CHAPTER-3

CRITICAL ANALYSIS OF CASH FLOW STATEMENT
AND CASH FLOW RATIOS

3.1 INTRODUCTION

Before 1997, the 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 IAS 7, the cash flow statement became an integral part of financial statements.

Ratio analysis is generally accepted to be the most widely used technique for analysing financial statements. Traditional balance sheet and income statement ratios have been developed to evaluate the business entities for solvency, liquidity, profitability and financial health. Even though, many financial analysts/authors agree on the significance of cash flow ratios for financial analysis, till date, neither text authors 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 that have superior potential than financial ratios in predicting financial distress or business failure, this chapter describes a theoretical investigation of (i) cash flow statement as per IAS-7 or Indian AS-3 and (ii) the available
cash flow ratios of past studies derived from the cash flow statement. Cash flow ratios with the ability to measure financial failure would also be highlighted. When the chapter discusses the earlier cash flow studies, it does not discuss later studies if the ratios were already covered in an earlier study.

3.2 CASH FLOW STATEMENT- POSITION UNDER US-GAAP AND U.K. GAAP

In 1980, as part of its conceptual framework project, the FASB issued a Discussion Memorandum – Reporting Funds Flows, Liquidity, and Financial Flexibility- Which discussed funds flow reporting issues. The major issues which were raised in the Discussion Memorandum relating to funds flow reporting included (a) the concept of funds that should be adopted as the focus of the funds flow statement, (b) the reporting of transactions that have no direct impact on funds, (c) the approaches for presenting information about funds flows, (d) the presentation of information about funds flow from operations and (e) the separation of funds flow information about investing activities into outflow for maintenance of operating capacity, expansion of operating capacity, or non-operating purposes.

Although this Discussion Memorandum was followed by an Exposure Draft of a proposed concept statement- Reporting Income, Cash Flows, and financial position of Business Enterprises – Which suggested that funds flow
reporting should focus on cash rather than working capital, the FASB decided not to issue a final statement on the subject. Instead, the FASB chose to consider the subject in connection with its study of recognition and measurement concepts. The outcome was that concepts statements No.5- Recognition and Measurement in financial statements of Business Enterprises – concluded that a full set of financial statements should include a statement of cash flows. This led to the FASB setting up a task force on Cash Flow Reporting, and ultimately to the publication in November 1987 of SFAS 95- statement of cash flows. In February 1989, SFAS 102- statement of cash flows- Exemption of certain Enterprises and classification of cash Flows from certain Securities Acquired for Resale, and in December 1989, SFAS 104- statement of cash flows- Net Reporting of certain Cash Receipt and Cash payments and Classification of cash flows from Hedging Transactions- were issued as amendments of SFAS 95; these amendments have been incorporated in the discussion of SFAS 95 below.

3.3 FOCUS OF SFAS 95

Statement of Financial Accounting Standards- SFAS 95 concluded that the primary purpose of a statement of cash flows is to provide relevant information about the cash receipts and cash payments of an enterprise during a period. The information provided by the statement, if used in
conjunction with related disclosures in the other financial statements, should assist users to:

(a) assess the enterprise’s ability to generate positive future net cash flows;

(b) assess the enterprise’s ability to meet its obligations, pay dividends and meet its needs for external financing;

(c) assess the reasons for differences between net income and related cash receipt and payments; and

(d) assess the effects on the enterprise’s financial position of both cash and non-cash investing and financing transactions during the period.

In order to achieve these objectives, the statement focuses on the change during the period in *cash and cash equivalents*, rather than working capital; ambiguous terms such as ‘funds’ are not to be used. The total amounts of cash and cash equivalents at the beginning and end of the period shown in the statements of cash flows will be the same amounts as presented in the balance sheets as of those dates. A statement of Cash flows is not required for defined benefit pension plans and certain other employee benefit plans or for certain investment companies.
3.3.1 Cash equivalents

SFAS 95 defines ‘Cash equivalents’ as short-term, highly liquid investments that are both:

(a) readily convertible to know amounts of cash; and

(b) So near their maturity that they present insignificant risk of changes in value because of changes in interest rates.

Generally, only an investment with an original maturity (i.e. original maturity to the entity holding the investment) of three months or less qualifies under the above definition.

It is noteworthy that not all investments that qualify are required to be treated as cash equivalents; for example, an enterprise may classify short-term, highly liquid investments as investments rather than cash equivalents. However, a Company must disclose its policy for determining cash equivalents, and any change to that policy is considered to be a change in accounting principle, requiring restatement of comparative financial statements.

3.4 FORM AND CONTENT OF THE STATEMENT OF CASH FLOWS

SFAS 95 states that a statement of cash flows must classify cash receipts and cash payments as resulting from investing, financing or operating activities. It therefore does not have classifications equivalent to
the Financial Reporting Standards - FRS 1 categories of returns on investments and servicing of ‘finance’ and ‘taxation’, thereby giving rise to issues regarding the classification of interest and taxation cash flows. Generally, each cash receipt or payment is to be classified according to its nature without regard to whether it stems from an item intended as hedge of another item. For example, the proceeds of a borrowing are a financing cash inflow even though the debt is intended as a hedge of an investment, and the purchase or sale of a futures contract is an investing activity even though the contract is intended as a hedge of a firms’ commitment to purchase inventory. However, cash flows from futures contracts, forward contracts, option contracts or swap contracts that are accounted for as hedges of identifiable transactions or events (for example, a cash payment from a futures contract that hedges a purchase or sale of inventory), including anticipatory hedges, may be classified in the same category as the cash flows from the items being hedged provided that the accounting policy is disclosed. If for any reason, hedge accounting for an instrument that hedges an identifiable transaction or event is discontinued, then any cash flows subsequent to the date of discontinuance are classified consistent with the nature of the instrument.
3.4.1 Investing activities

*Investing activities include:*

(a) making and collecting loans; and

(b) acquiring and disposing of

i. securities that are not cash equivalents;

ii. property, plant and equivalents;

iii. other productive assets, other than inventory materials.

Investing activities exclude acquisition and disposal of certain loans or other debt or equity instruments that are acquired specifically for resale.

*Cash inflows from investing activities are:*

(a) receipts from collections of loans made by the enterprise and of other entities, debt instruments (other than cash equivalents and certain debt instruments that are acquired specifically for resale) that were purchased by the enterprise;

(b) receipts from sale of equity instruments of other enterprises (other than certain equity instruments carried in a trading account), and from returns of investments in those instruments; and

(c) receipts from sales of property, plant and equipment and other productive assets (including interest capitalized as part of the cost of those assets.)
**Cash outflows for investing activities are:**

(a) disbursement for loans made by the enterprise, and payment made to acquire debt instruments of other entities (other than cash equivalents and certain debt instruments that are acquired specifically for resale);

(b) payments to acquire equity instruments of other enterprises (other than certain equity instruments that are acquired specifically for resale);

(c) payments to acquire property, plant and equipment and other productive assets (including interest capitalized as part of the cost of those assets).

**3.4.2 Financing activities**

Financing activities include obtaining resources from owners and providing them with a return on, and return of, their investment; borrowing money and repaying amounts borrowed, or otherwise settling the obligations; and obtaining and paying for other resources obtained from creditors or long-term credit.

**Cash inflows from financing activities are:**

(a) proceeds from issuance of equity securities; and

(b) proceeds from issuing bonds, mortgages, notes and from other short- or long-term borrowing.
Cash outflows for financing activities are:

(a) payments of dividends to owners;

(b) cash outlays to repurchase the enterprise’s shares;

(c) repayments of amounts borrowed; and

(d) other principal payments to creditors who have extended long-term credit.

3.4.3 Operating activities

Operating activities include:

(a) all transactions and other events not defined as investing or financing activities;

(b) delivering or producing goods for sale and providing servicing; and

(c) generally, the cash effects of transactions and other events that enter into the determination of income.

Cash inflows from operating activities are:

(a) cash receipts from sales of goods or services (the term ‘goods’ includes certain loans and other debt and equity instruments of other enterprises that are acquired specifically for resale);

(b) cash receipts from returns on loans (interest) and on equity securities (dividends); and
(c) all other cash receipts that do not stem from transactions defined as investing or financing activities (e.g. amounts received in settlement of lawsuits).

Cash outflows for operating activities are:

(a) cash payments to acquire materials for manufacture or goods for resale (the term ‘goods’ includes certain loans and other debt and equity instruments of other enterprises that are acquired specifically for resale);

(b) cash payments to other suppliers and employees for other goods or services;

(c) cash payments to governments for taxes, duties, fines etc.;

(d) cash payments to lenders and other creditors for interest; and

(e) all other cash payments that do not stem from transactions defined as investing or financing activities.

3.4.4 Receipts and payments are presented gross

In general, a greater and more meaningful assessment of cash flows can be derived from reporting gross, rather than net, cash receipts and cash payments. Nevertheless, SFAS 95 takes the view that items whose turnover is quick, the amounts are large and whose maturities are short-term may be reported net (i.e. investments- other than cash equivalents - loan receivable
and debt, provided that the original maturity of assets or liability is three months or less).

SFAS 95 argues that items with these characteristics may be reported net, since knowledge of gross cash receipts and payments related to them is not necessary to understand the enterprise’s operating, investing and financing activities.

However, banks, savings institutions and credit unions are not required to report gross amounts of cash receipts and cash payments for:

(a) deposits placed with other financial institutions and withdrawals of deposits;
(b) time deposits accepted and repayments of deposits; and
(c) loans made to customers and principal collections of loans.

When those enterprises constitute part of a consolidated enterprise, net amounts of cash receipts and cash payments for deposits or lending activities of those enterprises must be reported separate from gross amounts of cash receipts and cash payments for other investing and financing activities of the consolidated enterprise, including those of a subsidiary of a bank, savings institution or credit union that is not itself a bank, savings institution and credit union.
3.4.5 Non-Cash activities are disclosed separately

Information about all investing and financing activities of an enterprise during a period that affect recognised assets or liabilities, but that do not result in cash receipts or cash payments in the period shall be reported in related disclosures. Disclosure may be narrative or summarized in a schedule; examples include converting debt to equity, acquiring assets by assuming directly related liabilities (e.g. purchasing a building by incurring a mortgage to the seller), or obtaining an asset by entering into a capital lease.

3.4.6 Choice of using the direct or indirect methods

As is the case under FRS 1 and IAS 7, both the direct and indirect methods of presentation are available for reporting net cash flow from operating activities. However, regardless of which of the two methods is used, SAFS 95 (like FRS 1) requires that a reconciliation of net income to net cash flow from operating activities be presented, and that interest and income tax payments be presented.

It is noteworthy that although SFAS 95 recommends that the direct method should be used to report the net cash flow from operating activities, the AICPA’s 1993 survey of accounting practices revealed that of the 600 survey companies presenting a statement of cash flows, only 15 used the direct method.
3.5 PRINCIPAL DIFFERENCE BETWEEN FRS 1 AND SFAS 95

Although both the US and the UK have standards requiring a statement of cash flows, there are some quite significant differences between their provisions. The principal differences are summarized below:

Perhaps the main difference between FRS 1 and SFAS 95 lies in the categorization of cash flows. In particular, FRS 1 requires standard headings for returns on investments and servicing of finance and taxation, neither of which has a parallel under SFAS 95 in the US. These items are all included in cash flows from operating activities, except for dividends paid which are treated as financing cash flows, and capitalized interest which is treated as part of the cost of the assets into which it is capitalized, thereby forming part of the investing cash flows.

Under FRS 1, cash equivalents are shown net of advances from banks which are repayable within three months from the date of the advance. Essentially, this means that in the UK, bank overdrafts are deducted in arriving at cash equivalents and, whilst there is no equivalents requirement in the US, this is at least in part due to the fact that bank overdrafts are not a common form of financing in the US. More importantly, under SFAS 95 there is more flexibility in the definition of cash equivalents than is the case with FRS 1. Under SFAS 95, one of the criteria for instruments to be
classified as cash equivalents is that they are so near their maturity that they
present insignificant risk of changes in value because of changes in interest
rates. Although generally only an investment with an original maturity (i.e.
original maturity to the entity holding the investment) of three months or
less qualifies under the above definition, this is not a hard and fast rule.

It is also noteworthy that under SFAS 95 not all investments that
qualify are required to be treated as cash equivalent; for example, an
enterprise may classify short-term, highly liquid investments as investment
rather than cash equivalent. In any event, in the US a company must disclose
its policy for determining cash equivalents, and any change to that policy is
considered to be a change in accounting principle, requiring restatement of
comparative financial statements. Under FRS 1, whenever an investment (or
borrowing) falls within the definition of cash equivalent, it must be treated
as such.

SFAS 95 makes a provision for net disclosure of movements in
certain items; there is no equivalent provision in FRS 1. Items where the
turnover is quick, the amounts are large and maturities are short may be
disclosed net rather than gross. This includes investments (other than cash
equivalents), loans receivable and debt, provided that the original maturity
of the asset or liability is three months or less.
The consequence of this difference is that movements in items such as short term commercial paper borrowing should arguably shown by gross in the UK (they are no part of cash equivalents as they are not bank borrowings whereas in the US, only the net movement need be disclosed).

In dealing with foreign currency cash flows, SFAS 95 requires the cash flows of foreign operations to be translated using the exchange rate in effect at the time of the cash flow (i.e. the historical or actual rate). This differs from FRS 1 which requires that the rate used in translating the results of the foreign operations should also be used for the translation of the cash flows of foreign operations.

Information about non-cash transaction has to be given under each standard. However, under SFAS 95, only information about non-cash investing and financing activities has to be given. Under FRS 1, information about all material transactions not resulting in movements of cash but nevertheless altering the company’s financial position should be disclosed. Where the indirect method of presentation of cash flows from operating activities is adopted, FRS 1 requires the reconciliation of operating profit to cash flows from operating activities to be given in a note rather than in the cash flow statement itself. SFAS 95 allows the reconciliation to be given either as a note or actually on the face of the cash flow statement.
The supporting notes to statements differ as between the two countries. The reconciliations of opening and closing balance of cash and cash equivalents and of items in the financing section of the cash flow statement have no parallel in the US. Similarly, note discussion of exceptional and extraordinary cash flows is required by FRS 1 to give details of the effects on the cash flow statement of the acquisition or disposal of a subsidiary also has no equivalent under SFAS 95.

SFAS 95 (as amended by SFAS 104) permits cash flows relating to certain hedges to be classified along with the cash flows from the item being hedged. However, only cash flows from futures contracts, forward contracts, option contracts and swap contracts can be treated as hedges in this way. FRS 1, by contrast, appears to apply to a wider spectrum of hedging instruments than this and also appears to require the classification of the hedging cash flows with the cash flows of the hedged instrument rather than according to the nature of the hedging instrument.

3.6 POSITION UNDER INDIAN GAAP (INDIAN AS-3)¹

Cash flows arising from transactions in a foreign currency should be recorded in an enterprise’s reporting currency by applying to the foreign currency amount the exchange rate between the reporting currency and the foreign currency at the date of the cash flow. A rate that approximates the
actual rate may be used if the result is substantially the same as would arise if the rates at the dates of the cash flows were used. For example, AS-11 allows a weighted average exchange rate for a period to be used for recording foreign currency transactions. The effect of changes in exchange rates on cash and cash equivalents held in a foreign currency should be reported as a separate part of the reconciliation of the changes in the cash and cash equivalents during the period.

Unrealised gains and losses arising from changes in foreign exchange rates are not cash flows. However, the effects of exchange rate changes on cash and cash equivalents held or due in a foreign currency is reported in the cash flow statement in order to reconcile cash and cash equivalents at the beginning and the end of the period. This amount is presented separately from cash flows from operating, investing and financing activities and includes the differences, if any, had those cash flows been reported at the end of period exchange rates.

3.6.1 Cash Flows between a Parent and its Subsidiaries, Associates or Joint Ventures

When accounting for an investment in an associate or a subsidiary or a joint venture, a parent restricts is reporting in the parent only cash flow statement to the cash flows between itself and the investee / joint venture, for example, cash flows relating to dividends and advances. ICAI has issued
AS-27 on joint ventures, which only permits the proportionate consolidation method. Therefore, one believes that consolidated cash flows will include the proportionate share of the jointly controlled entity’s cash flow. Similarly in the case of parent-subsidiary relationship, the entire cash flow of the subsidiary will be included in the consolidated cash flow statements. Consolidated cash flow is prepared on the basis of consolidated balance sheet and profit and loss account rather than through a simple aggregation of the cash flow statement of the various entities since in the latter inter-company cash flows not get eliminated.

3.6.2 Disclosure of Acquisitions and Disposals of Subsidiaries and Other Business Units

The aggregate cash flows arising from acquisitions and from disposals of subsidiaries or other business units should be presented separately and classified as investing activities. An enterprise should disclose, in aggregate, in respect of both acquisition and disposal of subsidiaries or other business units during the period for each of the following:

(a) The total purchase or disposal consideration; and

(b) The portion of the purchase or disposal consideration discharged by means of cash and cash equivalents.

The separate presentation of the cash flow effects of acquisitions and disposals of subsidiaries and other business units as single line items helps to
distinguish those cash flows from other cash flows. The cash flow effects of disposals are not deducted from those of acquisitions.

3.6.3 Reporting of Non-cash Transactions

Investing and financial transactions that do not require the use of cash and cash equivalents should be excluded from a cash flow statement. Such transactions should be disclosed elsewhere in the financial statements in a way that provides all the relevant information about these investing and financial activities. Many investing and financial activities do not have a direct impact on current cash flow although they do affect the capital and asset structure of an enterprise. The exclusion of non-cash transactions from statements to be done as these items do not involve cash flows in the current period.

Examples of non-cash transactions are:

(a) the acquisition of assets by assuming directly related liabilities;
(b) the acquisition of an enterprise by means of issue of shares; and
(c) The conversion of debt to equity.
3.6.4 Disclosures

The disclosures other than those already set out in this chapter are enumerated below.

1. An enterprise should disclose the components of cash and cash equivalents and should present a reconciliation of the amounts in its cash flow statement with the equivalents items reported in the balance sheet.

2. In view of the variety of cash management practices, an enterprise discloses the policy which it adopts in determining the composition of the cash and cash equivalents.

3. The effects of any change in the policy for determining components of cash and cash equivalents is reported in accordance with accounting standard (AS 5), net profit or loss for the period, prior period items and changes in Accounting policies.

4. An enterprise should disclose, together with a commentary by management, the amount of significant cash and cash equivalent balances held by the enterprise that are not available for use by it. Examples include cash and cash equivalent balances held by a branch (subsidiary in the case of consolidated cash flows) of the enterprise that operates in a country where exchange controls or other legal
restrictions apply as a result of which the balances are not available for use by the enterprise.

3.6.5 Other Disclosures

Additional information may be relevant to users in understanding the financial position and liquidity of an enterprise. Disclosure of this information, together with a commentary by management, is encouraged (not mandatory) and may include:

1. The amount of undrawn borrowing facilities that may be available for future operating activities and to settle capital commitments, indicating any restriction on the use of these facilities; and

2. The aggregate amount of cash flow that represent increases in operating capacity separately from those cash flows that are required to maintain operating capacity.

The separate disclosure of cash flow that represent increases in operating capacity and cash flows that are required to maintain operating capacity is useful in enabling the user to determine whether the enterprise is investing adequately in the maintenance of its operating capacity. An enterprise that does not invest adequately in the maintenance of its operating capacity may be prejudicing future profitability for the sake of current liquidity and distributions to owners.
3.6.6 Position under IAS / IFRS

In October 1977, the IASC issued IAS 7- Statement of Changes in Financial Position- Which required the presentation of a statement of sources and uses of funds. However, the standard was even less prescriptive than SSAP 10, and contained virtually no requirement as to the form or content of the funds statement.

Although the IASC did not deal with IAS 7 in its comparability / improvements project, a separate project on cash flow statements was started in April 1989. This culminated in the publication in 1992 of a revised version of IAS 7- Cash flow statements.

The stated objective of IAS 7 is far less ambitious than that of FRS 1, and is simply stated as being ‘to require the provision of information about the historical changes in cash and cash equivalent of an enterprise by means of a cash flow statement which classifies cash flows during the period from operating, investing and financing activities. This makes it quite clear that a cash flow statement prepared under IAS 7 is not a statement of liquidity, thereby avoiding the problems in this regard associated with FRS 1.

IAS 7 applies to all enterprises including banks, insurance companies and other financial institutions. The reasoning behind this is articulated as follows: ‘Users of an enterprise’s financial statements are interested in how
the enterprise generates and uses cash and cash equivalents. This is the case regardless of the nature of the enterprise’s activities and irrespective of whether cash can be viewed as the product of the enterprise, as may be the case with a financial institution. Enterprises need cash for essentially the same reasons however different their core revenue-producing activities might be. They need cash to conduct their operations, to pay their obligations, and to provide returns to their investors. Accordingly, this standard requires all enterprises to present a cash flow statement.

IAS 7 takes a more flexible approach to cash equivalent than FRS 1, defining them as ‘short- term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value. The standard goes on to explain that cash equivalents are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes, and that an investment normally qualifies as a cash equivalent only when it has a short maturity of, say three months or less from the date of acquisition. Therefore, although IAS 7 hints at the ‘within three months of maturity when acquire’ criterion, the definition does have some flexibility.

IAS 7 has not followed FRS 1, is led in establishing a separate heading for returns on investments and servicing of finance. Nevertheless, it
recognizes that there is no consensus internationally on the classification of
interest and dividends in the cash flow statement and, in so doing, requires
that interest and dividends received and paid should be classified in a
consistent manner from period to period as either operating, investing or
financing activities. The amounts should be separately disclosed, thereby
enabling users to make their own comparisons or adjustment.

IAS 7 has also not established a separate heading in the cash flow
statement for taxation cash flows, and instead proposes that all cash flows
arising from taxes on income should be separately disclosed as a single line
item and classified as operating activities, unless they can be specifically
identified with financing and investing activities.

In sticking to the three standard classifications of operating, investing
and financing, IAS 7 has also followed the approach of SFAS 95 in defining
operating activities as activities other than those that are defined as investing
or financing activities and thereby avoiding the difficulties which are
inherent in FRS 1’s operating activities definition.

As in the case under FRS 1 and SFAS 95, IAS 7 permits both the
direct and indirect methods of presentation for reporting net cash flow from
operating activities. However, whereas both FRS 1 and SFAS 95 require that
a reconciliation of net income to net cash flow from operating activities be
presented regardless of which of the two methods is used, IAS 7 does not require the reconciliation in the case where the direct method is used. Also, unlike FRS 1, where the indirect method is used, the reconciliation may be given on the face of the cash flow statement.

In addition to disclosures in respect of acquisitions and disposals of subsidiaries, non-cash transactions and the components of cash and cash equivalents, IAS 7 has introduced the requirement that an enterprise preparing a cash flow statement should disclose, together with a commentary by management, the amount of significant cash and cash equivalent balances held by the enterprise that are not available for use by the group. The standard also encourages, but does not require, additional disclosures which may be relevant to users in understanding the financial position and liquidity of an enterprise. Included amongst these is the disclosure of segmental cash flows so as to enable users to obtain a better understanding of the relationship between the cash flows of the business as a whole and those of its component parts.

3.7 CASH FLOW RATIOS AVAILABLE FOR EVALUATING THE CASH FLOW STATEMENT

Gombola and Ketz (1983:113)\(^2\) 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).³

Cash flow ratios have been suggested by different researchers as useful for analyzing the cash flow statement. The set of cash flow ratios suggested by each researcher is discussed with regard to why he/she found the ratios
important for evaluating the cash flow statement. Many authors developed new cash flow ratios whereas other authors used such newly developed ratios in their 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 SFAS 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 components are included in the discussion.

3.8 CASH FLOW RATIOS SUGGESTED BY BEAVER (1966)⁴

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 criterion 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 its 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 3.1. Cash flow, as one of the components of the
ratios, was defined as net income plus depreciation, depletion and
amortisation.
TABLE 3.1  CASH FLOW RATIOS AS PREDICTORS OF FAILURE

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<tr>
<th>S. NO</th>
<th>LIST OF RATIOS</th>
<th>DEFINITION</th>
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<tr>
<td>1.</td>
<td>Cash flow to sales</td>
<td>Cash flow: Net income plus depreciation, depletion and amortization</td>
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<tr>
<td>2.</td>
<td>Cash flow to total assets</td>
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<tr>
<td>3.</td>
<td>Cash flow to total net worth</td>
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<td>4.</td>
<td>Cash flow to total debt</td>
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Source: Adapted from Beaver (1966)

The cash flow ratios shown in Table 3.1 had previously been suggested in literature but were untested. Beaver (1966) suggested that the ratios to be used as predictors of failure.

3.8.1 Cash flow to sales and asset ratios

Beaver (1966) implied that the larger 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.

3.8.2 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.
3.8.3  Cash flow to total net worth

The fourth concept is the fund expenditure for operations. Beaver (1966) suggested 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 their 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.
3.9 CASH FLOW RATIOS SUGGESTED BY GIACOMINO AND MIELKE (1988, 1993)\textsuperscript{5}

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.

3.9.1 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 3.2 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 3.2 RATIOS BY GIACOMINO AND MIELKE (1988) FOR CORPORATE PERFORMANCE**

<table>
<thead>
<tr>
<th>S. NO</th>
<th>LIST OF CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QUALITY OF EARNINGS RATIOS</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Operating funds index</td>
<td>Net income</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Funds from operations</td>
</tr>
<tr>
<td>2.</td>
<td>Reinvestment</td>
<td>Capital investments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depreciation + sale of assets</td>
</tr>
<tr>
<td>3.</td>
<td>Capital investments per dollar of funds</td>
<td>Capital investments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total sources of funds</td>
</tr>
</tbody>
</table>
|   | Funds flow adequacy | Funds from operations  
|   |                  | Capital investments + Inventory  
|   |                  | additions + dividends + debt uses  

**FINANCIAL MANAGEMENT RATIOS**

|   | Funds sources component percentages | Individual sources  
|   |                  | Total sources of funds  

|   | External financing Index | Funds from operations  
|   |                  | Total external financing sources  

|   | Productivity | Funds from operations  
|   |                  | Capital investments  

**MANDATORY FUNDS FLOW RATIOS**

|   | Mandatory funds index | Funds for operations + funds  
|   |                  | applied to long-term debt  
|   |                  | Total sources of funds  

|   | Long-term debt payment | Funds applied to long-term debt  
|   |                  | Funds supplied by long-term debt  

|   | Percentage funds sources required for long-term debt | Funds applied to long-term debt  
|   |                  | Total sources of funds  

|   | Short/long term | Current debt sources or long-term debt sources  
|   |                  | Total debt sources  

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The ratios set out in Table 3.2 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.

3.9.2 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 at S.No: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 at S.No: 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 of funds ratio at S.No: 3 shows the total sources of funds that were applied to capital investments, whereas the funds flow adequacy ratio at S.No: 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.

3.9.3 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 at S.No: 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.

3.9.4 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 at S.No: 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?

3.9.5 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 at S.No: 12 to 14 are the 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) 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. Their study used ratios where cash flow from operations is a component of each ratio. The aim was to predict failure, which will need ratios to calculate the ability to generate enough cash flow through internally generated funds to cover obligations.

3.9.6 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) 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) and Zeller and Stanko (1997) also suggested 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 3.3.

Table 3.3 illustrates the sufficiency and efficiency ratios to evaluate relative performance. The components that make up the ratios are also illustrated.

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

Certain cash flow ratios for relative performance evaluation as set out in Table 3.4, have been 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:

3.10.1 Sufficiency ratios

The cash flow adequacy ratio at S.No: 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 one 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 at S.No: 2 indicates the ability to pay long-term debt out of internally generated funds. The dividend payout
ratio at S.No: 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 at S.No: 4 evaluates the ability of an entity to reinvest in assets. Ratios at S.No: 2, 3 and 4 provide analysts 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 at S.No: 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 at S.No: 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 provides 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.

**TABLE 3.3 CASH FLOW RATIOS BY GIACOMINO AND MIELKE (1993) FOR RELATIVE PERFORMANCE EVALUATION**

<table>
<thead>
<tr>
<th>NO.</th>
<th>LIST OF CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cash flow sufficiency</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-term debt +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>purchases of assets +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dividends paid</td>
</tr>
<tr>
<td>2.</td>
<td>Long-term debt repayment</td>
<td>Long-term debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>payments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFFO*</td>
</tr>
<tr>
<td>3.</td>
<td>Dividend pay-out</td>
<td>Dividends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFFO*</td>
</tr>
<tr>
<td>4.</td>
<td>Reinvestment</td>
<td>Purchases of assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFFO*</td>
</tr>
<tr>
<td>5.</td>
<td>Debt cover</td>
<td>Total debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFFO*</td>
</tr>
<tr>
<td>6.</td>
<td>Impact depreciation write-offs</td>
<td>Depreciation +</td>
</tr>
<tr>
<td></td>
<td></td>
<td>amortization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CFFO*</td>
</tr>
</tbody>
</table>
Investors, creditors and other users of cash flows are especially interested in the income statement and earnings measures. The cash flow to sales ratio at S.No: 7 shows the percentage of each monetary sale realised as cash from operations. Over a period of time, this ratio should approximate the entity’s return on sales.

The operations index ratio at S.No: 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 at S.No: 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.

3.11 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).

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

**TABLE 3.4 RATIOS BY CARSLAW AND MILLS (1991) FOR CASH FLOW STATEMENT ANALYSIS**

<table>
<thead>
<tr>
<th>S. NO</th>
<th>LIST OF CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CASH COVERAGE</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Cash interest coverage</td>
<td>CFFO* before interest and tax Interest</td>
</tr>
<tr>
<td>2.</td>
<td>Cash debt coverage</td>
<td>CFFO*- total dividends Debt</td>
</tr>
<tr>
<td>3.</td>
<td>Cash dividend coverage</td>
<td>CFFO*- preferred dividends Common stock dividends CFFO* Total dividends</td>
</tr>
<tr>
<td></td>
<td><strong>QUALITY OF INCOME</strong></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Quality of Sales</td>
<td>Cash from sales Sales</td>
</tr>
<tr>
<td>5.</td>
<td>Quality of income</td>
<td>CFFO* Operating Income CFFO*before interest and tax Income before interest, taxes and depreciation</td>
</tr>
<tr>
<td>CAPITAL EXPENDITURES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 6. Capital acquisitions | CFFO*- total dividends  
Cash paid for acquisitions |
| 7. Investment/ finance | Net cash flows for investing  
Net cash flows from financing  
Net cash flows for investing  
Net cash flows from operating and financing |

<table>
<thead>
<tr>
<th>CASH FLOW RETURNS</th>
</tr>
</thead>
</table>
| 8. Cash flow per share | CFFO* - preferred dividends  
Weighted common stock |
| 9. Cash return on assets | CFFO* before interest and tax  
Total assets |
| 10. Cash return on debt and equity | CFFO*  
Stockholders’ equity and debt |
| 11. Cash return on stockholders’ equity | CFFO*  
Stockholders’ equity |

*Cash flow from operations

Source: Adapted from Carslaw and Mills (1991)
The ratios shown in Table 3.4 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.

3.11.1 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 at S.No: 1, 2 and 3 (illustrated in Table 3.4) will determine the ability of an entity to meet its obligations.

The cash interest coverage ratio at S.No: 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 at S.No: 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 debt 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 at S.No: 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.

3.11.2 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,
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 3.4.

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 at S.No: 4. These measures will be available if cash flows are reported using the direct approach. According to Carslaw and Mills (1991), 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 installment 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) 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.

3.11.3 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 3.4.
The capital acquisitions ratio at S.No: 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 at S.No: 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.

3.11.4 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 at S.No: 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 at S.No: 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 at S.No: 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 at S.No: 9, a return on debt and equity ratio at S.No: 10, or a return on stockholders’ equity ratio at S.No: 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 3.4, 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 at S.No: 1, 2, 3 and 5 (Carslaw & Mills, 1991) were also suggested to measure financial health by Zeller and Stanko (1994). The interest and dividend coverage ratios and cash flow to debt ratios can be used as a liquidity measure.

3.12 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);
The cash flow statement is rich with information and possesses great potential as an analytical tool. Figlewicz and Zeller (1991) suggested 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).

The cash flow statement is rich with information and possesses great potential as an analytical tool. Figlewicz and Zeller (1991) suggested 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).

Table 3.5 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).
TABLE 3.5 CASH FLOW RATIOS BY FIGLEWICZ AND ZELLER (1991) TO MEASURE PERFORMANCE, LIQUIDITY AND COVERAGE

<table>
<thead>
<tr>
<th>S.NO</th>
<th>LIST OF CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Operating cash return on sales</td>
<td>CFFO* Net Sales</td>
</tr>
<tr>
<td>2.</td>
<td>Operating cash return on assets</td>
<td>CFFO* Average total assets</td>
</tr>
<tr>
<td>3.</td>
<td>Operating cash return on equity</td>
<td>CFFO* Stockholder’s equity</td>
</tr>
<tr>
<td>4.</td>
<td>Cash flow liquidity</td>
<td>CFFO* Current Liabilities</td>
</tr>
<tr>
<td>5.</td>
<td>Critical needs coverage</td>
<td>CFFO*+ interest paid Interest Paid + Current portion of debt + dividends paid</td>
</tr>
<tr>
<td>6.</td>
<td>Interest Coverage</td>
<td>CFFO* - current portion of debt + interest paid Interest Paid</td>
</tr>
</tbody>
</table>
7. Dividend Coverage | CFFO* - current portion of debt
Dividends paid

**INVESTING AND FINANCING RATIOS**

8. Operating Investing activity | Net property, plant and equipment investments
Average total assets

9. Non-operating Investing activity | Net non-operating investments
Average total assets

10. Debt activity | Net debt activity
Total liabilities and equity

11. Equity activity | Net equity activity
Total liabilities and equity

11. Cash return on stockholders’ equity | CFFO*
Stockholders’ 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 3.5 shows these ratios using the operating activities as a component of each ratio. Figlewicz and Zeller (1991) also suggested 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.

### 3.12.1 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).

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 at S.No: 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 at S.No: 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 at S.No: 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.

3.12.2 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 at S.No: 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).

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 at S.No: 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).

The critical needs coverage ratio at S.No: 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).

The interest coverage ratio at S.No: 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).

Finally, the dividend coverage ratio at S.No: 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).

3.12.3 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 at S.No: 8 and non-operating investing activity ratio at S.No: 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 at S.No: 10 and the equity activity ratio at S.No: 11 are cash flow based measures of financing activities (Figlewicz & Zeller, 1991). 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). The performance, liquidity and coverage ratios were also suggested by Beaver (1966), Carslaw and Mills (1991, 1993) and Giacomino and Mielke
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.

3.13 CASH FLOW RATIOS SUGGESTED BY ZELLER AND STANKO

Zeller and Stanko (1993, 1994, 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; Zeller & Stanko, 1994).

Zeller and Stanko (1994) 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)\(^\text{15}\) also suggested certain of these ratios. The list of cash flow ratios is summarised in Table 3.6.

**TABLE 3.6 CASH FLOW RATIOS BY ZELLER AND STANKO (1994) TO MEASURE THE ABILITY TO GENERATE CASH FLOW**

<table>
<thead>
<tr>
<th>NO.</th>
<th>LIST OF CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>NEW CASH FLOW RATIOS</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Cash flow to current debt</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average current debt</td>
</tr>
<tr>
<td>2.</td>
<td>Cash flow to interest coverage</td>
<td>CFFO* + interest and taxes paid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interest paid</td>
</tr>
<tr>
<td>3.</td>
<td>Cash flow to total debt</td>
<td>CFFO* - dividends paid</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total debt</td>
</tr>
<tr>
<td>4.</td>
<td>Cash flow to operating income</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operating income</td>
</tr>
<tr>
<td></td>
<td><strong>RE-CALCULATED TRADITIONAL RATIOS</strong></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Cash flow to sales</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sales</td>
</tr>
</tbody>
</table>
The ratios in Table 3.6 may be used to measure the ability of an entity to generate cash flow. Ratios at S.No: 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)\textsuperscript{16}, Foster (1986)\textsuperscript{17} and Ketz \textit{et al}. (1990)\textsuperscript{18}.

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). These new ratios are now discussed in detail.
3.13.1 New operating cash flow ratios

The first new ratio, cash flow to current debt ratio at S.No: 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, 1994).

The cash flow to interest coverage ratio at S.No: 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 at S.No: 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, 1994).

The cash flow to operating income ratio at S.No: 4 indicates the percentage of cash flow from operations represented in operating income. Should this ratio deviates 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 under statement 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, 1994).

3.13.2 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, 1994).

Zeller and Stanko (1994b) concluded that the cash flow to sales, total assets and total debt ratios at S.No: 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.

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

Rujoub et al. (1995) also suggested 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 3.7.
<table>
<thead>
<tr>
<th>S.NO</th>
<th>LIST OF SUGGESTED CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>External financing index</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total external financing (debt)</td>
</tr>
<tr>
<td>2.</td>
<td>Cash sources component percentages</td>
<td>Cash from financing activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total sources of cash</td>
</tr>
<tr>
<td>3.</td>
<td>Financing policies ratio</td>
<td>Cash from financing activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total assets</td>
</tr>
<tr>
<td>4.</td>
<td>Operating cash index</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net income</td>
</tr>
<tr>
<td>5.</td>
<td>Operating cash inflow</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total sources of cash</td>
</tr>
<tr>
<td>6.</td>
<td>Operating cash outflow</td>
<td>Cash used in operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total sources of cash</td>
</tr>
<tr>
<td>7.</td>
<td>Long-term debt payment ratio</td>
<td>Cash applied to long-term debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cash applied by long-term debt</td>
</tr>
</tbody>
</table>
8. Productivity of assets

<table>
<thead>
<tr>
<th>CFFO*</th>
<th>Total assets</th>
</tr>
</thead>
</table>

* Cash flow from operations

Source: Adapted from Rujoub et al. (1995)

Certain of the ratios shown in Table 3.7 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 at S.No: 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).

The cash from financing activities to total cash sources is measured by the cash sources component percentages ratio at S.No: 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 at S.No: 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 at S.No: 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 at S.No: 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). 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 at S.No: 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).

The long-term debt payment ratio at S.No: 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 at S.No: 8 shows the percentage of cash generated from operating activities on each one Rupee 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).

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
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).

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.

**TABLE 3.8 CASH FLOW RATIOS BY MILLS AND YAMAMURA (1998) TO MEASURE SOLVENCY, LIQUIDITY AND VIABILITY AS A GOING CONCERN**

<table>
<thead>
<tr>
<th>NO.</th>
<th>LIST OF SUGGESTED CASH FLOW RATIOS</th>
<th>COMPONENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SOLVENCY AND LIQUIDITY RATIOS</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Operating cash flow ratio</td>
<td>CFFO*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Current Liabilities</td>
</tr>
<tr>
<td>2.</td>
<td>Funds flow coverage ratio</td>
<td>Earning before interest and tax + Depreciation and amortization Interest + debt repayments + preferred dividends</td>
</tr>
<tr>
<td>3.</td>
<td>Cash interest coverage</td>
<td>CFFO* + interest and taxes Interest paid</td>
</tr>
<tr>
<td>4.</td>
<td>Cash current debt coverage ratio</td>
<td>CFFO* - cash dividends Current debt</td>
</tr>
</tbody>
</table>

**RATIOS TO MEASURE FINANCIAL HEALTH**
### NET FREE CASH FLOW RATIOS

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Capital expenditure ratio</td>
<td>CFFO* Capital expenditure</td>
</tr>
<tr>
<td>6</td>
<td>Capital flow to total debt ratio</td>
<td>CFFO* Total debt</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 7 | Total free cash flow ratio  | Sum of net income + interest, depreciation, amortization, lease, rental – dividends declared and capital expenditure  
                                        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 amortization – tax, interest and capital expenditure  
                                        Average of debt maturities over next five years |

*Cash flow from operations*

Source: Adapted from Mills and Yamamura (1998)

Mills and Yamamura (1998) highlighted 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.
3.15.1 Solvency and liquidity ratios

The operating cash flow ratio at S.No: 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 at S.No: 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 at S.No: 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).

The cash current debt coverage ratio at S.No: 4 is a direct correlation of the earnings and current debt coverage ratio. The cash flow ratio reveals more because it addresses management’s dividend distribution policy and its subsequent effect on cash available to meet current debt commitments (Mills & Yamamura, 1998).

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, 1994).

3.15.2 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).

A financially strong entity should be able to finance growth. The capital expenditure ratio at S.No: 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).

The cash flow to total debt ratio at S.No: 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).
3.15.3  **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 3.8 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 at S.No: 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 at S.No: 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 suggested that auditors should employ cash flow ratios to assess corporate liquidity and viability. This would 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
suggested 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.
REFERENCES


