 7 will indicate whether an entity is reducing debt or increasing equity, whether it is in an investment or disinvestment phase and the productivity of new investments.

#### 4.4.1.3 Mandatory funds flow

The amount of funds available for the payment of dividends and interest and debt repayments has to be determined. Ratios such as the current ratio and debt-to-equity ratio can reveal the liquidity and solvency of an entity. The cash flow statement may give additional information about the ability of an entity to meet obligations as they become due and to pay a return to its investors.

In the long run, an entity should produce sufficient funds from operations to meet its commitments. On an ongoing basis an entity should have sources of funds that exceed its uses. Mandatory funds flow ratios (ratios 8 to 11) should be able to answer questions such as: Are long-term debt repayments made from funds from operations or through refinancing? Is the entity relying on short-term versus long-term debt?

#### 4.4.1.4 Discretionary funds flow

Many users of financial statements are interested in an entity's use of discretionary funds after ongoing operations and debt repayments. Dividends may be paid or subsidiary acquired, current operations may be expanded, or, perhaps, investment may be made in short-term securities for the prospect of future expenditures. Ratios 12 to 14 are ratios to determine the source of funds for payment of debts, dividends or other uses.

The analysis made by Giacomino and Mielke (1988) is not intended to be comprehensive. Giacomino and Mielke (1988:57) suggest that other cash flow ratios be included in an analysis to improve the analyst's ability to evaluate corporate performance.

Giacomino and Mielke (1988) developed ratios where all the sources of cash flows were used, as the intention was to evaluate corporate performance. This study will use ratios where cash flow from operations is a component of each ratio. The aim is to predict failure, which will need ratios to calculate the ability to generate enough cash flow through internally generated funds to cover obligations.

### 4.4.2 Cash flow ratios to evaluate financial health

Giacomino and Mielke (1993) developed a list of cash flow ratios to evaluate financial strength and profitability. These ratios were also used in a study by Juchau and Ross (1994) to evaluate entities in Australia.

Giacomino and Mielke (1993:55-58) proposed a list of nine cash flow ratios to be used for relative performance evaluation. Relative performance evaluation can be viewed in terms of sufficiency and efficiency. Sufficiency ratios evaluate the adequacy of cash flows to meet an entity's needs, whereas efficiency ratios

evaluate how well an entity generates cash flows relative both to other years and other entities. Zeller, Stanko & Cleverley (1996:161) and Zeller and Stanko (1997:6) also suggest cash flow ratios for the hospital sector to measure sufficiency and efficiency.

Operating activities involve an entity's primary activities, namely, the production and delivery of goods and services. They are the primary focus of an entity and the primary variable of interest in the performance evaluation ratios. Therefore, cash flow from operations is a component of each of the ratios as shown in Table 4.3.

Table 4.3 illustrates the sufficiency and efficiency ratios to evaluate relative performance. The components that make up the ratios are also illustrated.

**TABLE 4.3**

CASH FLOW RATIOS BY GIACOMINO AND MIELKE (1993) FOR RELATIVE PERFORMANCE EVALUATION

| CASH FLOW RATIOS BY GIACOMINO AND MIELKE (1993) FOR RELATIVE PERFORMANCE EVALUATION | | |
|---|---|---|
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| SUFFICIENCY RATIOS | | |
| 1. | Cash flow sufficiency | CFFO*<br>Long-term debt + purchases of assets + dividends paid |
| 2. | Long-term debt repayment | Long-term debt payments<br>CFFO* |
| 3. | Dividend pay-out | Dividends<br>CFFO* |
| 4. | Reinvestment | Purchases of assets<br>CFFO* |
| 5. | Debt cover | Total debt<br>CFFO* |
| 6. | Impact depreciation write-offs | Depreciation + amortisation<br>CFFO* |
| EFFICIENCY RATIOS | | |

| | | |
|---|---|---|
| 7. | Cash flow to sales | CFFO*<br>Sales |
| 8. | Operating index | CFFO*<br>Income from continuing operations |
| 9. | Cash flow to assets | CFFO*<br>Total assets |

**Cash flow from operations*

Source: Adapted from Giacomino and Mielke (1993:57)

Certain cash flow ratios for relative performance evaluation as set out in Table 4.4, will be included in a list of cash flow ratios with the potential to predict failure. These ratios by Giacomino and Mielke (1993) were also used by Brown (1996) in a study on free cash flow appraisals. They are as follows:

#### 4.4.2.1 Sufficiency ratios

The cash flow adequacy ratio (ratio 1) measures an entity's ability to generate sufficient cash to pay its long-term debts, reinvest in its operations and pay dividends. A value of 1 over a period of several years will show a satisfactory ability to cover these primary cash requirements out of internally generated funds.

The long-term debt payment (ratio 2) indicates the ability to pay long-term debt out of internally generated funds. The dividend payout (ratio 3) will determine to what extent dividends can be paid out of net cash flow from operations. It will indicate if all dividends (preference and ordinary dividends) can be paid and whether dividends may be increased. Maintaining an asset base or reinvestment in assets indicates financial viability and the ability to compete in a competitive market. The reinvestment ratio (ratio 4) evaluates the ability of an entity to reinvest in assets. Ratios 2, 3 and 4 provide annalists with insight into the individual importance of these three components. When these ratios are

expressed as percentages and added, it will show the percentage of cash from operations available for discretionary uses.

An entity could use cash generated from financing and investing activities to retire debts. Cash from operations represents the main source of long-term funds. The debt coverage ratio (ratio 5) can be viewed as a payback period. It indicates the number of years required, at the current level of cash from operations that it will take to retire all debts. It can also be used to determine future solvency.

The depreciation-amortization impact ratio (ratio 6) shows the percentage of cash from operations resulting from add-backs of depreciation and amortization. If this ratio is compared with the reinvestment ratio, it will provide insight into the sufficiency of an entity's reinvestment and the maintenance of its asset base. Over a period of time, the reinvestment ratio should exceed the depreciation-amortization impact ratio to ensure sufficient replacement of assets at higher current costs. This ratio can also be used as an efficiency evaluation. An entity would be considered more efficient if depreciation and amortization have a relatively low impact on cash from operations.

#### 4.4.2.2 Efficiency ratios

Investors, creditors and other users of cash flows are especially interested in the income statement and earnings measures. The cash flow to sales ratio (ratio 7) shows the percentage of each monetary sale realised as cash from operations in Rand. Over a period of time, this ratio should approximate the entity's return on sales.

The operations index ratio (ratio 8) compares cash from operations with income from continuing operations. When compared to accrual income from continuing operations, the cash flow from operations ratio is also useful. It reflects the extent

to which non-cash transactions are involved in the operating income computation. Over several years, cash flow from continuing operations might be expected to approximate income from continuing operations. The operations index ratio makes this comparison possible.

The cash flow return on assets ratio (ratio 9) is a measure of the return on assets used to compare entities on the basis of cash generation (as opposed to traditional income generation from assets). This ratio may be compared with the reinvestment ratio and the annuity return on assets to provide additional useful information. For example, a low return on the cash flow to asset ratio may be due to an increase in reinvestment in assets.

Sufficiency and efficiency ratios are examples of cash flow information available to users of the financial statement. These ratios will provide additional information if used in conjunction with traditional financial ratios. It is important to remember that, as in all ratio analysis, isolated ratios provide limited information about a single period. Ratios become more useful when computed for a period of years to determine averages and trends, and when compared with industry averages.

The ratios suggested by Giacomino and Mielke (1993) were developed to evaluate the performance of entities in the electronic, food and chemical sectors. The intention was not to predict failure, but to measure cash flow from operations and inflow of funds from sales and assets. The ratios also determine if obligations can be covered by internally generated funds and if the entity has the ability to reinvest in assets and pay dividends. Certain of these ratios can be used to predict failure. Beaver (1966) also found that for an entity to survive, the inflow should be greater than the outflow. Stanko and Zeller (1993) and Zeller and Stanko (1994) also suggested using ratios 3 and 8 to measure financial health.

## 4.5 CASH FLOW RATIOS SUGGESTED BY CARSLAW AND MILLS (1991)

The cash flow statement is required to disclose cash flows in operating, investing and financing activities. Although cash flows from investing and financing activities are important, the most scrutinized figure is likely to be cash flows from operations. Cash flows from operations (similar to income from operations) can include a diverse mix of transactions representing a variety of unusual events. When using ratios to predict future cash flows, the inclusion of abnormal transactions such as those related to unusual events, discontinued operations or extraordinary items could mislead potential investors. Therefore, analysis should include cash provided by normal operating activities only. This is the approach adopted in defining cash flow from operations in the discussion that follows (Carslaw & Mills, 1991:63-70).

The incorporation of cash flow data into the analysis process has been slow in coming and is long overdue. Ratios such as those suggested by Carslaw and Mills (1991) should help to provide further tools for cash flow evaluations and for analysing financial statements.

Table 4.4 provides a summary of the ratios for corporate cash flow evaluation. It includes the components of the ratios.

**TABLE 4.4**

RATIOS BY CARSLAW AND MILLS (1991) FOR CASH FLOW STATEMENT ANALYSIS

| RATIOS BY CARSLAW AND MILLS (1991) FOR CASH FLOW STATEMENT ANALYSIS | | |
|---|---|---|
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| CASH COVERAGE | | |
| 1. | Cash interest coverage | CFFO* before interest and tax<br>Interest |
| 2. | Cash debt coverage | CFFO*- total dividends<br>Debt |
| 3. | Cash dividend coverage | CFFO*- preferred dividends<br>Common stock dividends<br>CFFO*<br>Total dividends |
| QUALITY OF INCOME | | |
| 4. | Quality of sales | Cash from sales<br>Sales |
| 5. | Quality of income | CFFO*<br>Operating income<br>CFFO* before interest and tax<br>Income before interest, taxes and depreciation |
| CAPITAL EXPENDITURES | | |
| 6. | Capital acquisitions | CFFO*- total dividends<br>Cash paid for acquisitions |
| 7. | Investment/finance | Net cash flows for investing<br>Net cash flows from financing<br>Net cash flows for investing<br>Net cash flows from operating and financing |
| CASH FLOW RETURNS | | |
| 8. | Cash flow per share | CFFO*- preferred dividends<br>Weighted common stock |
| 9. | Cash return on assets | CFFO* before interest and tax<br>Total assets |
| 10. | Cash return on debt and equity | CFFO*<br>Stock holders' equity and debt |
| 11. | Cash return on stockholders' equity | CFFO*<br>Stockholders' equity |

**Cash flow from operations*

Source: Adapted from Carslaw and Mills (1991:67-69)

The ratios shown in Table 4.4 will assist financial analysts to evaluate corporate cash flows. Certain of these ratios are used to develop a set of ratios for effective cash flow evaluation.

### 4.5.1 Cash coverage

One objective of the cash flow statement is the assessment of an entity's ability to meet its obligations and pay dividends. Ratios 1, 2 and 3 (illustrated in Table 4.3) will determine the ability of an entity to meet its obligations.

The cash interest coverage ratio (ratio 1) should complement the traditional interest coverage ratio. The cash ratio reports the number of times cash outflows for interest are covered by cash flows from operations. When the ratio can be compared with the industry norm, it should indicate an entity's liquidity and its ability to meet interest commitments. It also helps investors and creditors to determine the extent to which cash flows could fall before the entity risks default on interest payments.

The traditional accrual-based interest coverage ratio uses income before interest and taxes divided by interest expense. Accrual-based income includes many non-cash-flow items, such as write-down of assets or gains on the sale of operating assets, and, therefore, may not clearly show an entity's ability to meet actual interest payments. A better measure would be cash flows from operations before interest and taxes divided by interest payments. The cash flow statement requires the separate disclosure of interest and taxes. This makes the adjustment for these expenses easier. This information may not be entirely correct, as many entities have adopted the practice of showing cash flows for interest net of capitalized interest, which understates the true cash outflows of

interest costs. Additional adjustments should be made to take the correct calculation of interest expense into account.

The cash debt coverage ratio (ratio 2) determines the ability to meet debts. The ability of an entity to continue as a going concern depends on meeting its current interest payments and on the repayment of dept principals. Bankers use two measures to determine an entity's ability to repay its debts, the ratio of retained operating cash flow to total debt and the ratio of retained operating cash flow to current maturities of debt. Retained operating cash flow measures the cash available for reinvestment that was generated by operations. Retained operating cash flow is normally defined as cash flow from operations less all dividend payments. The two ratios indicate the time period required to settle all obligations using retained cash flows from operations to repay the debt. The first ratio takes total debt into consideration and shows the number of years the current cash flows will be needed to meet this obligation. The second ratio indicates whether retained operating cash flow is sufficient to meet current maturities of long-term debt.

An alternative formulation of these two ratios could include existing cash and cash equivalents with retained operating cash flow. The argument here is that these funds are also available to meet payments of debt. Additional modification of these ratios can include adding current liabilities or other fixed commitments such as lease obligations to the debt portion of the ratio.

Varying compositions of debt or liability commitments, or both, can result in a substantial number of ratios that measure the entity's ability to meet future commitments. A consensus should be reached on which definition produces the most relevant ratio.

The cash dividend coverage ratio (ratio 3) gives evidence of the ability to meet current dividends from normal operating cash flow. This ratio can evaluate an

entity's ability to pay all dividends or its ability to pay dividends to ordinary or common shareholders. The ability of an entity to pay all dividends is reflected by cash flow from operations divided by total dividend payments. To compute cash dividend coverage for ordinary shareholders, dividends to preferred shareholders and minority shareholders in subsidiary entities are subtracted from cash flow from operations and the result is divided by cash payments to ordinary shareholders.

Different approaches can be used to define dividend payments. The approach used is a function of whether dividend coverage is based on the ability to meet current dividends or future dividends. If an entity has followed a policy of not regularly increasing dividends, it can use the cash paid for ordinary dividends as reported in the cash flow statement. Alternatively, if dividends are increasing constantly, the total dividends declared in a current year should be employed as a more up-to-date measure of prospective cash dividend requirements.

### 4.5.2 Quality of income

One of the advantages of a cash flow statement is that it will assist users in determining reasons for differences between net income and associated cash receipts and payments. The reasons for these differences provide a basis for evaluating the quality of income. It is perceived that the measurement of cash flow is more reliable and objective than the measurement of income. Measuring income involves more judgement about accruals, allocations and valuations. Net income is the primary operating cash flow, meaning the delivery of goods and services. Changes in current assets and liabilities are also classified as operating income (Brigham, 1995:65). Therefore, the ability to generate income should also be included in the analysis. Ratios that could be used to evaluate the quality of income are cash quality of sales and of income, as illustrated in Table 4.4.

Cash flow information may be disclosed either according to the direct or indirect method, although the direct method is suggested. The direct method displays the individual cash flow impact of normal operating revenue and expense items. An advantage of the direct method is that it permits an evaluation of cash flows relating to specific line items in the income statement such as gross sales, cost of sales or even total operating expenses. An example of such a ratio would be the cash quality of sales ratio (ratio 4). These measures will be available if cash flows are reported using the direct approach. According to Carslaw and Mills (1991:67), not many entities use the direct approach. As a result, investors and creditors must make their judgement about the quality of income based on the indirect method.

The quality of income is a simple approach for evaluating income by comparing cash flows from operations with operating income. The quality of income ratio (ratio 5) is intended to provide an indication of the variance between cash flows and reported earnings. Reported earnings, in many cases, include income, such as instalment sales, or expenses, such as depreciation, which do not have a current cash impact. Non-cash transactions such as these can result in substantial differences between cash flows and earnings that are highlighted by abnormal deviations in the ratio over time.

Carslaw and Mills (1991:68) suggest an alternative measure of the quality of income ratio: cash flow from operations before interest and taxes divided by income before interest, taxes and depreciation. This ratio eliminates major non-cash items in the income statement (depreciation and deferred taxes) and should result in a closer approximation of cash to income from normal operations. Any major variances from a one-to-one ratio should automatically result in investigation of the abnormality.

### 4.5.3 Capital expenditures

An entity's competitive advantage depends on its ability to maintain its capital assets. The cash-generating ability of an entity must be capable of meeting its obligations as well as financing its capital expenditures.

The cash flow statement requires the separate disclosure of cash expenditures for assets and cash inflows from asset disposals. Information on total capital expenditures is also available in notes to the financial statement. From such disclosures ratios can be developed that indicate whether an entity has the ability to finance its capital expenditures from internal sources. These ratios are shown in Table 4.3.

The capital acquisitions ratio (ratio 6) shows an entity's ability to meet its capital expenditure needs. This ratio is computed as retained operating cash flows divided by acquisitions. In this ratio, the retained cash flow after dividend payments is used as the measure of cash available for capital expenditures. Even though dividends do not have to be paid, there is the expectation; if they have been paid previously that may continue. That is the reason for deducting dividends from cash flows from operations.

A practical problem in the calculation of capital expenditure ratios is to define capital expenditures. Capital expenditures could be limited to the replacement of assets for normal operations or could include acquisitions of additional operations or entities. Ultimately, all replacement and expansion expenditures must be financed by cash flows from earnings.

Another problem to consider is what to do with capital disposals. This item could be added to retained cash flows or offset against capital expenditures. An argument can reasonably be made that the disposal of capital assets is an attempt to maintain a satisfactory return. Proceeds are then invested in capital

assets to achieve that return. These funds therefore should be included with cash flows from operations.

Major acquisitions that will not have an immediate impact on cash outflows are commonly financed. As a result, cash flows for capital expenditures may vary substantially from year to year. Future cash outflows for these acquisitions will be reflected as repayments of debt that are classified as financing activities. The full cash flow impact of the acquisition decision may never appear as part of investing activities. While a comparison of current cash outflows for capital acquisitions to cash generated by operations may give a short-term view of the adequacy of cash flows, it may be more useful to compare operating cash flows with average gross capital expenditures over a period of years.

The interrelationships between net operating, investing and financing cash flows can indicate how investments are being financed. The investment to finance ratio (ratio 7) compares the total funds needed for investing purposes with funds generated from financing. Alternatively, cash flows for investment activities can be compared with cash flows from both financing and operating activities. Normally such ratios tend to fluctuate so much that meaningful results are obtained only by averaging figures over a period of years.

### 4.5.4 Cash flow returns

Cash flow ratios can be developed that reflect returns on assets. The cash-generating efficiency of an entity is closely related to profitability and potential returns paid to investors. Historical cash flows may therefore provide evidence of an entity's ability to generate future cash flows. Cash flow returns on investment can be computed in much the same way as accrual-based profitability measures. The cash flow returns ratios (ratios 8 to 11) are the counterparts of similar accrual-based profitability ratios. Carslaw and Mills (1991) warned that these ratios should be used with caution. The cash flow ratios contain no provision for

replacement of assets or for future commitments. This is in contrast to the profitability measures that contain provisions for depreciation and charges for such items as future pension liabilities. Ratios such as cash flow per share should not be used as indicators of potential cash distribution but should be used in conjunction with other profitability measures. The FASB prohibits reporting cash flow per share information in the financial statements. At the same time, it should be noted that cash flow per share is the cash flow ratio most frequently used by financial analysts.

Cash flow per share ratio (ratio 8), if interpreted with caution, can provide certain information because it indicates the operating cash flow attributable to each common share. Investors can determine the cash payout ratio by comparing the cash dividend coverage ratio (ratio 3) with cash flow per share. This allows comparison of the total cash available per share compared with cash distributed in dividends.

The cash returns on investment may be a more useful ratio than the cash flow per share ratio. This can be computed either as a return on total assets (ratio 9), a return on debt and equity (ratio 10), or a return on stockholders' equity (ratio 11).

The cash return on total assets ratio is equivalent to the return on total investment. Traditionally, analysts considered the return on investment ratio to be the key profitability ratio. The cash-generating ability of the assets should also be a key indicator in the evaluation of investments. Strong cash returns help generate future investments.

The cash return on invested capital computed either from the point of view of the total permanent investment made by both debt holders and shareholders, or from the point of view of only stockholders indicates the ability of an entity to generate returns to the investor. The return to shareholders should be computed after

deducting interest and other prior claims. The cash return to all permanent investors should normally be computed prior to the distributions paid to them, which implies use of a pre-interest and pre-tax basis.
These cash return measures should be taken over a period and compared with industry norms. This will provide guidance on the ability of an entity to generate superior future cash flows from invested funds.

Cash flow from investing and financing activities were included in some of the ratios, illustrated in Table 4.4, by Carslaw and Mills (1991). The ratios using cash flow from operations measure the ability to generate cash from sales and assets and the demand on the inflow to cover obligations.

In a later study by Carslaw and Mills (1993) on cash flows, they suggested eight cash flow ratios. These ratios were covered in their earlier study and were also suggested by Giacomino and Mielke (1993) and some of them by Beaver (1966). The ratios measure the ability to generate cash from sales and assets, to cover debt, interest and dividends and to reinvest out of internally generated funds. Ratios 1, 2, 3 and 5 (Carslaw & Mills, 1991) were also suggested to measure financial health by Zeller and Stanko (1994b). The interest and dividend coverage ratios and cash flow to debt ratios can be used as a liquidity measure.

## 4.6 CASH FLOW RATIOS SUGGESTED BY FIGLEWICZ AND ZELLER (1991)

The purpose of the article by Figlewicz and Zeller (1991) was to identify and explore meaningful ratios derived from the cash flow statement. The dynamics of cash flows are important for any type of financial analysis. According to Nordgren (Figlewicz & Zeller, 1991:65);

> Financial obligations are paid with cash and not profits. Profitable activities do not necessarily provide needed cash, and cash-generating activities are not necessarily profitable. A profitable business may suddenly go bankrupt because of a shortage of cash to pay debts when due, and a solvent company may remain unprofitable for several years.

The cash flow statement is rich with information and possesses great potential as an analytical tool. Figlewicz and Zeller (1991:68) suggest the use of cash flow ratios to focus on performance, liquidity and coverage, capital investing activities and capital financing activities. Investing and financing activities generally support the operating cash flows of entities. An investing and reinvesting pattern in assets is typical of successful entities, as is the financing and re-financing of debt and equity (Figlewicz & Zeller, 1991:65-66).

Table 4.5 summarises the operating cash flow ratios suggested by Figlewicz and Zeller (1991). Ratios using investing and financing activities were also suggested as they support operating activities. The aim of this study was to concentrate on operating cash flows, as these are the primary activities of an entity. Ratios using cash flow from investing and financing activities are included as investments as operating assets are required to produce future cash flows and provide information on asset management and potential returns to investors (Figlewicz & Zeller, 1991:72).

**TABLE 4.5**

CASH FLOW RATIOS BY FIGLEWICZ AND ZELLER (1991) TO MEASURE PERFORMANCE, LIQUIDITY AND COVERAGE

| CASH FLOW RATIOS BY FIGLEWICZ AND ZELLER (1991) TO MEASURE THE PERFORMANCE, LIQUIDITY AND COVERAGE | | |
|---|---|---|
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| PERFORMANCE RATIOS | | |
| 1. | Operating cash return on sales | CFFO*<br>Net sales |

| | | |
|---|---|---|
| 2. | Operating cash return on assets | CFFO*<br>Average total assets |
| 3. | Operating cash return on equity | CFFO*<br>Stockholders' equity |
| LIQUIDITY AND COVERAGE RATIOS | | |
| 4. | Cash flow liquidity | CFFO*<br>Current liabilities |
| 5. | Critical needs coverage | CFFO* + interest paid<br>Interest paid + current portion of debt + dividends paid |
| 6. | Interest coverage | CFFO* - current portion of debt + interest paid<br>Interest paid |
| 7. | Dividend coverage | CFFO* - current portion of debt<br>Dividends paid |
| CASH FLOW RATIOS BY FIGLEWICZ AND ZELLER (1991) TO MEASURE THE PERFORMANCE, LIQUIDITY AND COVERAGE | | |
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| INVESTING AND FINANCING RATIOS | | |
| 8. | Operating investing activity | Net property, plant and equipment investments<br>Average total assets |
| 9. | Non-operating investing activity | Net non-operating investments<br>Average total assets |
| 10. | Debt activity | Net debt activity<br>Total liabilities and equity |
| 11. | Equity activity | Net equity activity<br>Total liabilities and equity |

** Net cash flow from operations (operating cash flow – taxes and interest paid)*

Source: Adapted from Figlewicz and Zeller (1991)

Figlewicz and Zeller (1991) suggested cash flow ratios derived from the cash flow statement. Table 4.5 shows these ratios using the operating activities as a component of each ratio. Figlewicz and Zeller (1991) also suggest that the cash flow ratios be compared with the traditional accrual ratios such as the return on sales, current, quick, interest coverage and dividend coverage ratios.

### 4.6.1 Performance ratios

The concept of cash based performance ratios is not new. Prior to the cash flow statement, cash flows from operations were used but calculated as net income plus depreciation. Creditors assign a value to an entity based on performance. With the inclusion of the cash flow statement in financial statements a consistent performance measure of cash flows from operations is available to analysts and serves as a new measure to evaluate performance (Figlewicz & Zeller, 1991:68).

Cash flow performance ratios derived from the operating activity section of the cash flow statement provide measures of performance. Using these performance ratios, the analyst can specifically monitor the production of cash flows from operating activities scaled to sales, assets and equity, free of the potential accrual accounting distortions in traditional profitability ratios.

The operating cash return on sales ratio (ratio 1) may be a leading indicator of rapidly changing business conditions that have impacted on sales and the collection of cash process. The operating cash return on assets ratio (ratio 2) represents the utilization of assets to create cash flows from operating activities. The cash flow from operating activities generated from the entity's asset base is directly measured by the operating cash return on assets ratio.

The operating cash return on equity ratio (ratio 3) represents the equity measure of an entity's performance. This ratio may provide a signal to existing and prospective investors about the future actual return on equity.

### 4.6.2 Liquidity and coverage ratios

Liquidity and coverage measures are of prime interest to creditors and investors. Creditors are concerned about an entity's ability to meet debt and interest obligations while investors are concerned about potential dividend payments.

The cash flow liquidity ratio (ratio 4) indicates the entity's short-term liquidity. The existence of operating cash flows in excess of critical current needs is indicated by values more than one. An entity may have difficulty meeting current obligations as trade receivables and inventory increases. This situation will not be reflected by the current and quick ratios. However, it will be reflected by the cash flow liquidity ratio. A value of less than one may indicate that cash flows from investing and/or financing activities may be required to meet critical current needs (Figlewicz & Zeller, 1991:70).

Other cash flow ratios measure the coverage of specific short-term obligations above normal operating cash requirements. Creditors and investors are interested in the coverage of interest and dividends along with the current portion of debt. Ratios 5, 6 and 7 are offered as measures of coverage. A ratio less than one, in each case, indicates that cash used to provide returns to creditors and investors is not totally provided by operations (Figlewicz & Zeller, 1991:70-71).

The critical needs coverage ratio (ratio 5) represents net cash flow from operations available to satisfy cash demands for current debt and equity obligations beyond those required by normal operating activities. The critical needs coverage ratio specifically identifies the entity's ability to meet the cash demands for interest, the current portion of debt, and dividends from current operating cash flows (Figlewicz & Zeller, 1991:71).

The interest coverage ratio (ratio 6) specifically represents net cash flows from operating activities less the cash needs for the current portion of debt available to satisfy creditors' expected cash returns. It clearly identifies the entity's ability to pay for the use of debt through cash generated by operations. A decreasing trend could indicate progressive deterioration of future ability to meet interest payments (Figlewicz & Zeller, 1991:72).

Finally, the dividend coverage ratio (ratio 7) specifically addresses shareholders' needs. The dividend coverage ratio represents net cash flows from operations available after satisfying the cash needs for interest and the current portion of debt available to provide shareholders with cash returns. Shareholders and potential shareholders can identify the entity's ability to continue to provide returns from operations relative to the current period's return after debt obligations are satisfied. An increasing trend in this ratio could indicate the entity's ability to provide greater returns, while a decreasing trend could indicate a tenuous ability to continue current levels of returns from cash generated by operations (Figlewicz & Zeller, 1991:72).

### 4.6.3 Investing and financing ratios

Traditional accrual ratios such as return on assets and assets turnover are expected to provide information concerning asset management and potential future returns to investors. Such information may not provide enough insight into the reinvestment in operating assets or maintaining an asset base and may require assessing future cash flow generation. Cash flow based investing activities may be a source for predicting future cash flows.

Operating investing activity ratio (ratio 8) and non-operating investing activity ratio (ratio 9) provide measures of the investing activities of an entity. They provide information about the support base for future cash flows from operations. The failure of management to replace fixed assets as consumed may reduce the potential for long-term cash flows owing to an inadequate basis for operating assets.

Investors and creditors may question the extent to which debt and equity are used to finance operations. This information is needed when evaluating the risk of a loan or the potential rate of return on an investment. The debt activity ratio (ratio 10) and the equity activity ratio (ratio 11) are cash flow based measures of

financing activities (Figlewicz & Zeller, 1991:73). They indicate the nature of and the changes in the financial structure.

Figlewicz and Zeller (1991) agree that a single measure of performance based on accrual accounting profitability should no longer be acceptable. They suggest that for cash flow ratios to be used effectively, the ratios must be integrated with traditional balance sheet and income statement ratios. They also suggest developing other ratios (Figlewicz & Zeller, 1991:79). The performance, liquidity and coverage ratios were also suggested by Beaver (1966), Carslaw and Mills (1991, 1993) and Giacomino and Mielke (1993). It seems that these ratios can serve as a starting point to determine the ability to generate cash from operations, pay all obligations and reinvest in assets. This should also provide an indication of the need for external financing. Other articles by Zeller and Figlewicz, published in 1988 and 1990, suggest the use of cash flow ratios to complement traditional ratios.

## 4.7 CASH FLOW RATIOS SUGGESTED BY ZELLER AND STANKO

Zeller and Stanko (1993, 1994a, b, 1996, 1997) developed cash flow ratios for the retail, hospital, banking, transportation and manufacturing sector. Prior to this the cash flow statement was designed to bridge the information gap between traditional accrual accounting and an understanding of the cash flow activities of an entity. A gap existed because accrual accounting failed to provide relevant information to assess the amount, timing and uncertainty of future cash flows. The primary categories of cash flow activities had not been specified under the predecessor statement of changes in financial position, and the term cash had not been defined (Figlewicz & Zeller, 1991:64-65; Zeller & Stanko, 1994b:51).

Zeller and Stanko (1994b) suggested a list of seven operating cash flow ratios to measure the ability of an entity to generate cash flow and cover obligations. The first four were new cash flow ratios that had been discussed in recent

professional business literature. The other ratios were traditional financial ratios that were re-calculated using cash flow from operations derived from the cash flow statement, as a component. Beaver (1966), Carslaw and Mills (1991), Figlewicz and Zeller (1991), Giacomino and Mielke (1993) and Ketz, Rajib and Jensen (1990) also suggested certain of these ratios. The list of cash flow ratios is summarised in Table 4.6.

**TABLE 4.6**

CASH FLOW RATIOS BY ZELLER AND STANKO (1994b) TO MEASURE THE ABILITY TO GENERATE CASH FLOW

| CASH FLOW RATIOS BY ZELLER AND STANKO (1994b) TO MEASURE THE ABILITY TO GENERATE CASH FLOW | | |
|---|---|---|
| NO. | LIST OF CASH FLOW RATIOS | COMPONENTS |
| NEW CASH FLOW RATIOS | | |
| 1. | Cash flow to current debt | CFFO*<br>Average current debt |
| 2. | Cash flow to interest coverage | CFFO* + interest and taxes paid<br>Interest paid |
| 3. | Cash flow to total debt | CFFO* - dividends paid<br>Total debt |
| 4. | Cash flow to operating income | CFFO*<br>Operating income |
| RE-CALCULATED TRADITIONAL RATIOS | | |
| 5. | Cash flow to sales | CFFO*<br>Sales |
| 6. | Cash flow to total assets | CFFO*<br>Total assets |
| 7. | Cash flow to total debt | CFFO*<br>Total debt |

**Cash flow from operations*

Source: Adapted from Zeller and Stanco (1994b)

The ratios in Table 4.5 may be used to measure the ability of an entity to generate cash flow. Ratios 5 to 7 are traditional operating cash flow ratios that were re-calculated using cash flow from the cash flow statement. Some of these ratios were also suggested by Gombola and Ketz (1983), Foster (1986) and Ketz *et al*. (1990).

Accrual accounting does not measure cash flow as in the cash flow statement. Previously, the lack of cash flow information caused problems for investors, analysts and other users in assessing an entity's liquidity, financial flexibility and operating capability. With the inclusion of the cash flow statement in financial reporting, a structured format exists to derive new ratios to support and enhance traditional ratio analysis (Zeller & Figlewicz, 1990:49-50). These new ratios are now discussed in detail.

### 4.7.1 New operating cash flow ratios

The first new ratio, cash flow to current debt (ratio 1) is a useful liquidity measure as the current and quick ratios do not accurately reflect an entity's ability to meet obligations. This ratio was also suggested by Figlewicz and Zeller (1991) as a liquidity and coverage ratio. It represents the excess of cash flow from operations after working capital needs have been paid (Zeller & Stanko, 1994b:52).

The cash flow to interest coverage ratio (ratio 2) indicates the operating cash flow coverage of interest paid to creditors. The conventional times-interest-earned ratio may not accurately reflect interest coverage because of the non-cash adjustment in the income statement. This ratio indicates an entity's ability to generate cash flow from operations in relation to its interest payment obligations. This ratio was also suggested by Carslaw and Mills (1991) and Figlewicz and Zeller (1991) to evaluate financial strength and profitability.

The cash flow to total debt ratio (ratio 3), also suggested by Carslaw and Mills (1991) as of importance, represents the percentage of current operating cash flow available to satisfy all debt obligations beyond the coverage of interest, taxes and dividends. A decreasing trend in this ratio may indicate a potential problem with debt repayment out of operating cash flow as well as a possible need for additional financing to satisfy interest charges, taxes and dividends (Zeller & Stanko, 1994b:52).

The cash flow to operating income ratio (ratio 4) indicates the percentage of cash flow from operations represented in operating income. Should this ratio deviate consistently and significantly from 1, it may indicate that operating income is not measuring an entity's true performance over time. A consistent figure less than 1 may indicate that expanding receivables or an understatement of payables generates sales. An understanding of this ratio is a key component in evaluating an entity's true economic performance. According to Carslaw and Mills (1991) and Giacomino and Mielke (1993), this ratio should be included in a set of cash flow ratios for effectively evaluating the cash flow statement as it measures the difference between cash flow and reported income, and non-cash transactions included in income (Zeller & Stanko, 1994b:52).

### 4.7.2 Re-calculated traditional ratios

Three traditional ratios have been recalculated using cash flow from operations obtained from the cash flow statement. Prior to SFAS 95, cash flow from operations had to be calculated using accrual accounting. The primary categories of cash flow activities had not been specified and the term cash not been defined. This failed to make comparability over time and across entities possible (Zeller & Stanko, 1994b:51).

Zeller and Stanko (1994b) concluded that the cash flow to sales, total assets and total debt ratios (ratios 5, 6 and 7) provide a more complete picture of an entity's

ability to generate sufficient operating cash flow to service its debt obligations and asset requirements.

When comparing these ratios with the ratios of the authors previously discussed in chapter four, it is evident that they agree on the importance of operating cash flow ratios to measure the cash generating ability of an entity, the ability to meet obligations and to reinvest in productive assets. Furthermore, the reinvestment ratio is important, as an entity has to at least maintain its current asset base to enhance its ability to generate future earnings.

## 4.8 CASH FLOW RATIOS SUGGESTED BY RUJOUB, COOK AND HAY (1995)

Rujoub *et al.* (1995) also suggest the use of cash flow ratios to predict business failure. They view cash flow as the lifeblood of an entity and the essence of its very existence. The authors selected eight financial ratios derived from the cash flow statement that were found to be of significance. Operating, investing and financing activities are components of these selected ratios as listed in Table 4.7.

**TABLE 4.7**

CASH FLOW RATIOS BY RUJOUB, COOK AND HAY (1995) TO PREDICT BUSINESS FAILURE

| CASH FLOW RATIOS BY RUJOUB, COOK AND HAY (1995) TO PREDICT BUSINESS FAILURE | | |
|---|---|---|
| NO. | LIST OF SUGGESTED CASH FLOW RATIOS | COMPONENTS |
| 1. | External financing index | CFFO*<br>Total external financing (debt) |
| 2. | Cash sources component percentages | Cash from financing activities<br>Total sources of cash |
| 3. | Financing policies ratio | Cash from financing activities<br>Total assets |

| | | |
|---|---|---|
| 4. | Operating cash index | CFFO*<br>Net income |
| 5. | Operating cash inflow | CFFO*<br>Total sources of cash |
| 6. | Operating cash outflow | Cash used in operations<br>Total sources of cash |
| 7. | Long-term debt payment ratio | Cash applied to long-term debt<br>Cash supplied by long-term debt |
| 8. | Productivity of assets | CFFO*<br>Total assets |

**Cash flow from operations*

Source: Adapted from Rujoub *et al.* (1995)

Certain of the ratios shown in Table 4.7 were either new ratios or ratios used in other studies and suggested as important by researchers such as Giacomino and Mielke (1988, 1993), Mielke and Giacomino (1988) and Carslaw and Mills (1991).

The external financing index ratio (ratio 1) shows an entity's ability to provide sufficient cash from its operations to meet its external obligations when they mature. A high ratio means a stronger liquidity and greater probability of success. This ratio views the liquidity from an external conservative point of view (Rujoub *et al.*, 1995:77).

The cash from financing activities to total cash sources is measured by the cash sources component percentages ratio (ratio 2). This ratio indicates how much the entity relies on debt and investment by owners rather than cash generated from operating or investing activities. A low ratio indicates a good financial position and greater probability of success.

The financing policy ratio (ratio 3) shows the percentage of assets that were funded by creditors and owners during a period. Users of financial statements may use the ratio to evaluate an entity's financing policies. A high ratio may indicate that the entity is not using its assets effectively and that it may face an

additional cash burden in the future as the interest and loan repayments become due.

The operating cash index ratio (ratio 4) assists current or potential investors and creditors to evaluate the quality of an entity's earnings. It compares accrual net income and the related cash from operations. A high ratio indicates better quality of earnings. The ratio also indicates an entity's ability to produce cash internally from ongoing operations.

The operating cash inflow ratio (ratio 5) indicates what proportion of cash inflows is generated internally from operating activities. A high ratio generally indicates a strong financial position. In such a case the entity will be less dependent on external sources of funds and should be able to withstand adverse changes in economic conditions (Rujoub *et al.*, 1995:77). According to Brown (1996), traditional income statements do not always report the impact or the ability to survive during economic downturns.

The proportion of total cash generated from all sources used in operations is indicated by the operating cash outflow ratio (ratio 6), which evaluates an entity's ability to control and contain costs. A low ratio indicates higher profitability and a greater probability of financial success (Rujoub *et al.*, 1995:78).

The long-term debt payment ratio (ratio 7) compares an entity's cash disbursements to pay long-term liabilities with cash receipts from long-term liabilities. A high ratio indicates the ability to settle long-term liabilities as they become due. Creditors will use the ratio to evaluate the probability of settling future debts.

The productivity of assets ratio (ratio 8) shows the percentage of cash generated from operating activities on each one Rand of asset invested and measures the productivity of assets. It also assists analysts in assessing an entity's financial

flexibility and management's ability to generate cash and control costs. Financial flexibility may be viewed in terms of an entity's ability to produce enough cash internally to respond to unforeseen circumstances and to utilise profitable opportunities. An evaluation of an entity's ability to survive an unexpected decline in revenues should include a review of its past cash flows from operations. In general, the higher the ratio, the greater the efficiency of the use of assets and the better the entity's financial position (Rujoub *et al.*, 1995:78).

The primary objective of the study by Rujoub *et al.* (1995) was to assess the usefulness of cash flow disclosures as required by SFAS 95 in the prediction of bankruptcy. Furthermore, the study determined whether cash flow data provides a superior prediction of failure over previous models employing conventional accrual accounting data (Rujoub *et al.*, 1995:75). The authors included cash flow from all activities in their list of cash flow ratios. The operating cash index and productivity of assets ratios were also suggested by Giacomino and Mielke (1988, 1993), Carslaw and Mills (1991, 1993) and Figlewicz and Zeller (1991). The quality of income and the ability to generate cash from operating assets are important to enhance ability for future earnings.

## 4.9 CASH FLOW RATIOS SUGGESTED BY MILLS AND YAMAMURA (1998)

When it comes to liquidity analysis, cash flow information is more reliable than balance sheet or income statement information. Balance sheet data is static as it measures a single point in time and the income statement contains many non-cash allocations. In contrast, the cash flow statement records the changes in the other statements and focuses on what shareholders really care about; cash available for operations and investments (Mills & Yamamura, 1998:53).

The value of cash flow ratios was evident in the collapse of W.T. Grant (Largay & Stickney, 1980). Traditional ratio analysis did not reveal the severe liquidity

problems that resulted in a bankruptcy filing. W.T. Grant showed positive current ratios as well as positive earnings while it had severe negative cash flows that rendered it unable to meet current debt and other commitments to creditors (Mills & Yamamura, 1998:54).

According to Mills and Yamamura (1998), the major credit-rating agencies use cash flow ratios prominently in their rating decisions. The cash flow ratios they find most useful are ratios to test for solvency and liquidity and ratios that indicate the viability of an entity as a going concern. The ratios that use the cash flow from operations as a component are listed in Table 4.8.

**TABLE 4.8**

CASH FLOW RATIOS BY MILLS AND YAMAMURA (1998) TO MEASURE SOLVENCY, LIQUIDITY AND VIABILITY AS A GOING CONCERN

| CASH FLOW RATIOS BY MILLS AND YAMAMURA (1998) TO MEASURE SOLVENCY, LIQUIDITY AND VIABILITY AS A GOING CONCERN | | |
|---|---|---|
| NO. | LIST OF SUGGESTED CASH FLOW RATIOS | COMPONENTS |
| SOLVENCY AND LIQUIDITY RATIOS | | |
| 1. | Operating cash flow ratio | CFFO*<br>Current liabilities |
| 2. | Funds flow coverage ratio | Earnings before interest and tax + depreciation and amortisation<br>Interest + debt repayments + preferred dividends |
| 3. | Cash interest coverage | CFFO* + interest and taxes<br>Interest paid |
| 4. | Cash current debt coverage ratio | CFFO* - cash dividends<br>Current debt |
| RATIOS TO MEASURE FINANCIAL HEALTH | | |
| 5. | Capital expenditure ratio | CFFO*<br>Capital expenditure |
| 6. | Cash flow to total debt ratio | CFFO*<br>Total debt |
| NET FREE CASH FLOW RATIOS | | |

| | | |
|---|---|---|
| 7. | Total free cash flow ratio | Sum of net income + interest, depreciation, amortization, lease, rental - dividends declared and capital expenditure<br>Sum of interest, lease, rental and current portion of long-term debt and lease obligations |
| 8. | Cash flow adequacy ratio | Earnings before interest, tax, depreciation and amortisation - tax, interest and capital expenditure<br>Average of debt maturities over next five years |

**Cash flow from operations*

Source: Adapted from Mills and Yamamura (1998)

Mills and Yamamura (1998) highlight the importance of the cash flow statement. They use cash flow ratios to measure an entity's solvency, liquidity and ability to meet future cash commitments.

### 4.9.1 Solvency and liquidity ratios

The operating cash flow ratio (ratio 1) measures an entity's ability to generate enough resources to meet current liabilities. Operating cash flow includes cash paid out for interest and taxes, which is not the case with traditional earnings before interest and taxes ratios. The funds flow coverage ratio (ratio 2), which excludes interest and taxes from the numerator, highlights an entity's cash generating ability to meet interest and taxes.

The cash interest coverage ratio (ratio 3) indicates an entity's ability to make interest payments on its entire debt load. A highly leveraged entity will have a ratio with a low value and an entity with a strong balance sheet will have a high value. An entity with a ratio of less than one runs an immediate risk of potential interest default. The entity will have to raise cash externally to make current interest payments (Mills & Yamamura, 1998:54).

The cash current debt coverage ratio (ratio 4) is a direct correlation of the earnings current debt coverage ratio. The cash flow ratio reveals more because it addresses management's dividend distribution policy and its subsequent affect on cash available to meet current debt commitments (Mills & Yamamura, 1998:54).

The above ratios indicate the entity's ability to carry debt comfortably. A high value for the ratios will indicate a high comfort level for the entity. As long as an entity is not insolvent, the appropriate levels for the ratios will vary by industry characteristics (Zeller & Stanko, 1994b:52).

### 4.9.2 Ratios to measure financial health

Analysts need to measure an entity's ability to meet ongoing financial and operational commitments and its ability to finance growth. Other important issues will also need to be analysed such as the repayment or re-finance of long-term debt, the payment of dividends and the ability to raise new capital (Mills & Yamamura, 1998:54).

A financially strong entity should be able to finance growth. The capital expenditure ratio (ratio 5) measures the capital available for internal re-investment and payment on existing debt. A ratio of more than one indicates that an entity has enough funds available to meet its capital investment with cash to spare to meet debt requirements (Mills & Yamamura, 1998:54).

The cash flow to total debt ratio (ratio 6) is of direct concern to credit-rating agencies and loan decision officers. This ratio indicates the length of time it will take to repay debt, assuming all cash flow from operations is devoted to debt repayment. A low ratio means that an entity has less financial flexibility and is more likely to face problems in the future (Mills & Yamamura, 1998:55).

### 4.9.3 Net free cash flow ratios

Bond holders and leveraged buyout specialists use free cash flow ratios to clarify the risk associated with their investments. Free cash flow ratios help to assess an entity's financial viability to survive a cyclical downturn or price war, or a major capital expenditure. Ratios, as set out in Table 4.8 were suggested to test for solvency and liquidity, and to indicate the viability of an entity as a going concern.

The total free cash flow ratio (ratio 7) offers the advantage of incorporating the effects of off-balance-sheet financing by taking into account operating leases and rental payments. The cash flow adequacy ratio (ratio 8) helps to smooth out some of the cyclical factors that pose problems with the capital expenditure ratio. Entities with a high ratio mean a high credit quality and less reliance on outside capital sources.

Net free cash flow can vary by entity as well as by industry. Therefore, the formulas should be considered as recommended rather than absolute. The Mills and Yamamura (1998) also suggest that auditors should employ cash flow ratios to assess corporate liquidity and viability. This will enable them to identify financial trouble in time to take corrective action.

The previously discussed authors (Giacomino & Mielke, 1988,1993; Carslaw & Mills, 1991; Figlewicz & Zeller, 1991: Zeller & Stanko, 1994b; Rujoub *et al*., 1995) also suggest the solvency and liquidity ratios to measure financial health. In addition, Mills and Yamamura (1998) included net free cash flow ratios for this purpose. To determine the risk associated with their investments, bondholders primarily use the free cash flow ratios.

## 4.10 CASH FLOW RATIOS SUGGESTED BY OTHER RESEACHERS

Gallinger (1997) and Lancaster and Stevens (1999) suggest the use of a cash conversion cycle instead of the current and quick ratios. The cash conversion cycle approach is dynamic in that it looks at cash flows occurring over time and measures the number of days an entity's operating cycle requires financing to support it. This means the number of days an entity goes from cash outlay back to cash receipts rather than the ability to cover short-term liabilities with liquid assets. The operating cycle is the number of day's sales invested in inventories and receivables.

Standard and Poor's (Kuffler & Leung, 1998) in analysing an entity's financial performance, review a multitude of financial ratios with the emphasis on cash flow, since debt obligations are serviced with cash. Funds from operations interest and debt service coverage, funds from operations to net debt and funds from operations to total debt are the key cash flow ratios utilized by them.

The objective of a study by Brown (1996) was to discuss the concept of free cash flows. He agrees that this provided investors and lenders with a more reliable indication of the risks involved over a three to five year period. Brown's study addresses the issue of cash flow adequacy and supports the ratios developed by Giacomino and Mielke (1993). Carslaw and Mills (1993) also suggested a free cash coverage approach. Hackel, Livnat & Rai (1994) feel that investors overreact to negative earnings or to negative earning prospects. They should instead look at the free cash flows of entities.

## 4.11 SUMMARY

In this chapter eight publications on cash flow ratios were discussed with reference to other relevant publications. Many authors agree on the importance of cash flow ratios although it is evident that a few cash flow ratios are favoured

as important by most of the authors. Such ratios were not included in the discussion on the investigation of cash flow ratios in this chapter, if they had been covered by other studies. The transformation of ratios was also not discussed if it was covered by an earlier study. If a list of cash flow ratios had similar nominators and denominators as ratios discussed by earlier studies, the ratios were not discussed again.

Beaver (1966) suggested the earliest cash flow ratios in 1966. In his study Beaver (1966) found that the ability to predict failure was the strongest in the cash flow to total debt ratio (Beaver 1966:85). The cash flow from operations was calculated as net income plus depreciation, depletion and amortisation.

Giacomino and Mielke (1988) suggested the use of the cash flow statement to analyse corporate performance. Four sets of ratios were listed to provide insight into management's cash management policies, performance and apparent priorities. Certain of these ratios were also listed as important cash flow ratios by other authors for example Zeller and Stanko (1994b) and Rujoub *et al.* (1995).

In a later study by Giacomino and Mielke (1993) cash flow based ratios were suggested in evaluating an entity's financial strength and profitability. One of the important uses of cash flow ratios is relative performance evaluation. Sufficiency ratios were introduced to evaluate the adequacy of cash flows for meeting an entity's needs, and efficiency ratios were introduced to evaluate how well an entity generates cash flows relative to other years and other entities. Giacomino and Mielke (1993) also suggested developing benchmarks for each cash flow ratio in a specific industry to make the ratios more meaningful and to enable an industry to compare its performance with that of similar entities.

Carslaw and Mills (1991) provided ratios to be used by users of financial statements to analyse and evaluate corporate cash flows. They suggested the use of the cash flow ratios in conjunction with traditional balance sheet and

income statement ratios to provide a better understanding of the financial strengths and weaknesses of an entity. The ratios suggested were to measure solvency and liquidity, the quality of income, capital expenditure and cash flow returns. They expressed the need for common cash flow ratios to provide further tools for analysing financial statements. Certain of these ratios were also suggested in a later study by Carslaw and Mills (1993). They suggested the use of cash flow ratios as a more appropriate measure of liquidity than adjusted profit and loss account data. The latter include various provisions and deferrals that do not have any immediate impact on cash flow. Certain of the suggested ratios currently being used by analysts appeared in annual company reports or have been proposed as useful in countries where cash flow statements have been prepared for some time.

According to Figlewicz and Zeller (1991), the statement of cash flows placed a renewed emphasis on the importance of cash flows. They listed performance, liquidity, coverage and capital ratios for an analysis of the cash flow statement. The cash flow statement provides the financial community with a consistent performance measure of cash flows from operations.

Zeller and Stanko (1994b) suggested operating cash flow ratios to measure an entity's ability to generate cash flow and to meet current obligations as they become due. Other researchers have already listed some of the ratios suggested by Zeller and Stanko (1994b). Some ratios were traditional ratios re-calculated using the cash flow from operations derived from the cash flow statement.

Rujoub *et al*. (1995) viewed cash flow as the lifeblood of an entity and the essence of its very existence. The ratios listed by them were to be used to predict bankruptcy. They used cash flow ratios suggested by other authors and developed new ratios in their study.

Mills and Yamamura (1998) suggested cash flow ratios as a better indicator of liquidity than balance sheet and income statement information. The cash flow statement is dynamic as it records the changes in the other statements. The ratios suggested by them can be used to measure solvency, liquidity and financial health. Other ratios to measure financial viability as a going concern are net free cash flow ratios. To measure the risk involved in their investments, bondholders also use the net free cash flow ratios.

The ratios that were found to be of importance measure the ability to generate cash from sales and assets, to pay debts, interest and dividends, and to reinvest in assets. Cash flow is also compared with income to determine the quality of income. An entity has to continue to generate certain levels of income, as income realizes in cash and is reinvested in assets to enhance future earnings.

In chapter five, a list of cash flow ratios with the ability to predict financial failure will be suggested. This list of ratios will be selected from the cash flow ratios discussed in this chapter. In chapter six, the list will be used to evaluate South African failed and non-failed entities and to determine if the ratios can serve as an early predictor of financial distress.

# CHAPTER FIVE

# DEVELOPING A SET OF CASH FLOW RATIO FOR FINANCIAL ANALYSIS

## 5.1 INTRODUCTION

In chapter four, an investigation was made of cash flow ratios that were suggested as important for financial analysis by various authors. Some of these ratios were newly developed ratios, recalculated from traditional ratios. Others were used in reported financial statements or in countries where the cash flow statement has been in use for some time.

Ever since its proposal the users of financial statements have supported the cash flow statement. Many authors (Largay & Stickney, 1980; Lee, 1982; Zeller & Stanko, 1994a, b; Mossman *et al.,* 1998; Bary, 1999) agree on the importance of cash flow for financial analysis but to date neither text writers nor analysts have developed a comprehensive set of ratios for the effective evaluation of the cash flow statement.

Traditional balance sheet and income statement ratios have been used for financial analysis for many years. Empirical research has shown that an entity can have a positive current and quick ratio, yet have severe cash flow problems and in fact, be insolvent. The risk involved if cash flow information is not used, as in the case of Laker Airlines, is that financial distress can go undetected (Lee, 1982; Largay & Stickney, 1980). In 1987, the FASB required that entities generate a cash flow statement based in part on the belief that cash flow information should help creditors predict future financial distress of an entity (Ward, 1993:134).

Chapter five presents a list of cash flow ratios derived from the ratios suggested by various authors and discussed in chapter four. Eight of the cash flow ratios

that were found to be significant by various authors were selected due to popularity. Failed and non-failed entities were evaluated in chapter six by means of these ratios to determine whether the ratios had the potential to predict financial failure. Such ratios used in conjunction with traditional balance sheet and income statement ratios should lead to a better indication of the financial strengths and weaknesses of an entity.

## 5.2 RATIOS FOR FINANCIAL ANALYSIS

An investigation of cash flow ratios (reported on in chapter four) revealed that various authors have suggested that cash flow ratios can be used to evaluate solvency, liquidity, financial health, profitability, relative performance and leverage (Zeller & Stanko, 1990; Carslaw & Mills, 1991; Giacomino & Mielke, 1993; Juchau & Ross, 1994; Koen, Oberholster & Van der Laan 1994; Mills & Yamamura, 1998).

FRS 1 (ASB, 1996:par 1) states that the principal objective of the cash flow statement is to assist users of financial statements in their assessment of the reporting entity's liquidity, viability and financial adaptability. Galinger (2000:40) suggests that when analyzing an entity, an understanding of profitability (return on sales), asset management (sales to assets), cash flows, liquidity and financial distress is essential. Signs of potential financial distress are generally evident in a ratio analysis long before the entity actually fails. Analysts use ratio analysis to predict the probability of financial failure (Brigham & Ehrhardt, 2002:942).

A cash flow analysis can be used to address an entity's cash flow dynamics. It should throw light on questions such as (Palepu *et al.,* 2000:9.24):

- Is the strength of internal cash flow generation positive or negative? Is it negative because the entity is growing, or operations are unprofitable, or is the entity having difficulty managing its working capital properly?

- Were short-term financial obligations such as interest payment met with operating cash flows?
- Was the amount of cash invested in growth financed by internal cash flows, or did it rely on external financing?
- Were dividends paid from internal free cash flow, or did these relies on external financing?
- Is the type of external financing on which an entity rely short- or long-term debt?
- Does the entity have excess cash flow after making capital investments?

Cash flow ratios can be used to answer such questions. To reiterate, a cash flow analysis focuses on an entity's liquidity, solvency and financial flexibility, since debt obligations are met with cash.

There must be consensus on a set of useful ratios. According to Gombola and Ketz (1983:105), being faced with a bewildering array of potentially useful financial ratios forces the users of financial statements to rely on some system for reducing the ratios to a manageable number. On the other hand, as in all ratio analysis, isolated ratios provide limited information about an entity. Ratios become more useful when computed for a period of years to determine averages and trends and when compared with industry averages.

When selecting a set of cash flow ratios, it has to serve the objectives of the cash flow statement. The available cash flow ratios should as far as possible be selected to measure the ability to generate future cash flows, meet obligations, determine the need for outside financing, and the reasons for differences between income and cash flow (Carslaw & Mills, 1991:63).

## 5.3 COMPARING CASH FLOW AND TRADITIONAL RATIOS

Traditional accrual ratios are used for financial analysis. Tables 5.1 to 5.4 categorize these traditional ratios and show the available cash flow ratios (as investigated in chapter four), which can be utilized, and result in comparable evaluations as the traditional ratios. The authors who suggested the cash flow ratios are listed in the tables. Such cash flow ratios, if used in conjunction with traditional ratios, should give a better understanding of the financial strengths and weaknesses of an entity as they include the internal cash flows of an entity.

### 5.3.1 Liquidity ratios

Cash flow information is more reliable than balance sheet and income statement information when it comes to liquidity measurement (Mills & Yamamura, 1998:53). For liquidity prediction, what is more liquid than cash? According to Clark (1996), a strong cash flow is the lifeblood of an entity.

A shortage of cash to meet obligations will not be reflected by current and quick ratios, but will be reflected by cash flow liquidity ratios. This was evident in a traditional ratio analysis performed on W.T. Grant Company. The entity showed positive current ratios but had a severely negative cash flow and liquidity problems that resulted in a bankruptcy filing (Largay & Stickney, 1980). One of the objectives of the cash flow statement is to determine the ability of an entity to meet obligations. Table 5.1 lists the traditional ratios used for liquidity evaluations. Cash flow ratios are given that were suggested by authors as measurements of liquidity.

**TABLE 5.1**

RATIOS FOR FINANCIAL ANALYSIS – LIQUIDITY RATIOS

| RATIOS FOR FINANCIAL ANALYSIS – LIQUIDITY RATIOS | | |
|---|---|---|
| NO | TRADITIONAL RATIOS | CASH FLOW RATIOS |
| 1. | Current ratio<br>Current assets<br>Current liabilities | Cash to debt<br>CFFO*<br>Total debt |
| 2. | Quick ratio<br>Current assets – inventory<br>Current liabilities | Critical needs<br>CFFO* + interest paid<br>Interest + current debt + dividends |

**Cash flow from operations*

Source: Adapted from Gombola and Ketz (1983), Foster (1986), Gilbert *et al.* (1990), Figlewicz and Zeller (1991), Carslaw and Mills (1993), Giacomino and Mielke (1993), Koen *et al.* (1994), Zeller and Stanko (1994b), Mills and Yamamura (1998) and Lovemore and Brummer, (2003)

Table 5.1 summarizes traditional ratios used for liquidity evaluation and cash flow ratios suggested for measures of liquidity. Figlewicz and Zeller (1991) suggested the use of a critical needs coverage ratio. It measures available cash flow from operations to satisfy the cash demands for current debt and equity obligations beyond those required by normal operating activities.

The use of cash flow data in liquidity ratios is more appropriate than adjusted income data. The income statement includes various provisions such as special write offs and deferrals that do not have an impact on immediate cash flows. Certain analysts for example, Mills and Yamamura (1998) are now examining free cash flow in their analysis of the cash flow data.

### 5.3.2 Asset management ratios

The asset management ratios are also known as the activity or turnover ratios. Cash flow ratios will measure the productivity of cash flow from operating activities. The cash generating ability of an entity is not only to meet obligations but to finance capital expenses out of internally generated sources. To determine the ability to generate future positive cash flow, normal operating activities should be used. Table 5.2 lists the traditional ratios and the cash flow ratios that can be used for similar evaluations from an operating cash flow position.

**TABLE 5.2**

RATIOS FOR FINANCIAL ANALYSIS – ASSET MANAGEMENT RATIOS

| RATIOS FOR FINANCIAL ANALYSIS – ASSET MANAGEMENT RATIOS | | |
|---|---|---|
| NO | TRADITIONAL RATIOS | CASH FLOW RATIOS |
| 1. | Fixed asset turnover<br>Turnover<br>Net fixed assets | Cash to asset<br>CFFO*<br>Total assets |
| 2. | Total asset turnover<br>Turnover<br>Total assets | Reinvestment<br>CFFO*<br>Capital invested |

**Cash flow from operations*

Source: Adapted from Gombola and Ketz (1983), Foster (1986), Gilbert *et al.* (1990), Figlewicz and Zeller (1991), Carslaw and Mills (1993), Giacomino and Mielke (1993), Koen *et al.* (1994), Zeller and Stanko (1994b), Mills and Yamamura (1998) and Lovemore and Brummer, (2003)

Table 5.2 summarizes traditional asset management ratios included in financial analysis and the cash flow ratios suggested for similar evaluations. An entity's competitive advantage depends not only on meeting its obligations but also on financing capital expenditure. Ratios can be developed to indicate whether an entity has the ability to finance its capital investments from internal sources. An

entity should at least maintain its current asset base to ensure the production of future earnings.

### 5.3.3 Debt management ratios

Debt management or leverage ratios are listed in Table 5.3. An objective of the cash flow statement is to meet obligations, pay dividends and to determine the need for external financing. The ability of an entity to continue as a going concern depends on meeting its principal debt payments. These ratios can also be used to measure solvency.

**TABLE 5.3**

RATIOS FOR FINANCIAL ANALYSIS – DEBT MANAGEMENT RATIOS

| RATIOS FOR FINANCIAL ANALYSIS – DEBT MANAGEMENT RATIOS | | |
|---|---|---|
| NO | TRADITIONAL RATIOS | CASH FLOW RATIOS |
| 1. | Debt<br>Total debt<br>Total assets | Cash to debt<br>CFFO*<br>Total debt |
| 2. | Interest cover<br>Earnings before interest and tax<br>Interest | Cash interest coverage<br>CFFO*<br>Interest paid |
| 3. | Fixed charge coverage<br>Earnings before interest, leases<br>Interest, leases, debt repayment and preference dividends | Cash fixed charges coverage<br>CFFO*<br>Total dividends<br>CFFO*<br>Interest, debt and dividend charges |

**Cash flow from operations*

Source: Adapted from Gombola and Ketz (1983), Foster (1986), Gilbert *et al.* (1990), Figlewicz and Zeller (1991), Carslaw and Mills (1993), Giacomino and Mielke (1993), Koen *et al.* (1994), Zeller and Stanko (1994b), Mills and Yamamura (1998) and Lovemore and Brummer, (2003)

Table 5.3 summarizes traditional ratios used for an evaluation of leverage, or debt management and cash flow ratios suggested for similar evaluations. Various authors selected these cash flow ratios as important to include in a financial analysis.

### 5.3.4 Profitability ratios

The cash generating efficiency of an entity is closely related to profitability and potential returns paid to investors. Table 5.4 lists the traditional ratios and cash flow ratios. Certain of the cash flow ratios suggested to be used are traditional ratios replacing net income with cash flow from operations. Entities can have positive earnings but negative cash flows. In this regard, Lee (1982) showed that Laker Airways was in financial trouble three years prior to failure. Their profits were increasing as failure approached.

**TABLE 5.4**

RATIOS FOR FINANCIAL ANALYSIS – PROFITABILITY RATIOS

| RATIOS FOR FINANCIAL ANALYSIS – PROFITABILITY RATIOS | | |
|---|---|---|
| NO | TRADITIONAL RATIOS | CASH FLOW RATIOS |
| | PROFITABILITY RATIOS | PRODUCTIVITY RATIOS |
| 1. | Return on sales<br>Net income**<br>Turnover | Cash to sales<br>CFFO*<br>Sales |
| 2. | Return on assets<br>Net income**<br>Total assets | Cash to asset<br>CFFO*<br>Total assets |
| 3. | Return on equity<br>Net income**<br>Equity | Cash to equity<br>CFFO*<br>Equity |
| 4. | Return on capital employed<br>Earnings<br>Equity and long-term debt | Cash to equity employed<br>CFFO*<br>Equity and long-term debt |

| | | |
|---|---|---|
| 5. | Return on equity<br>Profit after preference shares<br>Equity | Cash to income<br>CFFO*<br>Operating income |

**Cash flow from operations*

***Net income to ordinary shareholders*

Source: Adapted from Beaver (1966), Gombola and Ketz (1983), Foster (1986), Gilbert *et al.* (1990), Figlewicz and Zeller (1991), Carslaw and Mills (1991, 19933), Giacomino and Mielke (1993), Koen *et al.* (1994), Zeller and Stanko (1994b), Mills and Yamamura (1998), Rujoub *et al*. (1995) and Lovemore and Brummer, (2003)

Table 5.4 summarizes the traditional ratios use to measure profitability and the cash flow ratios suggested for similar evaluations. One of the objectives of the cash flow statement is to determine the reasons for the difference between net income and cash flow from operating activities. These reasons will provide a basis for evaluating the quality of income. The quality of income measures the ability of an entity to continue generating current levels of income and investment in assets. This will enhance the production of future earnings.

Traditionally analysts were forced to use an accounting rate of return (the income statement) as their measure of an entity's performance. These rates of return are known to be theoretically deficient measures of profitability as it was calculated from the income statement (Salamon, 1982:292). Cash flow is perceived to be more reliable, as the income statement includes figures based on judgments such as accruals, valuations and allocations. Adequate funds (as in the cash flow statement) must be produced to support the current level of operations as well as the ability to generate future earnings.

The income statement includes many non-cash items such as pension contributions, depletions, depreciation and amortization. In contrast, the cash flow statement records the changes in the balance sheet and focuses on what

stakeholders really care about, which is the cash available for operations and investments.

## 5.4 SELECTING CASH FLOW RATIOS

Ratio models are derived directly from the traditional financial statements, while cash flow models are based on the fundamental finance principle that the value of an entity equals the net present value of its expected future cash flows. Bankruptcy will result if an entity has insufficient cash available to service debt outflows as they become due, and the value of the entity is insufficient to obtain additional financing. If current cash flows accurately predict future financial status, then past and present cash flows should be good indicators of both the value of the entity and the probability of bankruptcy (Mossman *et al.* (1998:36).

Beaver (1966:71), Bernstein (1989:521) and Foster (1986:60) agree that an entity's cash position should be included in a financial ratio analysis. Cash and marketable securities form an important reservoir for an entity and can be used to meet operating expenditure and other cash obligations when and as they fall due.

No single ratio or small group of ratios converging on one aspect of an entity, such as liquidity, is likely to be very useful. The dynamics of economic activities are not captured when using only a few selected ratios. When performing a financial analysis the analyst should have a manageable list of ratios. The aim of this study was to determine the usefulness of the cash flow ratios to predict financial failure.

Eight cash flow ratios derived from the cash flow ratios investigated in chapter four, were selected. These ratios were selected to measure the ability to generate cash from sales and assets, cover all obligations and indicate the difference between cash flow and net income. The ratios also indicated reliance

on outside financing to cover debts. Table 5.5 lists the selected cash flow ratios. These ratios also serve the objectives of the cash flow statement.

**TABLE 5.5**

CASH FLOW RATIOS SELECTED FOR FINANCIAL ANALYSIS

| CASH FLOW RATIOS SELECTED FOR FINANCIAL ANALYSIS | | |
|---|---|---|
| NO | LIST OF CASH FLOW RATIOS | SELECTED BY AUTHORS |
| PERFORMANCE RATIOS | | |
| 1. | Cash flow to sales<br>CFFO*<br>Sales | Beaver (1966), G&M (1988, 93), C&M (1991), F&Z, Z&S (1994b), GH&K, KO&L, Foster (1987) |
| 2. | Cash flow to assets<br>CFFO*<br>Total assets | Beaver (1966), G&M (1993), C&M (1991,93), F&Z, Z&S (1994b, 1997), RC&J, GH&K, GM&S (1990), KO&L, Foster (1987) |
| 3. | Cash flow to income<br>CFFO*<br>Operating Income | G&M (1988, 1993), C&M (1991, 93), Z&S (1994, 1997), KO&L |
| CASH FLOW RATIOS SELECTED FOR FINANCIAL ANALYSIS | | |
| NO | LIST OF CASH FLOW RATIOS | SELECTED BY AUTHORS |
| LIQUIDITY AND DEBT MANAGEMENT RATIOS | | |
| 4. | Cash flow to total debt<br>CFFO*<br>Total debt | Beaver (1966), G&M (1993), C&M (1991, 93), F&Z, Z&S (1994, 97), M&Y, KO&L |
| 5. | Critical needs coverage<br>CFFO* + interest paid<br>Interest + current debt + dividends | G&M (1988), F&Z, Z&S (1994, 1997), M&Y, GH&K, GM&S |
| 6. | Cash interest coverage<br>CFFO* - current debt +interest<br>Interest paid | C&M (1991, 93), F&Z, Z&S (1994), RC&J, M&Y, Foster (1987) |
| 7. | Dividend coverage<br>CFFO* (after interest, tax, current debt and capital expenditure)<br>Total dividends | G&M (1988, 1993), C&M (1991, 93), F&Z, KO&L |
| ASSET MANAGEMENT RATIOS | | |

| | | |
|---|---|---|
| 8. | Reinvestment<br>CFFO*- dividends, current debt<br>Capital expenditure | <br>G&M (1988, 1993), C&M (1991, 93)<br>M&Y, KO&L |

*Cash flow from operations

Source: Adapted from Beaver (1966), Gombola and Ketz (1983), Foster (1986), Gilbert *et al.* (1990), Figlewicz and Zeller (1991), Carslaw and Mills (1993), Giacomino and Mielke (1993), Koen *et al.* (1994), Zeller and Stanko (1994b), Mills and Yamamura (1998), Rujoub *et al*. (1995) and Lovemore and Brummer (2003)

The eight cash flow ratios set out in Table 5.5 were suggested to be of importance, by various authors, and to be included in a financial analysis. Foster (1987), Gombola *et al.* (1987), Gilbert *et al.* (1990) and Koen *et al.* (1994) were not included in the eight publications that were discussed in chapter four. The abbreviations used for the authors who suggested the ratios in Table 5.5 are listed in Table 5.6.

**TABLE 5.6**

LIST OF ABBREVIATIONS FOR AUTHORS

| LIST OF ABBREVIATIONS FOR AUTHORS | |
|---|---|
| ABBREVIATION | AUTHORS |
| C&M | Carslaw and Mills (1991, 1993) |
| F&Z | Figlewicz and Zeller (1991) |
| G&M | Giacomino and Mielke (1988, 1993) |
| GM&S | Gilbert, Memon & Schwartz (1990) |
| GH&K | Gombola, Haskins and Ketz (1987) |
| KO&L | Koen, Oberholster & Van der Laan (1994) |
| M&Y | Mills and Yamamura (1998) |
| RC&H | Rujoub, Cook and Hay (1995) |
| Z&S | Zeller and Stanko (1994b, 1997) |

Table 5.6 lists the abbreviations used for the authors who suggeste the eight selected cash flow ratios shown in Table 5.5. These cash flow ratios may be used as an early warning of potential financial difficulties. To be used effectively, cash flow ratios must be integrated with both traditional financial ratios and other ratios in financial statement analysis. The list of cash flow ratios will be used in chapter six to determine if it has the potential to predict financial failure.

Cash flow from operations is a component of each of the cash flow ratios. The principal focus of financial analysis is the amounts of funds generated from operating activities. The assessment of an entity's cash generating ability from operations should not be influenced by financing activities. The cash generating process for operations requires one type of managerial decision and reflects on operating risk. Cash generating abilities from other activities require another type of managerial decision and reflect financial risks. An analysis of operating funds flows should also provide insight into the ability of an entity and its management to generate these cash flows in the future (Stephens & Govindarajan, 1990:243).

When selecting the cash flow ratios, the aim was to include the ratios suggested by most of the authors. These ratios can measure the ability to generate cash and pay debts and dividends. They also indicate the difference between net income and cash flow from operations and the reliance on outside financing. This, according to AC 118, is also the objective of the cash flow statement.

### 5.4.1 Cash flow to sales ratio

The cash flow to sales ratio measures the sales that are realized in cash. This will be an indicator of the ability to generate cash flow. The delivery of goods and services are the primary activities of an entity and therefore the primary cash generating activity of an entity. The earnings potential of an entity is a key determinant of credit protection measures for Standard and Poor's. Strong and stable earnings enhance an entity's ability to generate internal equity capital,

attract external capital and withstand business adversity. A cash flow analysis provides a better level of debt-servicing capability in comparison with an earnings analysis (Kuffler & Leung, 1998:58-59).

According to O'Glove (1987) and Figlewicz and Zeller (1991) it is common practice to shift inventory to a customer by offering relaxed credit requirements and attractive discounts. Such an economic event will not be reflected by the traditional return on sales ratio. By comparing the return on sales ratio with the cash flow to sales ratio (ratio 1) the analyst can identify the extent to which an entity relies on non-cash items to generate sales. Slow cash collections, for example, will be picked up by the cash flow to sales ratio whereas the return on sales ratio will stay stable. The cash flow ratio can be a leading indicator of rapidly changing business conditions that will impact on sales and cash collections.

There is always a link between the inflow and outflow of an activity. If any part of the activity fails it may cause the whole entity to fail. An entity should generate sufficient cash to cover at least its immediate obligations.

### 5.4.2 Cash flow to assets ratio

The traditional return on asset and asset turnover ratios are expected to provide information about asset management and potential future returns to investors. However, the asset turnover ratio only provides information about whether the entity is generating appropriate turnover to support the investment in assets and not whether the investment in assets is sufficient to support future cash flow generation. The return on asset ratio is simply a profitability measure that provides little information about the future cash flow of an entity (Zeller & Figlewicz, 1990:52).

The cash flow to asset ratio (ratio 2) gives a measure of the cash generating ability of an entity's asset base and the utilization of assets to create cash flows. This is a truer indicator of performance as cash flow from operations is calculated before inflow of interest and dividends. The aim is to use productive assets. Adjustments need to be made if significant investments are included in total assets.

In contrast to profitability ratios, the cash flow ratios contain no provision for depreciation or future pension liabilities. Carslaw and Mills (1991:69) suggest that these ratios be used with other profitability ratios. The cash generating ability of assets is important in the evaluation of investments in assets, as strong cash returns help generate future investments.

### 5.4.3 Cash flow to income ratio

One of the objectives of the cash flow statement is to determine the difference between net income and net cash flow from operations. In a study by Zeller and Stanko (1994b:57) to determine the ability of retailers to generate operating cash flows, this ratio was found to measure an insignificant financial characteristic of an entity. Giacomino and Mielke (1988:56) found that funds produced by operations affect the quality of earnings both from the viewpoint of producing adequate funds to support the current level of operations as well as the ability to generate future earnings.

Earnings can include non-cash items such as installment sales, depreciations, valuations and amortizations. A better measure for the cash flow to income ratio (ratio 3) is cash flow before interest and taxes and income before interest, taxes and depreciation.

Cash flow to income ratio is a performance ratio. This ratio indicates the amount of income that is realized in cash. It also determines the quality of earnings. The significance of this ratio is that it indicates the ability of an entity to generate cash

from operations. It also measures whether an entity can continue to generate current levels of income and to invest in assets to enhance future earnings. As Ciesielski (1999) reasons:

> What good are an entity's earnings if they don't produce cash for reinvestment or for rewarding shareholders? Many investors have informed the press "Cash is king, after all".

### 5.4.4 Cash flow to total debt ratio

Beaver (1966) found this ratio to be the most significant in predicting bankruptcy. Bankruptcy will result if an entity has insufficient cash available to pay obligations as they become due and if the value of the entity is insufficient to obtain additional financing. The current and quick ratios are traditionally used to measure liquidity. It is assumed that current assets will be liquidated to meet current liabilities. The traditional ratios will not indicate difficulty to pay current liabilities, as receivables or inventories increase. Laitinen (1994:196) pointed out that the cash flow to total debt ratio has proved to be a very powerful predictor of failure.

The cash flow to debt ratio (ratio 4) may be used as a liquidity indicator. It measures the percentage of current operating cash flow available to satisfy long and short-term debt obligations beyond the coverage of interest, taxes and dividends. A decreasing trend may signal a potential problem with maintaining operations and debt repayment out of internally generated funds and the need for additional financing to satisfy interests charges, taxes and dividends.

The cash flow to debt ratio also indicates the number of years it will take to retire all debt out of internally generated cash flow. It is of direct concern to credit agencies and loan officers. The interrelationships between net operating, investing and financing cash flows can indicate how investments are being financed or obligations met. Financing and investment activities can be used to

cover debts. This study used the ability of operating activities to cover obligations, as it is the single source of long-term cash flows.

### 5.4.5 Critical needs coverage ratio

Within financial analysis, the cash flow analysis is the most critical in the final determination of Standard and Poor's credit rating. This importance is highlighted by interest or principal obligations serviced by cash payments rather than by earnings (Kuffler & Leung, 1998:58)

Traditional activity and coverage ratios fail to capture a specific measure of an entity's liquidity and long-term solvency. Specific cash flow indicators of liquidity and solvency are designed to measure an entity's ability to meet obligations beyond operating needs, such as interest and debt.

The critical needs ratio (ratio 5) shows if cash flow is available to cover interest, current liabilities and dividends. This is a short-term liquidity measure and excludes long-term debt. If an entity is able to cover immediate obligations it may survive in the long-term.

### 5.4.6 Cash interest coverage ratio

The cash interest coverage ratio (ratio 6) clearly identifies an entity's ability to pay for the use of debt through cash generated by operations. A decreasing trend is an indicator of progressive deterioration of future ability to meet interest payment.

Zeller and Stanko (1994b:57) doubt whether the cash interest coverage ratio is of any use to retailers, as interest is not normally paid to creditors. During hard times an entity may rely on outside financing to cover debts. This will increase the interest liability on an entity. If an entity can cover increasing interest

payments it may survive, as the debts payments were taken care of through financing.

When an entity has to rely on external financing to cover obligations the interest coverage ratio will decline, since the interest obligation becomes more as external financing increases. After current liabilities are paid the interest coverage ratio measures whether cash remains to cover interest obligations.

### 5.4.7 Cash dividend coverage ratio

Shareholders want to determine how well their dividends are covered and if the potential exists for increased dividend payments. The cash coverage ratio (ratio 7) measures the cash available for dividends after interest, current debt payments and capital expenditure. This should indicate whether an entity could afford to maintain or increase its dividends.

An entity experiencing financial difficulties will tend not to pay dividends. If no dividends are paid for a few years, it could indicate financial difficulties. During such a period shareholders may be willing to forfeit dividends for survival of the entity.

### 5.4.8 Reinvestment ratio

An entity's competitive advantage depends on its ability to maintain its capital assets. If reinvesting does not occur, the basis for future cash flows could be questioned. The reinvestment ratio (ratio 8) is an indication of an entity's ability to finance its capital expenditure from internal sources and whether it is reinvesting in assets faster that writing off depreciation. Over several years maintenance or reinvestment in assets should exceed depreciation and amortization. An entity would be considered more efficient if depreciation and amortization have a relatively low impact on cash from operations.

The failure of an entity to replace its assets as consumed may reduce the potential for long-term cash flows due to an inadequate base for operating assets. Cash flow measures capture the reinvesting patterns through investment inflows or outflows relative to increasing or decreasing total assets. With regard to generating future operating cash flows, the return on assets and asset turnover may appear acceptable. Nevertheless, it is possible that the asset base for generating future cash flows may be eroding. Both the operating and non-operating investments support the asset base upon which future operating cash flows depend (Figlewicz & Zeller, 1991:73).

The cash to income ratio (ratio 3) measures the quality of income. Quality of income indicates whether the entity can continue to generate current income levels and invest in assets that will help to determine the quality of future earnings. If this ratio is drawn through to the reinvestment ratio it will show the ability to generate future earnings from assets. If there is a decline in the cash to income ratio as well as in the reinvestment ratio, it indicates that the entity is not maintaining, or has not generated earnings to maintain its asset base. Therefore, it could not utilize its assets to enhance future earnings and generate cash flows.

Operating cash flow ratios should not be ignored and reliance placed solely on accrual accounting to determine an entity's true performance. For instance, if the income to total assets ratio is increasing and the cash flow to total assets is decreasing over time, an entity's operating cash flows may not be providing the necessary resources for capital expenditure (Zeller & Stanko, 1994b:57).

If the current cash flows of an entity accurately predict future financial status, then past and present cash flows should be a good indicator of both an entity's value and the probability of financial failure. By comparing traditional accrual measures and cash flow ratios, the analyst can estimate an entity's ability to fund capital expenditure and service current and long-term debt.

## 5.5 THE IMPORTANCE OF CASH FLOW INFORMATION TO PREDICT FAILURE

Chapter three discussed the usefulness of cash flows for financial analysis. It was suggested that cash be used to measure liquidity. Income does not pay debts but cash does and the inability to service obligations as they become due will result in financial failure. It seems that Beaver (1966) was the first of many studies on bankruptcy prediction. Since then there has been a constant inflow of research on the topic. Research by Beaver (1969), Altman (1969), Deakin (1972) and Blum (1974) considered the ability of financial ratios, and models developed from ratios, to predict financial failure. The initial studies calculated cash flow as net income plus depreciation and amortization. Later researchers (Largay & Stickney, 1980; Gombola & Ketz, 1983; Casey & Bartczak, 1984, 1985; Gentry & Newbold, 1985; Gentry, Newbold & Whitford, 1987; Aziz *et al*., 1988; Aziz & Lawson, 1989) focused on models of cash flows and called for a broader measure of cash flows, which was calculated as cash receipts from operations less cash disbursements for operations. Thereafter, followed research on cash flow ratios calculated from the cash flow statement (Giacomino & Mielke, 1988, 1993; Carslaw & Mills, 1991, 1993; Stanko & Zeller, 1993; Zeller & Stanko, 1994; Mills & Yamamura, 1998) that still continues.

Ball and Foster (1982) pointed out that previous empirical studies in bankruptcy prediction used an empiricism approach to justify the ratios chosen for the studies. The empirical findings tended to be sample specific and not capable of indicating the most likely predictors of financial distress. This was noted by Gentry *et al.* (1985) and to overcome this problem, a cash-based funds flow model (developed in 1972 by Helfert) was chosen as a basis for their study of bankruptcy prediction. Cash flow was calculated as suggested by the FASB in its Exposure Draft on Reporting Income, Cash Flows and Financial Position of Business Enterprises (FASB, 1981). FASB (1981) suggested cash flow from operations to be calculated as working capital provided by operations, plus or

minus changes in the non-cash working capital accounts except for short-term indebtedness. In a study by Laitinen (1994:196), he points out that cash based and accrual based cash flow ratios may lead to different classification schemes in failure prediction.

The primary objective of the study by Gentry *et al.* (1985) was to test the model by assessing whether cash-based funds flow ratios can adequately classify failed and non-failed entities and serve as an alternative to financial ratios computed using accrual accounting. Their findings were that cash-based funds flow components offered a viable alternative for classifying failed and non-failed entities.

Ohlson (1980:110) found that firm size was a significant negative predictor of bankruptcy, as bankrupt firms tend to be smaller that non-bankrupt entities. One point of concern raised by Ohlson was that if one employs predictors derived from statements that were released after the date of bankruptcy, then the evidence indicates that it will be easier to predict failure.

Largay and Stickney (1980) indicated that the net income plus depreciation, depletion and amortisation of W.T. Grant's was relatively steady until the year immediately prior to its demise. The cash flow from operations, on the other hand, was negative in eight of the ten years prior to failure. Under similar circumstances, Lee (1982) observed that although Laker Airways was in financial trouble three years prior to failure, the profits were increasing. In this regard, Ward (1994) indicates that operating cash flow is a better indicator of financial distress than net income.

Aziz *et al.* (1988:423) investigated bankruptcy prediction by using a cash flow model developed by Lawson in 1971. It was found that all cash flows for non-bankrupt entities were consistently higher than for bankrupt entities. Overall, Aziz *et al.* (1988) found the cash flow model superior to other models and stated that it

is likely to predict bankruptcy up to five years prior to the event (Aziz *et al.,* 1988:431, 435).

Gombola and Ketz (1983:105-106) point out that the major difference between the (then) present and earlier studies of classification patterns for financial ratios lies in the identification of cash-flow measures. Cash flow ratios may contain some information not found in profitability ratios and should not be overlooked in studies involving financial ratios. The FASB, in its Discussion Memorandum on Reporting Funds Flow, Liquidity and Financial Flexibility (FASB, 1980), takes it as given that profitability and funds flow are different. The objectives of financial reporting indicate that users need information about cash flows to help with assessment of future cash flow. Accordingly, cash flow should not be calculated as the net income plus depreciation in ratios. The proper measure of cash flow is cash receipts from operations less cash disbursements for operations, which differs markedly from the other measure.

Sharma (2001) conducted research to provide a comprehensive review of the cash flow failure prediction literature since Beaver's paper in 1966. Sharma (2001) concluded that cash flow information contains potentially significant content over accrual information for discriminating between bankrupt and non-bankrupt entities, particularly in the determination of the probability of bankruptcy. Cash flow information may introduce a degree of objectivity in the performance evaluation process that is not provided by accrual based performance analysis.

The importance of cash flow information can be found in various studies. Financial managers and bankers use the sustainable growth rate to determine possible financing needs and investment opportunities for entities. Burger and Hamman (1999) state that this accrual model does not reflect the cash position of an entity. Such an accrual analysis could lead to situations in which an entity could grow itself into cash problems. In this regard they suggest a cash flow

sustainable growth rate that is defined as the rate at which an entity can grow while still maintaining a target cash balance in the balance sheet.

## 5.6 SUMMARY

Chapter five discussed a list of eight cash flow ratios selected for financial analysis. These ratios were chosen as they were recommended by various authors as being significant and important. The ratios also serve the objectives of the cash flow statement in that they measure the ability to generate future operating cash flows and to pay debts and dividends, and the reliance on external financing.

The list of cash flow ratios can be used in conjunction with traditional balance sheet and income statement ratios. Together they should lead to a better understanding of the financial strengths and weaknesses of an entity. The use of the ratios proposed in this study will assist and provide further tools for analyzing financial statements. Problems, however, still exist in establishing standards for the computation of ratios and a need remains for consensus on some common ratios.

The traditional approach to assessing an entity's liquidity and viability is through ratios such as the current and quick ratio. Many off-balance sheet items such as leases and purchase commitments are not reflected in these ratios. Changes in the composition of the current assets and liabilities can also be overlooked when evaluating these ratios. The use of cash flow data in liquidity ratios is more appropriate than adjusted income statement data because the income statement includes various provisions such as special write offs and deferrals which do not have any immediate impact on cash flows (Carslaw & Mills, 1993:14).

Although this study limits its approach for measuring performance to cash flow ratios, use of trend analysis and an evaluation of traditional accrual-based ratios

are equally important in analyzing financial statements (Carslaw & Mills, 1991:63). It is important to remember that, as in all ratio analysis, isolated ratios provide limited information about a single period. Ratios become more useful when computed for a period of years to determine averages and trends and when compared with industry averages (Giacomino & Mielke, 1993:56).

Chapter six discusses the list of selected cash flow ratios used to analyze failed and non-failed entities. The failed entities were selected and their financial statements over the last five years prior to failure were analyzed by means of the cash flow ratios. Non-failed entities in the same sectors were also selected and analyzed. The aim was to determine if the cash flow ratios had the potential to predict financial failure.

# CHAPTER SIX

# RESEARCH METHODOLOGY AND ANALYSIS OF RESULTS

## 6.1 INTRODUCTION

An aim of this study is to suggest a list of cash flow ratios and to determine if the ratios have the potential to predict financial failure. In chapter four, an investigation was made of various studies on cash flow ratios to establish available cash flow ratios. In chapter five, eight cash flow ratios were selected for an analysis of entities with financial difficulties. The ratios selected were due to popularity as various authors suggested the inclusion thereof in a financial analysis. These ratios were also selected to measure liquidity and to serve the objectives of the cash flow statement.

In chapter six, the cash flow ratios are used to evaluate entities de-listed or suspended from the JSE owing to financial difficulties. The aim is to determine if financial distress could have been predicted. Non-failed entities in the same sector as the failed entities were selected and the ratios of the non-failed entities are compared with the failed entities. The objective of the study is to establish whether there is a difference between the ratios of failed and non-failed entities. The research methodologies as well as the analysis of results are discussed in chapter six.

## 6.2 RESEARCH METHODOLOGY

The primary objective of this study is to determine the usefulness of the cash flow statement. In this regard, a list of cash flow ratios was selected for the evaluation of the cash flow statement. As the cash flow ratios are calculated from the cash flow statement, the objective is to determine if financial failure can be predicted. If an entity fails to generate enough cash flow from operations, it will be forced to

increase borrowings or to dispose of capital investments to meet obligations. If this situation persists for a period of time, it will lead to financial distress and eventual failure.

Financial failure in this study means the inability to cover obligations as it becomes due. According to Mossman *et al.* (1998), bankruptcy will result if an entity has insufficient cash available to service debt outflows as they become due, and the value of the entity is insufficient to obtain additional financing. Altman and Spivack (1983) agree that the inability of an entity to generate enough cash from its operations may force the entity to borrow more money or to dispose of its productive assets, or investments to meet its obligations. If this situation persists over an extended period of time, it may lead to financial failure. Altman and Spivack (1983) and Mossman *et al.* (1998) have found that the inability to finance obligations out of internally generated funds is empirically testable. It has also been successfully used for investigating the usefulness of accounting information in other studies.

Clark and Weinstein (1983) found that shareholders experience abnormal losses over periods from four to six years prior to bankruptcy. Therefore, this study analyses financial statements five years prior to failure to establish if failure could have been predicted.

### 6.2.1 Selection of sample – failed entities

Entities in earlier studies on the prediction of bankruptcy (Beaver, 1966; Aziz *et al.,* 1988; Laitinen, 1994) were all listed and evaluated over a period of five years. In this study, entities listed or previously listed on the JSE were used in the evaluation. A list of all entities de-listed or suspended from 2000 to 2004 was obtained directly from the JSE and listed in Table 6.1 with the reasons for de-listings or suspensions.

**TABLE 6.1**

LIST OF ENTITIES DELISTED OR SUSPENDED FROM 2000 TO 2004

| LIST OF ENTITIES DELISTED OR SUSPENDED FROM 2000 TO 2004 | | |
|---|---|---|
| ENTITIES | DATE | REASON |
| ENTITIES SUSPENDED | | |
| Dynamo Retail | 26.04.00 | Directors request |
| Advanced Technical Systems | 22.05.00 | In liquidation |
| Universal Growth Holdings | 18.08.00 | Withdrawal of banking capital |
| Leisurenet | 06.10.00 | Directors request |
| Top Info Technology Holdings | 20.02.01 | Directors request |
| Whetstone Industrial Holdings | 19.04.01 | Directors request |
| LIST OF ENTITIES DELISTED OR SUSPENDED FROM 2000 TO 2004 | | |
| ENTITIES | DATE | REASON |
| ENTITIES SUSPENDED | | |
| Chariot Land | 31.05.01 | Directors request |
| Northern Engineering Industries | 23.06.01 | Liquidation dividend |
| Omega Alpha International IT | 26.07.01 | In liquidation |
| Siltek | 12.10.01 | Directors request |
| Saambou Holdings | 11.02.01 | Placed under curatorship |
| Richway Retail Properties | 25.02.02 | Voluntary winding-up |
| Dynamic Cables RSA | 28.02.02 | Failure to submit statements |
| Cyberhost | 02.05.02 | Directors request |
| Amlac | 06.05.02 | Failure to submit statements |
| Retail Apparel Group | 28.05.02 | Directors request |
| Terrafin Holdings | 24.06.02 | Directors request |
| Consolidated Property and Finance | 05.08.02 | Resignation of transfer secretary |
| Fashion Africa | 30.10.02 | Directors request |
| Shawcell Telecommunications | 17.12.02 | JSE request |
| Tigon | 17.12.02 | JSE request |
| Centrecity Property Fund | 13.03.03 | Voluntary winding up |
| Hosken Consolidated Investments | 07.07.03 | S17 of JSE exchange control act |
| Viking Investments & Assets | 08.08.03 | Failure to submit statements |
| Gilboa Properties | 15.09.03 | Failure to submit statements |
| CCI Holdings | 17.09.03 | Liquidation |
| Rare Earth Extraction Company | 26.09.03 | Directors request |
| DNA Supply Chain Investments | 15.10.03 | Voluntary winding up |
| EC Holdings | 06.11.03 | Failure to submit statements |
| Rentsure Holdings | 06.11.03 | Failure to submit statements |
| Zarara Energy | 23.12.03 | Failed to require new assets |
| Bonatla Property Holdings | 02.02.04 | Failure to submit statements |
| Fairvest Property Holdings | 02.02.04 | Failure to submit statements |

| | | |
|---|---|---|
| Terexko | 02.02.04 | Failure to submit statements |
| Samrand Development Holdings | 18.02.04 | At request of JSE |
| Millionair Charter | 10.03.04 | At request of directors |
| Pacific Holdings | 31.03.04 | S17 of JSE exchange control act |
| Lyons Financial Solutions | 17.05.04 | Offer to minority shareholders |
| Avgold | 17.05.04 | Scheme of arrangement |
| ENTITIES DELISTED | | |
| East Rand Proprietary Mines | 17.11.00 | Liquidation |
| Corpcapital Bank Controlling | 22.10.01 | Liquidation |
| Masterfridge | 03.06.02 | No possibility of liquidation dividend paid to share holders |
| Coastal Group | 03.06.02 | No possibility of liquidation dividend paid to share holders |
| FE Squared Holdings | 03.06.02 | No possibility of liquidation dividend paid to share holders |
| Sempres International Holdings | 03.06.02 | No possibility of liquidation dividend paid to share holders |
| Accord Technologies | 30.05.03 | Liquidation |
| LIST OF ENTITIES DELISTED OR SUSPENDED FROM 2000 TO 2004 | | |
| ENTITIES | DATE | REASON |
| ENTITIES DELISTED | | |
| Afribrand Holdings | 30.05.03 | Liquidation |
| Core Holdings | 30.05.03 | Liquidation |
| Century Carbon Mining | 30.05.03 | Liquidation |
| Kirchmann-Hurry Properties | 11.07.03 | Voluntary liquidation |

Source: Adapted from list received from the JSE

Table 6.1 lists all entities de-listed or suspended from 2000. The entities that were included in an analysis and evaluated by means of cash flow ratios to determine if financial failure could have been predicted satisfied the selection conditions.

The JSE was not able to identify entities with financial difficulties but supplied the reasons for de-listings or suspensions. A stockbroking firm in Port Elizabeth, Sasfin Frankel Pollak Securities, was contacted to verify entities with financial difficulties. The entities with financial difficulties are listed in Table 6.2. If an entity was excluded from the evaluation, the reason for exclusion is given. Entities were included in this sample if they satisfied the following conditions:

- The entity must have been traded on the stock exchange;
- The entity must have been de-listed or suspended;
- The entity must have financial statements available for five years from 1996, the latest; and
- The entity must not belong to finance, investment, banking, insurance or any other financial sector.

The next task was to find financial statements for the failed entities. The BFA at the University of Pretoria was chosen as it has a data bank of all financial statements of entities listed on the JSE. The financial statements of all entities are available to students from the University of Pretoria in a standardized format selected by the BFA (BFA, 1989). The list of entities in Table 6.1 was presented to the BFA and the financial statements from 1996 for these entities were requested.

The aim of the requisition was to have financial statements for at least five years available for evaluation after 1996. 1996 was the first year AC 118 (revised), Cash Flow Statement, became compulsory. Beaver (1966), Aziz *et al*. (1988), and Laitinen (1994) used five years in their studies to determine the ability to predict financial failure. Altman and Brenner (1981) used four years in their evaluation. Clark and Weinstein (1983) suggest four to six years prior to financial failure. Table 6.2 lists the entities included in the evaluation and the reasons for exclusion from the evaluation.

**TABLE 6.2**

LIST OF FAILED ENTITIES SELECTED FOR ANALYSIS AND REASONS FOR EXCLUSIONS

| LIST OF FAILED ENTITIES SELECTED FOR ANALYSIS AND RESONS FOR EXCLUSIONS | |
|---|---|
| ENTITIES | SELECTED AND REASON FOR EXCLUSION |
| ENTITIES SUSPENDED | |
| Dynamo Retail | Financial statements from 1999 |
| Advanced Technical Systems | Financial statements from 1999 |
| Universal Growth Holdings | Included |
| Leisurenet | Financial statements from 1999 |
| Top Info Technology Holdings | Financial statements for two years |
| Whetstone Industrial Holdings | Financial statements for three years |
| Chariot Land | Property investment industry |
| Northern Engineering Industries | Included |
| Omega Alpha International IT | Financial statements for one year |
| Siltek | Included |
| Saambou Holdings | Financial industry |
| Richway Retail Properties | Property investment industry |
| Dynamic Cables RSA | Included |
| Cyberhost | Financial statements for two years |
| Amlac | Cash flow statement for 2000 similar to 1999 |
| Retail Apparel Group | Included |
| Terrafin Holdings | Financial statements for three years |
| Consolidated Property & Finance | Property and finance industry |
| Fashion Africa | Included |
| Shawcell Telecommunications | Financial statements for three years |
| Tigon | Other finance industry |
| Centrecity Property Fund | Property investment industry |
| Hosken Consolidated Investments | Finance investment industry |
| Viking Investments & Assets | Financial statements for four years |
| Gilboa Properties | Property development industry |
| CCI Holdings | No information available from |
| LIST OF FAILED ENTITIES SELECTED FOR ANALYSIS AND RESONS FOR EXCLUSIONS | |
| ENTITIES | SELECTED AND REASON FOR EXCLUSION |
| ENTITIES SUSPENDED | |
| Rare Earth Extraction Company | Included |
| DNA Supply Chain Investments | Included |
| EC Holdings | Financial statements for four years |
| Rentsure Holdings | Property development industry |

| | |
|---|---|
| Zarara Energy | Other finance industry |
| Bonatla Property Holdings | Property investment development industry |
| Fairvest Property Holdings | Financial statements for one year |
| Terexko | Included |
| Samrand Development Holdings | Property unit trust financial industry |
| Millionaire Charter | Financial statements for four years |
| Pacific Holdings | Investment holding capital |
| Lyons Financial Solutions | Financial statements for four years |
| Avgold | Scheme of arrangement |
| ENTITIES DE-LISTED | |
| East Rand Proprietary Mines | No information available |
| Corpcapital Bank Controlling | Banking industry |
| Masterfridge | Included |
| Coastal Group | Financial statements for four years |
| FE Squared Holdings | No information available |
| Sempres International Holdings | No information available |
| Accord Technologies | Financial statements for two years |
| Afribrand Holdings | Financial statements for three years |
| Core Holdings | Financial statements for three years |
| Century Carbon Mining | Financial statements for one year |
| Kirchmann-Hurry Properties | Property investment industry |

Source: Adapted from list received from JSE

Of the entities listed in Table 6.2, ten entities were selected for an evaluation by means of cash flow ratios. Entities with a minimum of financial statements for five years were chosen to determine if financial failure could have been predicted. If financial failure could be predicted, the ratios have the ability to serve as an early warning and enhance the usefulness of the cash flow statement.

Entities in the public utilities, transportation, investment (including property), unit trusts, banking, insurance and finance were not included in the evaluation. According to Mossman *et al.* (1998:36) as well as in other studies (Gilbert *et al.*, 1990:162; Beaver, 1966:72), financial institutions were excluded as their ratios and cash flows are always substantially different from those of other entity types, even when they are in no danger of failure. Ohlson (1980:114) also excluded financial institutions from a study on the prediction of bankruptcy as entities in the financial and investment industry are structurally different and have a different

bankruptcy environment. The reason for this is that the central objective of a bank is to attract funds at an acceptable cost and reinvest at a higher return. Therefore, financial ratios were developed specifically for the analysis of the banking industry (Stanko & Zeller, 1994).

In a study on financial analysis, Du Plessis and Swannepoel (2002:43) found that financial ratio analysis has conventionally taken two forms, a time-series analysis and a cross-sectional analysis. Time-series analysis involves the search for identical trends in past entity performance with a view to predicting future performance. The cross-sectional analysis involves the comparison of results of a specific company against some benchmark or other entities in the industry. Therefore, non-failed entities were included in the analysis.

### 6.2.2 Selection of sample – non-failed entities

Ball and Foster (1982) raised a concern, which is noted by Gentry *et al.* (1987) that bankruptcy prediction studies should have a theory of financial failure on which to base the selection of specific ratios. If this is not the case then empirical findings cannot be generalized to indicate the most likely predictors of financial failure. To overcome this, failed entities were compared with selected non-failed entities to determine if the ratios of failed entities were different or weaker.

Ten entities, de-listed or suspended owing to financial difficulties were selected for the analysis. Twenty non-failed entities in the same sector were included in the analysis to determine if the ratios of failed and non-failed entities were different. A list of all entities listed on the JSE was obtained on the Internet using www.jse.co.za. All the entities are classified according to industry in alphabetical order. Basic information on each entity is available. A non-failed entity was selected if it met the following criteria:

- Must be in the same sector as the failed entity;
- Must have five financial statements with years corresponding with failed entity; and
- Must not fall in the list of excluded entities.

The most difficult task of the data collection was finding non-failed entities with financial statements corresponding to the failed entity in the same sector. A further problem was finding non-investing entities in the same sector. A random selection was made and three non-failed entities in the same sector were included in the evaluation. A random selection determined starting with the second entity listed in the sector. If there were three or less entities in the sector, all the entities were selected providing they had five corresponding financial statements and were not involved in financing or investment. If there were three or less non-failed entities and the entities were investing or did not have five corresponding financial statements, only the non-investing entities were included. If there were no suitable non-failed entity in the sector, an entity was selected if it had four corresponding financial statements. The aim was then to have at least one non-failed entity included in the evaluation even if it had four corresponding financial statements.

Some sectors had more than three entities and in these cases, an average of three entities was selected. In the venture and development capital sector, the non-failed entities with the closest field of business to the failed entity were selected. Table 6.3 lists the selected failed, non-failed entities and the sectors in which they operate.

**TABLE 6.3**

LIST OF ENTITIES INCLUDED IN ANALYSIS

| LIST OF ENTITIES INCLUDED IN ANALYSIS | |
|---|---|
| FAILED AND NON-FAILED ENTITIES | INDUSTRY, FIELD OF BUSINESS |
| Dna Supply Chain Investments (DNASUP)<br>Bowler Medcalfe (BOWCAFL)<br>Nampak (NAMPAK)<br>Transpaco (TRNPACO) | Support services business support |
| LIST OF ENTITIES INCLUDED IN ANALYSIS | |
| FAILED AND NON-FAILED ENTITIES | INDUSTRY, FIELD OF BUSINESS |
| Dynamic Cables (DYNAMIC)<br><br>Infowave Holdings (INFOWAVE)<br>Integrear (INTEGREAR)<br>Stella Vista Technologies (STELLA) | Development capital (Telecommunications and cabling)<br>Financial statements for four years<br><br>Financial statements for four years |
| Fashion Africa (FASHAF)<br>African & Overseas Enterprises (AF-&-OVER)<br>Foschini (FOSCHINI)<br>Mr Price Group (MR PRICE) | Retailers soft goods, clothing |
| Masterfridge (FRIDGEM)<br>Nu-World Holdings (NUWORLD)<br>Richemont Securities (RICHMONT) | Textile household appliances |
| Northern Engineering Industries (NEI-AFR)<br>Kairos Industrial Holdings (KAIROS) | Engineering machinery<br>One non-failed entity in sector with financial statements for four years |
| Rare Earth (RARECO)<br>Lonrho Africa (LONAFRIC) | Venture capital (mining & extraction)<br>Closest non-failed entity - construction |
| Retail Apparel Group (RAG)<br>African & Overseas Enterprises (AF-&-OVER)<br>Foschini (FOSCHINI)<br>Mr Price Group (MR PRICE) | Retailers soft goods, clothing |
| Siltec (SILTEC)<br>Mustec (MUSTEC) | IT hardware computer hardware<br>Financial statements for four years |
| Terexko (TEREXKO)<br>Famous Brands (FAMBRANDS)<br>Kings Consolidated Holdings (KINGCO) | Leisure and hotel, restaurants, pubs<br>Two suitable non-failed entities were found in this sector |

| | |
|---|---|
| Universal Growth Holdings (UNIGRO)<br>Venter Leisure & Commercial Trailers (VENTEL) | Household goods textile leisure<br>Closest non-failed entity in sector |

Source: Adapted from list received from JSE and www.jse.xxxxx

Table 6.3 lists the ten failed and twenty non-failed entities selected for evaluation. The failed entity is listed first followed by the non-failed entities. The short name of the entity is given in brackets and additional information is included. Reasons are given if it was not possible to select three non-failed non-investing or non-financing entities with corresponding financial statements for each failed entity in the same sector.

The entities were evaluated by means of the selected cash flow ratios in Table 6.5. The results of the evaluation indicated that some of the non-failed entities had weak ratios and could experience financial difficulties. Non-failed entities are included in the evaluation for comparison of failed entities. For a useful evaluation, the non-failed entities have to be financially sound. If the entities are in financial distress, a meaningful comparison cannot be made. To determine whether the non-failed entities were financially sound, the entities were then evaluated by means of the K-score to determine their financial position.

The K-score was developed by De La Rey (1981) to predict financial failure. The BFA calculated the formula and the following results, as listed in Table 6.4, were obtained for the non-failed entities. The scores for the failed entities, where available are also included in Table 6.4. The results for Masterfridge, a failed entity, were not available.

**TABLE 6.4**

RESULTS OF K-SCORE

| RESULTS OF K-SCORE | | | | | |
|---|---|---|---|---|---|
| | YEARS | | | | |
| ENTITIES | 1 | 2 | 3 | 4 | 5 |
| Support services business | 2002 | 2001 | 2000 | 1999 | 1998 |
| Dna Supply Chain Investments | -0.34 | 0.76 | 1.79 | 3.61 | -0.16 |
| Bowler Medcalfe | 3.26 | 2.81 | 2.82 | 2.22 | 2.06 |
| Nampak | -0.07 | 0.03 | 0.64 | 1.24 | 1.21 |
| Transpeco | 0.52 | -8.83 | 2.53 | 1.55 | 0.66 |
| | | | | | |
| Development Capital | 2002 | 2001 | 2000 | 1999 | 1998 |
| Dynamic Cables RSA | 0.03 | 1.38 | 1.48 | -4.18 | 0.25 |
| Infowave Holdings | 3.99 | 2.13 | -8.98 | 4.19 | X |
| Integrear | -1.6 | 2.49 | 2.92 | -2.29 | -3.9 |
| Stella Vista Technologies | -3.5 | 0.48 | -0.01 | 0.69 | X |
| | | | | | |
| Retailers of Soft Goods | 2002 | 2001 | 2000 | 1999 | 1998 |
| Fashion Africa | -4.1 | -6.31 | -3.84 | 22.75 | 0.54 |
| African & Overseas Enterprise | 0.88 | 0.79 | 1.15 | 1.38 | 1.6 |
| Foschini | 0.52 | 0.07 | 1.21 | 1.26 | 1.21 |
| Mr Price Group | 1.02 | 0.8 | 1.69 | 1.23 | 0.77 |
| | | | | | |
| RESULTS OF K-SCORE | | | | | |
| | YEARS | | | | |
| ENTITIES | 1 | 2 | 3 | 4 | 5 |
| Textile household appliances | 2000 | 1999 | 1998 | 1997 | 1996 |
| Masterfridge | X | X | X | X | X |
| Nu-World Holdings | 0.93 | 0.73 | 0.72 | 0.65 | 0.65 |
| Richemont Securities | 7.7 | 1.18 | 0.67 | 1.67 | 3.13 |
| Venture Capital | 2002 | 2001 | 2000 | 1999 | 1998 |
| Rare Earth | -0.48 | 28.41 | -5.2 | -5.14 | -3.16 |
| Lonrho Africa | -1.46 | -2.66 | -3.3 | -2.04 | -0.98 |
| Retailers of Soft Goods | 2001 | 2000 | 1999 | 1998 | 1997 |
| Retail Apparel Group Ltd | -3.96 | -3.56 | -0.51 | 0.36 | 1.45 |
| African & Overseas Enterprise | 0.79 | 1.15 | 1.38 | 1.6 | 1.31 |
| Foschini | 0.07 | 1.21 | 1.26 | 1.21 | 1.06 |
| Mr Price Group | 0.8 | 1.69 | 1.23 | 0.77 | 0.69 |
| | | | | | |
| IT hardware computer hardware | 2000 | 1999 | 1998 | 1997 | 1996 |

| | | | | | |
|---|---|---|---|---|---|
| Siltec | -0.79 | 0.17 | 1.28 | 0.7 | 3.18 |
| Mustec | 0.2 | 1.77 | 2.5 | 2.96 | X |
| | | | | | |
| Leisure, hotel, restaurants, pubs | 2002 | 2001 | 2000 | 1999 | 1998 |
| Terexko | -0.93 | -9.52 | 0.47 | 0.61 | 3.86 |
| Famous Brands | 1.37 | 1.84 | 1.94 | 1.99 | 2.06 |
| Kings Consolidated Holdings | -2.11 | -1.81 | -1.23 | -0.85 | 1.4 |
| | | | | | |
| Household goods textile leisure | 2000 | 1999 | 1998 | 1997 | 1996 |
| Universal Growth Holdings | 0.04 | -2.9 | -2.45 | 1.13 | 0.85 |
| Venter Leisure & Commercial Trailers | -0.18 | -6.24 | 0.98 | 0.25 | -0.85 |

Source: Adapted from list received from BFA

The K-score that was calculated for the entities in Table 6.4 classifies entities as financially sound or financially failed. The further an entity's score moves above zero, the more financially sound it will be while the more negative the score, the more likely the entity will fail financially. The zone of ignorance, which means uncertain classifications where an entity can either fail or survive, ranges from -0.2 to +0.2 (De La Rey, 1981).

The results in Table 6.4 indicate that some of the non-failed entities could experience financial difficulties and they were eliminated from the analysis. The scores for Integrear indicated that it has been in financial difficulties three times in five years. Stella Vista failed one year and was on the negative side of the zone of ignorance for one year. Stella Vista was excluded, as it was doubtful for two out of four years. Kairos was in financial difficulties four years out of four years and was excluded as well as Lonrho Africa and Kings Consolidated Holdings. Venter Leisure and Commercial Trailers was also excluded as it was in financial distress two years and in the zone of ignorance for two years. Although Nampac was in the zone of ignorance two out of five years, the entity was included as it was negative in only one of the two years.

The cash flow ratios were calculated for all the entities listed in Table 6.3, including the non-failed entities that were excluded due to their K-score. The results are listed in Annexure A. The results of the cash flow ratios of the non-failed entities excluded from the evaluation are weak as well.

### 6.2.3 Variables selection

The standardized financial statements were received from the BFA. The BFA use the same standard format in the same fields for all financial statements. An example of a standardized financial statement is shown in Annexure B. The cash flow ratios selected in chapter five were used to evaluate the selected entities. The ratios were selected according to the following criteria:

- The first criterion was based on the ratio's popularity. This refers to their frequent appearance in studies by different authors (see chapter four);
- The second criterion for selecting the ratios are that they must be based on operating cash flows; and
- The third criterion is that the ratios must serve the objectives of the cash flow statement.

Table 6.5 lists the eight cash flow ratios that were selected for the evaluation. New cash flow ratios may be merged with traditional ratios to provide a more comprehensive financial analysis.

**TABLE 6.5**

RATIOS SELECTED FOR FINANCIAL ANALYSIS

| RATIOS SELECTED FOR FINANCIAL ANALYSIS | | |
|---|---|---|
| NO | CASH FLOW RATIOS | COMPONENTS |
| 1. | Cash flow to sales | CFFO*<br>Sales |
| 2. | Cash flow to assets | CFFO*<br>Total assets |
| 3. | Reinvestment | CFFO* (after interest, dividends and current debt)<br>Capital expenditure |
| 4. | Cash flow to total debt | CFFO* (after interest)<br>Total debt |
| 5. | Critical needs coverage | CFFO*<br>Interest, current debt and dividends |
| 6. | Cash interest coverage | CFFO* (after current debt)<br>Interest paid |
| 7. | Dividend coverage | CFFO*(after interest and preference dividends)<br>Ordinary dividends |
| 8. | Cash flow to income | CFFO*(after interest and taxation)<br>Operating Income (after interest and taxation) |

**Cash flow from operations*

Source: Adapted from list received from JSE and www.jse.xxxxx

The entities selected were evaluated using the ratios listed in Table 6.5. Additional information was also included in the evaluation. The aim was to determine if cash flow ratios had the ability to measure liquidity as cash flow from operations is the primary cash generating activity of an entity. Therefore, the cash flow from operations is a component of each of the selected cash flow ratios and should indicate the ability of an entity to generate cash internally to cover primary obligations.

The ratios in Table 6.5 were calculated for each set of financial statements for all twenty-four entities. A program was written in Excel to calculate the ratios for five years for each entity. The program used the Excel field that corresponded with

the BFA field which listed the component in the ratios. Table 6.6 lists the components, the fields used by the BFA and the fields used in Exel to calculate the ratios.

**TABLE 6.6**

COMPONENTS AND FIELDS USED

| COMPONENTS AND FIELDS USED | | |
|---|---|---|
| EXCEL | BFA | ITEM |
| 2 | | Name of entity in field 2 |
| 7 | | Balance sheet heading of entity in field 2 |
| 78 | | Income statement heading of entity in field 78 |
| 234 | | Cash flow statement heading of entity in field 234 |
| 30 | 14 | Total fixed assets |
| 46 | 24 | Long-term loans |
| 52 | 28 | Short-term loans advanced |
| 56 | 31 | Total current assets |
| 64 | 37 | Total current liabilities |
| 80 | 51 | Turnover |
| 86 | 55 | Interest received |
| 93 | 60 | Surplus on sale of investments |
| 94 | 61 | Surplus on sale of trading assets |
| 100 | 65 | Depreciation on other fixed assets |
| 101 | 66 | Depreciation on land and buildings |
| 117 | 73 | Profit before interest and taxation |
| 118 | 74 | Interest paid |
| 240 | 704 | Investment income |
| 242 | 706 | Changes in working capital |
| 252 | 713 | Taxation paid |
| 254 | 714 | Cash available from operations (before dividends) |
| 255 | 715 | Ordinary dividends |
| 256 | 716 | Preference dividends |
| 261 | 719 | Fixed assets acquired |

Source: Adapted from excel and financial statements of BFA

Table 6.6 lists the fields used by the BFA that correspond with Excel. Table 6.7 lists the cash flow ratio and indicates which fields in Excel were used to calculate the ratios.

**TABLE 6.7**

FIELDS USED FOR CALCULATION OF RATIOS

| FIELDS USED FOR CALCULATION OF RATIOS | | |
|---|---|---|
| NO | RATIO | FIELDS USED IN EXCEL |
| 1. | Cash to sales | ((117+100+101)-(93+94)-(240+86)+(242))/(80) |
| 2. | Cash to total assets | ((117+100+101)-(93+94)-(240+86)+(242))/ (30+56-52) |
| 3. | Reinvestment | ((117+100+101)-(93+94)-(240+86)+(242)-(64+118+255+256)/(261) |
| 4. | Cash to total debt | ((117+100+101)-(93+94)-(240+86)+(242)-(118))/ (46+64) |
| 5. | Critical needs | ((117+100+101)-(93+94)-(240+86)+(242))/ (64+118+255+256) |
| 6. | Cash interest cover | ((117+100+101)-(93+94)-(240+86)+(242)-(64))/(118) |
| 7. | Cash dividend cover | ((117+100+101)-(93+94)-(240+86)+(242)-(64+118+256))/(255) |
| 8. | Cash to income | ((117+100+101)-(93+94)-(240+86)+(240+86)+ (242)-(118+252))/(123) |

Source: Adapted from excel

The components used to calculate the ratios are listed in Table 6.7. The process to calculate the ratios was repeated as a verification method. If the results in the second attempt differed from the first calculation, it indicated a mistake. This process was repeated until all the same results were obtained.

This study uses cash flow ratios derived from the cash flow statement to determine if financial distress can be predicted. The results of each ratio are listed in Annexure A. The results of the failed entity in a sector were listed first followed by the results of the non-failed entities. The mean values of each of the cash flow ratios were calculated for the failed and non-failed, financially sound entities for each year prior to failure. In this calculation, the non-failed entities that were found to have financial difficulties, as indicated by the K-score, were

excluded. The results of the mean values of the ratios are illustrated in Figures 6.1 to 6.8.

**FIGURE 6.1**

CASH FLOW TO SALES RATIO

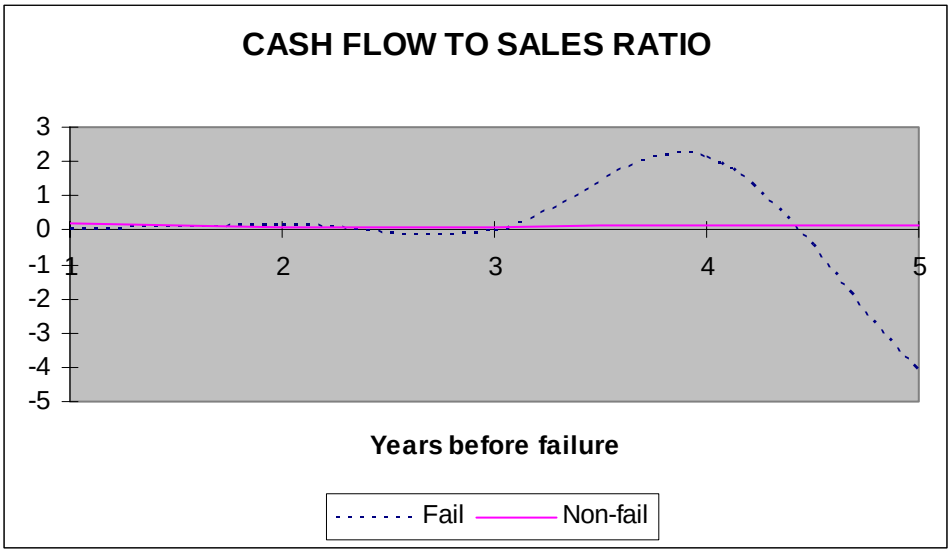
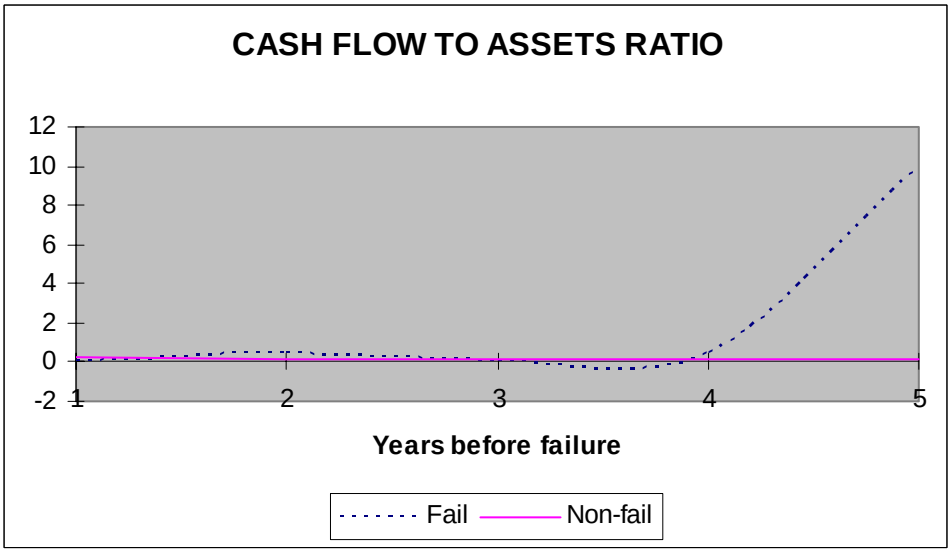



**FIGURE 6.2**

CASH FLOW TO ASSETS RATIO



The mean value for the failed entities was 790.34 in the fifth year prior to failure. In Figure 6.2, it was indicated as 10 so that the difference between small values could be indicated in the figure.

**FIGURE 6.3**

REINVESTMENT RATIO

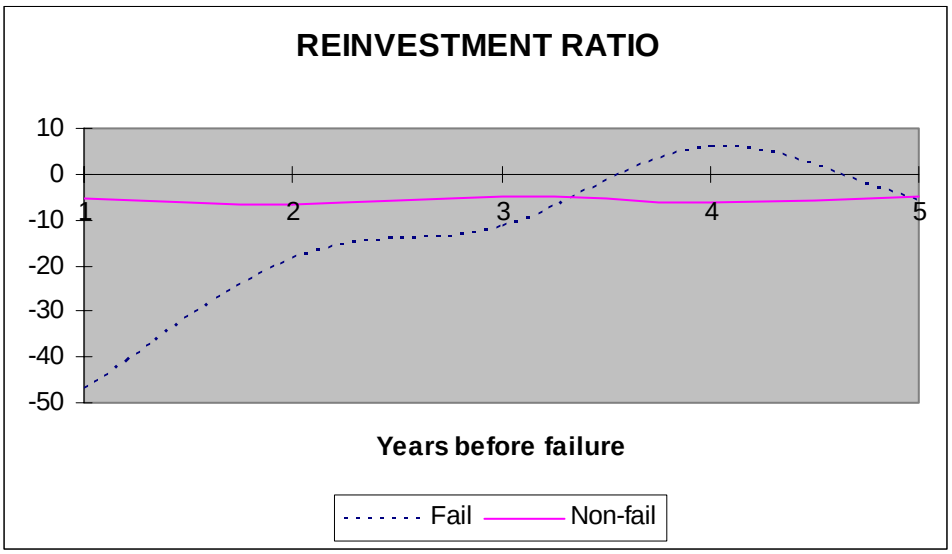



**FIGURE 6.4**

CASH FLOW TO TOTAL DEBT RATIO

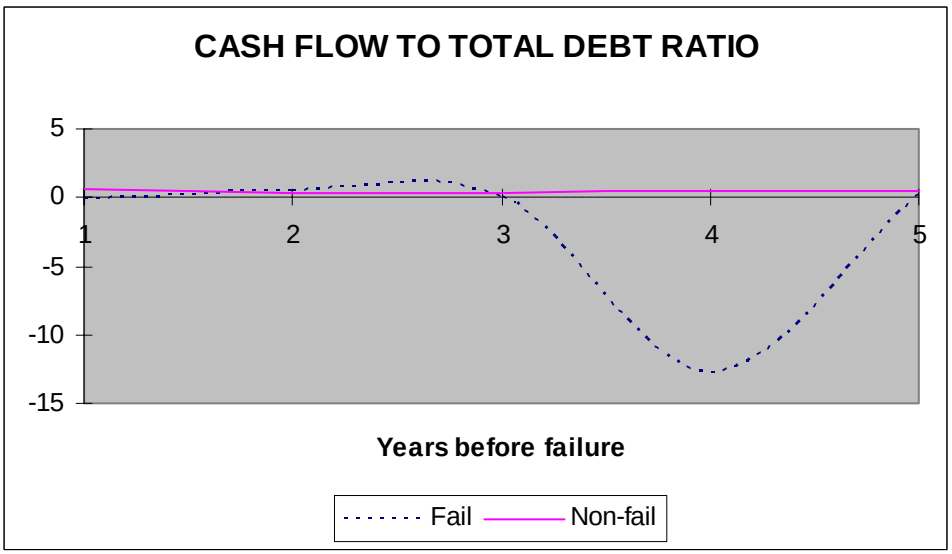


**FIGURE 6.5**

CRITICAL NEEDS RATIO

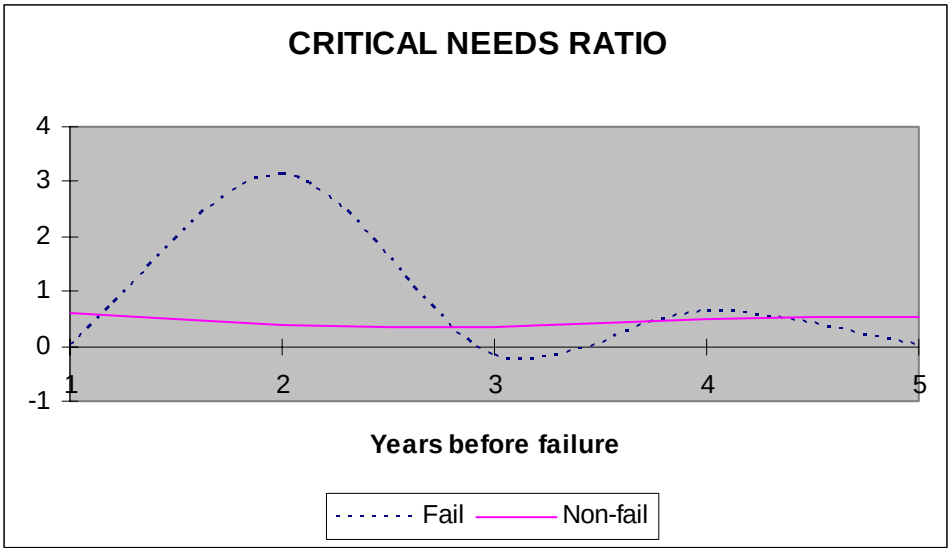



**FIGURE 6.6**

CASH INTEREST COVERAGE RATIO

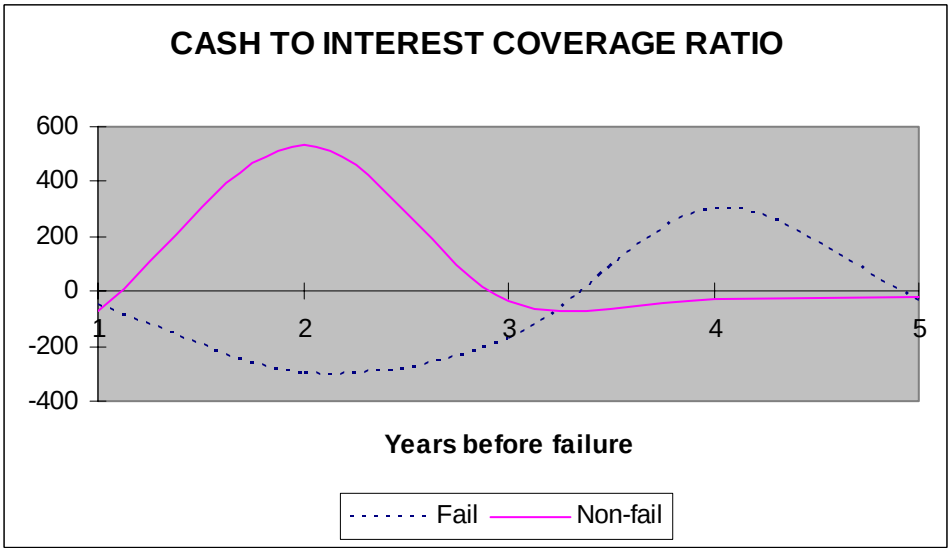


**FIGURE 6.7**

CASH DIVIDEND COVERAGE RATO

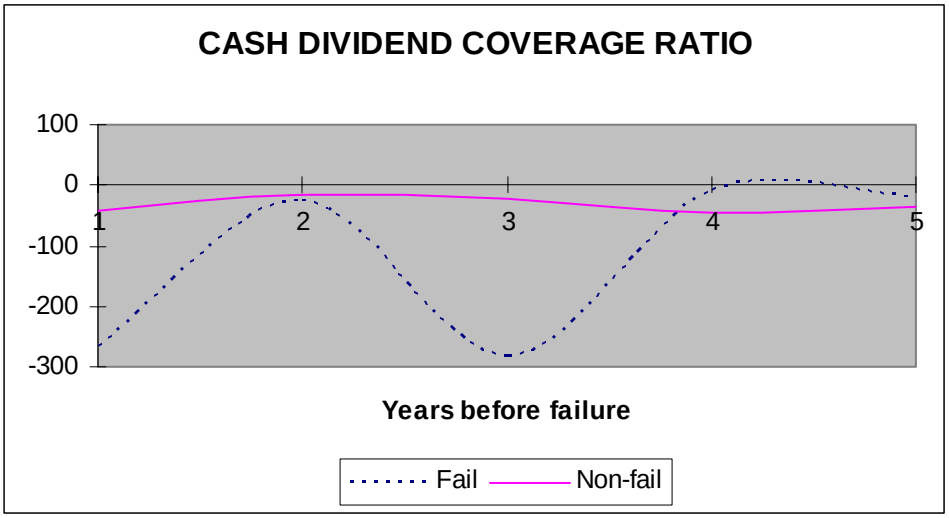
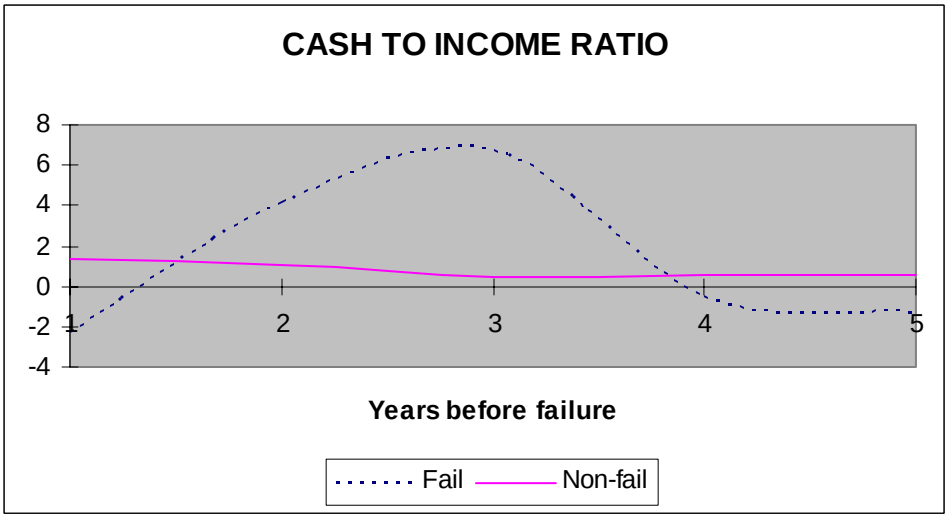



**FIGURE 6.8**

CASH TO INCOME RATIO



The difference between the mean values of the ratios for the failed and non-failed entities was illustrated in Figures 6.1 to 6.8. Table 6.8 indicates, the years in which the ratios of the non-failed entities were stronger than the ratios of the failed entities.

**TABLE 6.8**

DIFFERENCES IN MEAN VALUE OF CASH FLOW RATIOS

| DIFFERENCES IN MEAN VALUE OF CASH FLOW RATIOS | | | | | |
|---|---|---|---|---|---|
| | YEARS PRIOR TO FAILURE | | | | |
| CASH FLOW RATIOS | 5 | 4 | 3 | 2 | 1 |
| Cash flow to sales | NF>F | | NF>F | | NF>F |
| Cash flow to assets | | | NF>F | | NF>F |
| Reinvestment | NF>F | | NF>F | NF>F | NF>F |
| Cash flow to total debt | NF>F | NF>F | NF>F | | NF>F |
| Critical needs | NF>F | | NF>F | | NF>F |
| Cash interest coverage | NF>F | | NF>F | NF>F | |
| Cash dividend coverage | | | NF>F | NF>F | NF>F |
| Cash income to income | NF>F | NF>F | | | NF>F |

Source: Adapted from results of mean values of cash flow ratios

Table 6.8 indicates the years in which the non-failed entities had the stronger ratios. The cash flow to total debts and reinvestment ratios of the non-failed entities were the strongest in four out of five years.

## 6.3 ANALYSIS OF RESULTS

Ten failed and twenty non-failed entities were evaluated by means of selected cash flow ratios and the results are shown in Annexure A. Six non-failed entities were identified with possible financial difficulties, using the K-score and were then excluded from further analysis. The mean values for each cash flow ratio for ten failed and fourteen financially sound non-failed entities were calculated for

each year prior to failure. The results of the mean values of the ratios are illustrated in Figures 6.1 to 6.8 in years prior to failure.

When analyzing the results, it was found that some of the failed entities had unusually strong ratios for failed entities. An investigation into these ratios revealed that the high results were due to a cash inflow as a result of changes in working capital and not a result of increased inflow from turnover or services.

Fashion Africa, retailers in the soft goods sector, had a decrease of inventory in 1999, four years prior to failure, of close to R126 million. In the year prior to failure, 2000, Retail Apparel decreased inventory and debtors and increased creditors with nearly R20 million, R15 million and R60 million respectively. In 2001, inventory was decreased with close to R48 million and with debtors of R12 million.

In the year before failure, Masterfridge decreased inventory with R43 million and creditors increased by R12 million. Dynamic Cables had a decrease in inventory and debtors in 2000, the third year prior to failure, of R34 million and R45 million. DNA had a change in working capital of R8 million in the fifth year prior to failure.

Rare Earth decreased its inventory and debtors in the fourth year prior to failure with R4 million and in the final year, 2002, increased its creditors by R80 million. Terexko had an increase in creditors in the year of failure, 2002, with R6 million, and decreased debtors with R44 million in the fourth year and by R15 million in the year prior to failure.

An analysis of results revealed that cash flow information has explanatory power. The aim of the analysis was to outline the general relationship between failed and non-failed entities using cash flow information derived from the cash flow statement. The higher the ratio, calculated from the cash flow statement, the lower the likelihood of failure and a positive ratio also indicates positive cash

flows. Where the mean values are negative, no effective conclusion can be made other than that insufficient cash was available.

In the fifth year before failure, six cash flow ratios of the non-failed entities were stronger than the ratios of the failed entities except for the cash flow to assets and dividend coverage ratios of the failed entities. The mean values of the failed entities indicated negative cash flow from sales and income whereas the cash flow to asset ratio indicated that cash could be generated from their asset bases. An entity has to maintain its operating assets to remain competitive. In this analysis, the reinvestment ratio indicates that after providing for current debt, interest and dividends, the failed entities did not have cash flow available to maintain the current asset bases. The cash flow to total debt and coverage ratios indicated that the entities had to rely on other sources to meet their obligations.

In the fourth year, most of the cash flow ratios of the failed entities were stronger than the ratios of the non-failed entities. The cash flow to total debt ratio, however, declined from the fifth to the fourth year. This indicated additional sources of cash to cover debt and interest payments. The cash to income ratio indicated a negative cash flow from operations from the fifth year. A consistent figure which is less than one for the cash to income ratio may indicate that expanding receivables or the understatement of payables were responsible for generating sales.

The increase in the cash flow to sales ratio of the failed entities could be a result of decreasing inventory as not enough cash was produced from assets. Funds were available for reinvestment in assets after short-term obligations were met but not available for covering the total debt. In the fourth year, the cash flow to total debt ratio was the weakest and this indicated that the entities were not liquid. Insufficient cash was produced from operations, and the entities had to rely on other sources or outside financing to pay debts. The increase in reinvestment ratio could also be a result of insufficient reinvestment in assets.

The failed entities' cash flow to asset ratio decreased from the fifth to the fourth year. A low return on this ratio, in normal circumstances, can also indicate increased investment in assets. In this case, however, the low value of the ratio was due to insufficient cash being realized from assets.

The failed entities' interest coverage ratio also decreased from the fourth year. A highly leveraged entity will have a low cash interest coverage ratio and a decreasing trend in this ratio indicates progressive deterioration of the entity's future ability to meet interest payments. In the third year, the ratios of the non-failed entities were the strongest, except for the cash to income ratio. Only the cash to total debt ratio, which indicated for the third year insufficient funds to meet obligations, and the cash to income ratio increased. The cash flow to sales ratio decreased, whereas the cash to income ratio increased. This indicated no stability between cash flow and income.

From the third year to the year prior to failure, there was no improvement in the cash flow ratios of the failed entities. The critical needs ratios improved from the third year but insufficient cash was generated to cover total debt. The second year prior to failure was the only year when the cash flow to total debt ratio of the failed entities was stronger than the ratio for the non-failed entities. However, the critical needs ratio only indicated cash flow in the short-term. The individual coverage ratios showed insufficient funds for interest and dividends and hardly any dividends were paid by the failed entities. There were also no internal funds available for reinvestment in assets. The ratios of the non-failed entities were stable except for the improvement in the cash interest coverage ratio.

In the final year, all the ratios of the failed entities were negative and seven of the eight ratios of the failed entities were weaker than the ratios of the non-failed entities. No cash flow was produced from sales and assets. All the ratios

declined from the second year, except for the cash flow to interest ratio, which indicated a slight increase.

If all these factors are taken into consideration, it is possible to predict failure in the third year. For the second time in three years most of the ratios of the failed entities were weaker than the ratios of the non-failed entities. The cash flow to income ratio indicated, in the fourth year, that expanding receivables or the understatement of payables generated sales. The entities could not generate cash from sales and assets and had to rely on other sources to meet interest payments and pay debts and no cash flow was available to reinvest in an asset base to enhance future production of cash flows. In comparison with the non-failed entities, the mean values of the failed ratios were unstable.

The cash flow to total debt and reinvestment ratios of the failed entities were weaker than those of the non-failed entities in four out of the five years prior to failure. Therefore, the probability to predict failure should lie with the cash flow to total debt and reinvestment ratios as all ratios do not predict equally well. However, it is more likely that an entity will fail if it does not pay debts than if its investment in assets is insufficient. Furthermore, as financial distress increased, entities will tend to use available funds to pay interest and other debt obligations to survive and they will not use funds to reinvest in an asset base. This is also evident in the cash dividend coverage ratio, as entities with financial difficulties do not pay dividends. Therefore, the best predictor of failure will lie with the cash flow to total debt ratio. The cash flow to total debt ratio is calculated after providing for interest and principal debt. The reinvestment in productive assets will enhance future earnings and will not have an immediate impact on earnings or cash flows. Therefore, a low value for the reinvestment ratio, in normal circumstances, can also indicate substantial investments in assets.

Beaver (1966:80) identified four concepts as important when predicting financial failure. These concepts could be listed as:

- The size of the cash reserves;
- The net cash flow from operations;
- The amount of debt held; and
- The operating expenditures.

These concepts can be used to explain the predictive value of the cash flow to debt ratio. The larger the reserves of cash and cash flow from operations, the smaller the probability of failure. Furthermore, the greater the debt and operating expenditure of an entity, the greater is the probability of failure.

This study uses the cash flow from operations after operating expenditure has been paid, adding the changes in working capital that represents the reserve of liquid assets. What remains is available to pay debts. If an entity does not have cash flow to cover its debts over a period of time, it cannot survive.

Any ratio in isolation is not of much use. It has to be incorporated with other ratios or information to have a predictive value. The cash flow to sales ratio was negative in year five and this indicated that not enough cash was generated from operations. This was also evident in the cash to income ratio. As a result, not enough cash was available to pay debts and critical needs, as indicated in the cash flow to total debt and critical needs ratios. This indicated reliance on outside financing or other sources to cover debts. The cash flow from assets ratio indicated that cash was produced from assets but after debts were met, there was no cash flow available for the maintenance of an asset base.

In the fourth and third years, the cash flow to assets ratio declined. A possibility could be that the asset base was not maintained previously to generate future cash flow from assets. The increase in cash flow to sales ratio indicated that entities tried to generate cash by decreasing inventory and increasing creditors. This was evident in the cash to income ratio. A ratio consistently less than one

indicated that sales were generated by means of expanding receivables, decreasing inventory or the understatement of payables. There was no significant increase in the cash flow to assets ratio as there were insufficient funds available for investment in productive assets, interest and dividend payments.

From the third year, the cash to income, reinvestment and cash interest and dividend coverage ratios declined. A comparison between the income and reinvestment ratio indicates that an entity had to maintain an asset base to enhance the ability to generate future income and cash flow from assets. From the third year, all the cash available, whether from operations or changes in working capital, inventory decrease or non-payment of creditors were used to service debts. The cash flow to total debt ratio for the failed entities was stronger than the ratio for the non-failed entities in the year prior to failure.

Signs of potential financial failure are generally evident in a ratio long before the entity actually fails. In this regard, the failed entities had lower cash flows than non-failed entities and also had smaller reserves of liquid assets. They also had less capacity to meet obligations and they tended to incur more debt. The changes in working capital also had an effect on the results of ratios. A decrease in inventories meant that the entity was selling inventories and not replacing it and therefore, generating cash. When payables increased the entity received additional credit that saved cash. In the fourth and the year prior to failure, the changes in working capital caused these failed entities to have positive cash flows while other years experienced negative cash flows.

## 6.4 CONCLUSION

Ten failed and fourteen non-failed entities were analyzed by means of cash flow ratios derived from the cash flow statement as listed in Table 6.5. Cash flow from operations, according to AC 118 (SAICA, 1996:par 16), is primarily derived from the principal revenue-producing activities of an entity. It generally results from transactions and other events that enter into the determination of net profit or loss. Cash flow from operations was a component in each of the cash flow ratios used in the evaluation.

In a study by Aziz *et al.* (1988:423), it was found that all cash flows for non-failed entities were consistently higher than for failed entities. This study compared the mean values of cash flow ratios of ten failed entities with fourteen non-failed entities and concluded that the failed entities had weaker ratios than the non-failed entities. Therefore, the cash flow to total debt ratio still seemed to be the strongest predictor of failure. The ratio for the failed entities was weaker than the ratio for the non-failed entities four out of five years prior to failure. The ratios could have been weaker had the failed entities not generated cash by decreasing inventory and saving cash by not paying creditors. The reinvestment ratio of the failed entities was also weaker than the non-failed entities four out of five years, but the ability to predict failure lies with the cash flow to total debt ratio. An entity will fail if it does not pay debt and not if reinvestment in assets is low.

The ratios of the failed entities were also very unstable in comparison to the stable non-failed ratios. Rujoub *et al.* (1995) suggest that entities with weak and unstable financial indicators are more likely to fail than those with stronger and more stable indicators. An analysis of the individual ratios of the failed entities indicated ratios that fluctuated from one year to the next and systematic declining trend could be established from the fifth to the year before failure. This was also evident in the changes in working capital. Entities started to dispose of inventory to generate cash in the fourth year prior to failure and creditors increased as

there was not sufficient cash to service current obligations. In addition, hardly any dividends were declared by the entities. The individual results of the entities in Annexure A proved that if an entity continued to have a negative cash flow from operations, such as Fashion Africa, Masterfridge, Retail Apparel and Rare Earth, it would not be able to cover primary obligations. Outside financing, if it could be obtained, or other sources were earmarked to pay debts and not to increase primary activities. However, an entity should not rely on outside financing to pay debts or the disposal of investments or productive assets if cash cannot be generated internally.

The cash inflows and outflows of activities in the cash flow statement are highly interrelated. A failure of any part of the system to operate may endanger or cause the entire entity to fail (Largay & Stickney, 1980). An entity should produce adequate funds from operations for primary cash requirements such as current debt, interest, dividends and capital investments.

The cash flow to sales and assets measures the amount of sales that realizes cash and the utilization of assets to create cash flows. If there is a decline in theses ratios an entity does not generate sufficient cash to cover debts. This will indicate whether an entity must rely on outside financing or dispose of capital investments.

The debt, reinvestment, dividend and interest coverage ratios indicate if there is not enough cash for these requirements. If cash is not generated through the utilization of assets, the reinvestment ratio will be low and this indicates insufficient investment in assets. If an entity does not reinvest in assets or at least maintain its asset at approximately the rate it is depreciating assets, it will hurt future earnings as the productivity from existing assets will decrease and there is no or little reinvestment in assets for the enhancement of future earnings.

The cash to income ratio relates to the cash to sales, assets and reinvestment ratio. The decline in an entity's ability to generate cash from operations is also shown by the cash to income ratio that measures the quality of income. This ratio can be interpreted that one Rand (R1) of income results in so much Rand (Rx) in cash. The quality of earnings is whether an entity can continue to generate current income levels through sales and continued investment in assets to secure future quality of earnings. Furthermore, also including depreciation into the equation, it will reflect the rate of deterioration of assets being depreciated. If the relation between depreciation and cash flow from operations increases, it shows less productivity from existing assets. The cash to income ratio, if consistently less than one, indicates the generation of sales by the expanding of receivables, decreasing of inventory or the understatement of payables. This is evident in the fourth and fifth year as the failed entities tried to generate cash in the period when the cash flow to debt total ratio was very weak.

Considering the study's findings, the analysis of results shows that the ratios of the failed entities were weaker than the ratios of the non-failed entities. The ratios indicated that insufficient cash was generated from sales and assets. Primary obligations could not be serviced and the asset base was not maintained. In addition, the cash to income ratio indicated that the quality of income was inadequate to continue to generate sufficient levels of future earnings and sales were generated by other means than primary activities.

An entity's ability to continue as a going concern depends on its ability to finance debt, in other words, to remain liquid. The critical needs and interest coverage ratios measure debt requirements in the short term whereas the total debt ratio includes interest and principal debt requirements. The failed entity's ratios were mostly negative and this indicated that at the current levels of cash flow, they could not pay current or long-term obligations. The cash to total debt ratio also indicated how many years, at the current levels of cash flow, it would take to pay off all debt. However, this could not be calculated, as the ratios were mostly

negative for the failed entities. The ratios also indicated that the reserve of liquid assets of the failed entities were low.

When analyzing the cash flow ratios, it appeared that financial failure could have been predicted from the third year prior to failure, as it was the second year in three years that most of the failed cash flow ratios were weaker than the non-failed ratios. Furthermore, the total debt ratio was the best indicator of financial failure as it was the weakest in four out of five years and entities failed if they could not meet their obligations.

No single ratio or small group of ratios addressing only one aspect of an entity such as liquidity is likely to be very useful. The dynamics of economic activities are not captured by a few selected measures, therefore, to be used effectively, new cash flow ratios must be integrated with traditional financial ratios in financial statement analysis (Figlewicz & Zeller, 1991:74). However, the cash flow to total debt ratio can also be used as an additional measure of liquidity. Although the ratio is not a pure estimate of liquidity, it is useful to use in conjunction with current and quick ratios.

It should be noted that this study does not suggest overlooking traditional financial ratios, but rather it addresses whether cash flow information can complement the information already provided by traditional income statement and balance sheet ratios. The integration of cash flow information with accrual accounting information can provide a superior measure over accrual accounting alone for predicting failure and to provide additional information on the financial strengths and weaknesses of an entity.

## 6.5 SUMMARY

Ratio models are derived directly from traditional financial statements while cash flow models are based on fundamental financial principles that the value of an entity equals the net present value of its expected future cash flows. Financial failure results if an entity has insufficient cash available to service debt outflows as they become due and the value of the entity is insufficient to obtain additional financing (Mossman & Bell, 1998:36). If the current cash flows accurately predict future financial status, then past and present cash flows should be a good indicator of both the value of the entity and the probability of financial failure.

In chapter four, an investigation was made of available cash flow ratios calculated from the cash flow statement. A list of cash flow ratios was selected in chapter five derived from the available ratios. The cash flow ratios were chosen due to their popularity and based on the objectives of the cash flow statement. The aim was to evaluate failed and non-failed entities by means of the ratios to establish if failure can be predicted.

As financial failure can produce substantial losses, the early prediction of potential failure can serve as an early warning and has the potential to reduce the risk and ultimately save an entity from failure. In chapter six, failed and non-failed entities were selected and evaluated using the cash flow ratios selected in chapter five.

A list of entities de-listed or suspended since 2000 was obtained from the JSE. The financial statements of these entities were obtained from the BFA. A minimum of five financial statements, after 1996, was required to be included in the analysis. Non-failed entities in the same sectors with financial statements corresponding to the failed entities were selected for evaluation. The non-failed entities were randomly selected which proved not to be the best selection as some of the non-failed entities had weaker ratios than the failed entities and

could possibly experience financial difficulties. The intention was to compare the ratios of the failed entities to financially successful entities. The non-failed entities were further evaluated to determine liquidity and solvency. The K-score was used to evaluate financial strength. Six entities were found to have possible financial difficulties and were eliminated from further evaluations. The mean values of the ratios for failed and non-failed ratios were computed and compared to determine if cash flow ratios of failed entities were different from non-failed entities and had the ability to predict financial failure.

The results of the ratio analysis implied that cash flow ratios had explanatory power. Ten failed entities were compared with fourteen non-failed entities and the results of the ratios indicated that the failed entities had the weakest ratios.

To conclude the study, chapter seven provides a summary of the findings of the research to determine whether the objectives have been achieved. Conclusions will be drawn from the findings and topics for further research will be suggested.

# CHAPTER SEVEN

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 7.1 INTRODUCTION

This chapter provides a brief summary of the study's objectives. A summary of the chapters discussed in this study is also provided. Finally, conclusions and possible recommendations are suggested for further research.

## 7.2 SUMMARY

The primary objective of this study was to assess the usefulness of the cash flow statement in financial analysis and to determine it cash flow ratios derived from the cash flow statement had the ability to predict financial failure.

In chapter one, the problem statement, objectives, importance, plan of study and research methodology were discussed. The aim of the study was to determine whether the usefulness of the cash flow statement could be enhanced by means of cash flow ratios. The integration of cash flow information with accrual accounting information can provide a superior measure over accrual accounting data for the prediction of financial failure.

Chapter two, three and four form the first section of the study in which the basic fieldwork was pursued by which the study's objectives could be determined in the second section of the study. Firstly, the development of the accounting framework was discussed. The accounting profession has long experienced pressure from the users of financial statements for more informative financial reporting. Therefore, the FASB embarked on a project to develop standards to contribute towards the development of an accounting framework for the preparation and presentation of financial reporting. The first publication was

launched in the USA in 1973 and resulted in the development of a conceptual framework. This framework was accepted in South Africa in November 1990 for financial reporting and issued as AC 000.

Secondly, in chapter two, the development of the cash flow statement was discussed. One of the primary objectives of financial reporting is to supply the users of financial statements with information for useful economic decision-making. The users need information to asses the ability of an entity to generate cash flow and the probability of future cash flow generation (Carslaw & Mills, 1991:63). Although the development of the cash flow statement has been slow in coming and was long overdue, cash flow information seems to be an important addition to financial statements (Mills & Yamamura, 1998:53). Many authors agree on the importance of the cash flow statement for financial analysis but, to date, neither text writers nor analysts have developed a comprehensive set of ratios for the effective evaluation thereof. In 1996 (SAICA, 1996), the cash flow statement, AC 118(revised) became a mandatory statement and is an integral part of financial reporting in South Africa.

Thirdly, in chapter three the analysis of financial statements was discussed with the focus on ratio analysis. Ratio analysis is one product of accounting evolution that can be traced as far back as the late 19$^{th}$ century. Beaver (1966) identified the current ratio as the first ratios to be used in the early 19$^{th}$ century. Since then many ratios have been developed that are widely used by analysis to evaluate financial statements for solvency, liquidity and financial viability as well as to predict financial distress. For many years, traditional current and quick ratios have been used for liquidity analysis. However, empirical research has shown that an entity can have a positive current and quick ratio, yet it can have severe cash flow problems and, in fact, be insolvent (Lee, 1982). The risk involved to rely only on traditional ratios to evaluate liquidity is that financial distress can go undetected and for liquidity prediction, that liquidity is cash.

With the inclusion of the cash flow statement in financial statements, a need arose for the development of ratios to evaluate the cash flow statement. The usefulness and the importance of cash flow information were discussed and, finally, in chapter four, studies on cash flow information and cash flow ratios were investigated. Cash flow ratios were suggested to measure relative performance (Giacomino & Mielke, 1993) and researchers (Zeller & Stanko, 1994b; Mills & Yamamura, 1998:55) re-calculated traditional cash flow ratios using cash flow from operations obtained in the cash flow statement. Many authors (Rujoub *et al.,* 1995) suggest the use of similar cash flow ratios although there are additional ratios proposed by various researchers for financial analysis. However there is a need to reach consensus on a list of common cash flow ratios for the evaluation of the cash flow statement.

Chapter five and six cover the second section of the study. The objectives of these two chapters were to select a list of cash flow ratios derived from the cash flow statement and to determine if the use of cash flow ratios enhances the usefulness of the cash flow statement for financial analysis. In chapter five, a list of eight cash flow ratios derived from the cash flow statements were selected from the ratios investigated in chapter four. The ratios were selected due to popularity as they were identified by various authors as important and also to adhere to the objectives of the cash flow statement. Cash flow from operations is the primary cash generating activity of an entity and is a component of each of the ratios suggested. The ratios were selected to be used in an evaluation with the aim to determine if the cash flow ratios have the ability to predict financial distress.

In an earlier study by Beaver (1966) on bankruptcy prediction, the importance of cash flow information as an early warning of financial distress has been identified. Later studies have shown that cash flow information contains potentially significant information content over accrual information in discriminating between bankrupt and non-bankrupt entities, particularly in the

determination of the probability of bankruptcy (Casey & Bartczak, 1984; Gentry *et al.*, 1985b, 1987; Aziz & Lawson, 1989; Sharma, 2001).

A list of entities de-listed or suspended owing to financial difficulties, between 2000 and 2004, was obtained from the JSE. Ten failed entities with a minimum of five financial statements since 1996 and twenty non-failed randomly selected entities in the same sectors with corresponding financial statements to the failed entities were selected for evaluation. The financial statements of the entities were obtained from the BFA. The analysis of the results and the research methodology were discussed in chapter six. The selected non-failed entities were evaluated using the K-score to determine financial strength. Six non-failed entities were excluded from further evaluations owing to financial distress. The mean value of each ratio for each year prior to failure was then calculated. The aim was to compare the ratios of failed and non-failed entities to determine differences. Financial, insurance, property development and investing entities were excluded from the evaluation as their ratios and cash flows are always substantially different from those of other entities in different financial sectors, even when they are in no danger of failure.

Previous studies on predicting financial failure used different approaches to measure cash flow from operations, while this study based its measure of cash flow from operations on those criteria required by AC 118. The cash flow ratios used in this study to evaluate entities were also calculated from the cash flow statements and were used to indicate financial difficulties. In general, it was found that cash flow ratios have the ability to predict financial failure.

Beaver (1966) was the first to stress the importance of cash flow information for the prediction of financial distress. The usefulness of cash flow information was also supported by various authors in later studies (Lee, 1982; Dambolena & Shulman, 1988; Stanko & Zeller, 1993; Mills & Yamamura, 1998). These authors furthermore agreed that current and quick ratios are not enough for liquidity

prediction as in the failure of W.T. Grant (Largay & Stickney, 1980; Zeller & Stanko, 1994b) and Laker Airlines (Lee, 1982). The primary objective of this study as stated in chapter one, therefore, was to establish the usefulness of the cash flow statement in predicting financial failure. Other objectives of this study were to investigate existing cash flow ratios, suggesting a list of cash flow ratios to be included in a financial analysis and to analyze failed and non-failed entities by means of the cash flow ratios.

The study concluded that cash flow ratios calculated from the cash flow statement enhanced the usefulness of financial statement. Cash flow information can also be useful in complementing traditional ratios. Cash flow information has shown that information that may be overlooked by traditional ratios will be identified by cash flow ratios. This was evident, for example, where working capital was manipulated to improve cash flows.

To prove the primary objective of this study, comparisons were made between failed and non-failed entities by means of the list of suggested cash flow ratios. Although this study proved that failure could be predicted by means of cash flow ratios, the possibility exists that it is not ultimately the best predictor of failure. Cash flow ratios in isolation are not enough to predict financial failure. The ratios should be used in conjunction with other liquidity predictors, such as the K-score, by De La Rey (1981), which was used to determine whether the non-failed entities used in the comparison were financially sound.

## 7.3 CONCLUSIONS

After an evaluation of entities by means of selected cash flow ratios, it was found that cash flow information has explanatory power. An entity will fail if it is unable to produce internally generated cash to finance obligations and it is not able to obtain additional financing. If additional financing is obtained, it must be used for the enhancement of operating activities or productive assets and not to finance debt.

Entities can dispose of capital investments or productive assets to pay debts but if this persists over a period of time, it will lead to financial distress and failure. Beaver (1966) was the first to identify the cash to debt ratio as the ratio with the greatest potential to predict failure. In a later study by Laitinen (1994), the cash to debt ratio proved to be a powerful predictor of failure. This was also supported in this study. Of all the cash flow ratios used, the cash to total debt ratio was one ratio with the strongest ability to predict financial failure.

Beaver (1966) in a previous study on bankruptcy prediction compared the ratios of failed entities with non-failed entities. Although his entities were similar in asset size, in this study, the non-failed entities were randomly selected. The non-failed entities were further tested to determine if they were experiencing financial difficulties. The mean values of each ratio for failed and non-failed ratios were calculated for each year prior to failure. The cash flow to total debt and the reinvestment ratios for the failed entities were weaker than the non-failed ratios in four out of five years. However, the cash flow to total debt ratio proved to be the best indicator of financial failure, as an entity cannot survive if its debt obligations cannot be met. As financial difficulties increase, entities will tend to use cash flow to pay debts rather than to reinvest in an asset base or pay dividends. This was also indicated by the cash dividend coverage ratio. In addition, reinvestment in assets was low and hardly any dividends were paid as the cash available was used to pay debt.

Another observation that was made was the unexpected positive cash flow of failed entities while other years experienced negative cash flows. As financial distress became evident, an assumption could be made that the entities were selling off inventory to generate cash flow instead of replacing it. Furthermore, creditors increased to save cash. Therefore, the cash inflow owing to the changes in working capital resulted in stronger cash flow ratios. Bearing this in mind, the cash to total debt ratio may have been weaker than the ratio of the non-failed entities for all five years. Failed entities have lower cash flows than non-failed entities and also smaller reserves of liquid assets. They also have less capacity to meet obligations and they tend to incur more debt, as cash become less. The financial ratios of failed entities are also unstable and fluctuating.

Beaver (1966) makes an observation that the most popular ratios would become the most manipulated by management. This activity is called window dressing and the utility or usefulness of such ratios would be destroyed if manipulated by management to portray better results of an entity to third parties.

Cash flow activities are closely related. The failure on one part of the system can cause the total system to fail. Bearing this in mind, it was found that the cash to sales and asset ratios are truly productive ratios. These ratios indicate the amount of sales that realize in cash and the utilization of assets to create cash flow. Should an entity not generate sufficient cash, debt, interest and dividends cannot be paid and an asset base will not be maintained. If an entity does not reinvest in productive assets at least at the same rate as it is depreciating assets, it will neglect the ability to generate future earnings.

Creditors need cash flow as an indicator to determine if debts can be paid. Zeller and Stanko (1994b:52) found that a decline in the cash flow to sales and asset ratios as well as a decline in the cash income ratio indicated reliance on outside financing for primary cash requirements. If an entity cannot generate cash flow

out of sales or generate cash flows for the maintenance of assets and the enhancement of future earnings it will not be able to generate sufficient cash to cover debts. A decline in cash to asset ratio indicates less productivity from existing assets. A decline in these ratios indicates reliance on outside financing to cover primary cash requirements.

A point of concern made by Ohlson (1980) must be stressed. After analyzing various studies on bankruptcy prediction by, amongst others, Beaver (1966), Altman (1968), Deakin (1972), Libby (1975) and Blum (1974), Ohlson (1980) concluded that if predictors derived from statements that were released after the date of bankruptcy were employed, it would be easier to predict bankruptcy.

The ratios suggested in this study if used in conjunction with traditional balance sheet and income statement ratios should lead to a better indication of the financial strengths and weaknesses of an entity. It also has the potential to serve as an early warning of financial distress and bankruptcy. An early prediction of financial distress has the advantage that financial distress and possible bankruptcy may be prevented.

## 7.4 RECOMMENDATIONS

This study does not suggest overlooking traditional balance sheet and income statement ratios. Cash flow ratios and traditional ratios could be used to optimum advantage of an entity as these ratios complement each other. If inventory, as an example, is shifted from the entity to the customer by offering relaxed credit requirements, it will not be reflected by the traditional return on sales ratio. By comparing the traditional return on sales ratio to the cash flow to sales ratio the extent that an entity relies on non-cash items to generate sales will be identified.

The critical needs, cash interest and dividend coverage ratios are short-term measures of liquidity and coverage. These ratios are cash flow indicators of

liquidity and solvency about an entity's ability to meet obligations beyond operating needs. Traditional activity and coverage ratios have many limitations. The debtors and creditors turnover, or days to pay creditors or receive from debtors, and times interest earned, does not measure the ability to return funds to creditors or investors. Specific indicators of cash flows are needed that are only provided by cash flow information (Figlewicz & Zeller, 1991:71).

Debt ratios will cover what the current and quick ratios missed. If debtors and inventory (stock piling) increase and cash decreases, it will not show up in the current and quick ratios. If the current and quick ratios are less than one, cash flows from other activities will have to be used to cover critical current obligations. Therefore, the debt ratio can be use as an additional measure of liquidity. It is not a pure estimate of liquidity but is useful to use in conjunction with current and quick ratios. A host of cash flow ratios from the cash flow statement are possible. Cash flow information is standardized in the cash flow statement internationally. In this regard, cash-flow-based ratios may come as useful complements to traditional accrual ratios and the full potential of the cash flow statement will be utilized.

The cash to income ratio measures the quality of earnings or the closeness of accrual based earnings to cash. These items may differ and the differences will be reported in the reconciliation of net earnings and cash flow from operations. This ratio should be stable and consistent values of below one can indicate other measures of generating sales than from primary activities, for example, the expanding of receivables, decreasing inventory or the understatement of payables. An understanding of this ratio gives insight into the true economic performance of an entity.

The cash flow statement can also be useful to identity manipulation of cash. By comparing the components of operating cash flow it will give further insight on the relationship between liquidity and financial distress. The reduction of inventory and receivables and the increasing of payable may be a means to

manipulate cash flow from operations. Selling of inventory without replacing it generates cash as well as increasing creditors. However, Clark (1996) stresses the importance of monitoring cash flow. Small leaks of cash outflows can be spotted and plugged before they drain an entity's lifeblood. Gombola and Ketz (1987) agree that a cash flow analysis can be more revealing than a profitability analysis.

This study used failed entities and evaluated the entities by means of suggested cash flow ratios to determine if the potential to predict financial distress exists. However, ratios in isolation are of little value. Benchmarks can be developed for each ratio against which ratios of individual entities can be compared. The comparing of an entity's ratios to industry ratios or benchmark ratios will filter out common uncertainties and will leave behind only entity-specifics. In such an evaluation other entities in the industry will provide information about the specific performance of an entity.

Research in this field had identified many other fields of research on which to embark. Beaver (1966) also found that larger entities are less likely to fail than smaller firms. This is another assumption that will be interesting to research. Although the prediction of failure is one aspect of research on cash flows, financially strong entities can also be evaluated. Entities can be evaluated by means of the cash flow ratios investigated in chapter four. Ratios can also be used to evaluate corporate performance or to make a relative performance evaluation. Retail entities can also be evaluated to determine their ability to pay.

Since the introduction of the cash flow statement in financial reporting additional data has been made available. This reinforces the need for further research with the inclusion of cash flow data or the combination of cash flow data in accrual ratios. This study has proposed that cash flow ratios be used in conjunction with traditional ratios. Research using cash flow and traditional ratios and comparisons between these ratios are another research field.

The ratios suggested in this study should provide a starting point for further analysis and provide a foundation for common usage. To date there is little agreement on which ratios provide the most relevant measures. Only time and experimentation with various measures will reveal which ratios best capture the quality of the liquidity and financial flexibility of an entity.

The financial failure of an entity is an event than can produce substantial losses. Therefore, a model to predict potential financial failure as early as possible can serve as an early warning of distress and has the potential to reduce the risk of suffering and losses.

Accounting is plagued by the existence of alternative measurement methods. For many years, accountants have been searching for criteria that can be used to choose the best measurement alternative. According to Beaver *et al.* (1968:675, 683) alternative accounting measurements are evaluated in terms of their ability to predict events of interest to decision-makers. The measure with the greatest predictive power with respect to a given event is considered to be the best method for that particular purpose. Although there is always the possibility of an unknown or untested measure that performs even better than the best measure tested, it seems that the authors (Beaver *et al.*, 1968) are encouraging researchers to continue to search for methods to prove what they are trying to prove. There is always a possibility that another measure will be found to prove what is needed to be proved.