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Utilization of Cash Flow Ratios in Financial Management

Assoc. Prof. Dr. Huseyin Yilmaz

Faculty of Economics and Administrative Sciences, Bilecik Şeyh Edebali University, Turkey

ABSTRACT

Cash flow ratios are the ratios are calculated using balance sheet, income statement, and the statement of cash flow. The statement of cash flow is used to calculate all of the 28 cash flow ratios. These ratios may be used in financial management. The financial managers can utilize the ratios in especially the seven functions of the financial management. They are financial analysis, working capital management, capital structure, capital budgeting, dividend policy, leverage, and valuation. All of the cash flow ratios could be used financial analysis and working capital management functions of the financial management. 14 ratios in capital structure, 10 ratios in capital budgeting, 8 ratios in dividend policy, 8 ratios in leverage, and a ratio in valuation may be used.

Keywords: Cash flow ratios, financial management, functions of financial management, financial analysis, working capital management, capital structure, capital budgeting, dividend policy, leverage, valuation.

*Correspondence to Author:

Assoc. Prof. Dr. Huseyin Yilmaz
Faculty of Economics and Administrative Sciences, Bilecik Şeyh Edebali University, Turkey

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1.Introduction

The Science of financial management uses many tools to explain its coverage. The analysis of financial statement includes ratio analysis, present value calculation, future value calculation, beta, capital assets pricing model (CAPM), fund flow analysis, break-even point, leverage calculations, net present value, internal rate of return etc.

In this paper, I will introduce another tool for financial management. It is cash flow ratio analysis. Of course, cash flow ratios have been developed in the past years. However, they will be utilized as a tool of financial management after this paper is introduced.

In this paper, firstly, the cash flow ratios will be introduced and their calculation will be explained. Then, an application of an American international company's cash flow ratio analysis from its financial statements will be realized. Finally, an interpretation of the cash flow ratios, the Case company's cash flow ratios, and the classification of the ratios by utilization of function of financial management will be determined.

2. Cash Flow Ratio Analysis

2.1. Calculation of Cash Flow Ratios

Calculation of cash flow ratios are shown at the Table 1 below:

Table 1: Ratios and Their Calculations

| Ratios | Calculation |
|--|---|
| (1) Cash Flow Adequacy I ¹ | CFA I= Cash Flow From Operations:(Long Term Debt Payment+ Asset Acquisition+ Dividend Paid) |
| (2) Cash Flow Adequacy II ² | CFA II= CFFO: (Capital Expenditure+ Inventory Increase ³ +Cash Dividend |
| (3) Dividend Payout | DPO = Dividend Paid: CFFO |
| (4) Reinvestment of Cash | RC = Asset Acquisition: CFFO |
| (5) Debt Coverage | DC=Total debt: CFFO |
| (6) Depreciation Effect | DE= Depreciation: CFFO |
| (7)Return of Sales to CFFO | RSC= CFFO: Sales |
| (8)Operating Index | OI=CFFO: Operating Income |
| (9)CFFO to Assets ⁴ | CA=CFFO: Total Assets |
| (10)CFFO to Annual Interest Payments | CAIP= CFFO: Annual Interest Payments ⁵ |
| (11)Overall Cash Flow | OCF= CFFO: (Financing Cash Outflows+ Investing Cash Outflows) ⁶ |
| (12)Cash Flow Per Share ⁷ | CFPS=Net Cash Flow ⁸ : Number of Shares ⁹ |

¹ The ratios number 1and 3-9 were cited from Giacomino and Mielke (1993:57) .

² This ratio with same name "cash flow adequacy" was cited from Bernstein (1989:566-567).

³ The "inventory increase" is calculated by subtracting former year's inventory account from current year's inventory account.

⁴ Output of this ratio is equal with the ratio 19. However, the two ratio have different comments because of their different numbers in their denominator. The ratio 9's denominator covers "assets" while the ratio 19's denominator covers debt and owner's equity. They are actually same numbers.

⁵ This ratio was cited from Ferris and Others (1992:219).

⁶ This ratio was cited from Louderback and Others (1993:336).

⁷ The ratios number 12-23 were cited from Shim ve Siegel (1992: 96 - 99 ve 624).

⁸ This is seen at the Cash Flow Statement as "Increase/(Decrease) in cash, cash equivalents and restricted cash".

⁹ The ratio is also shown as "Cash Flow Per Share = Net Cash Flow From Operations/The Number of Shares Outstanding (Institute of Management Accountants, 1994:18).

| | |
|---|---|
| (13)Return of Sales to Cash | $RSC = \text{Cash From Sales}^{10} : \text{Sales}$ |
| (14) Cash Debt Coverage | $CDC = (\text{CFFO} - \text{Dividends}) / \text{Total Debt}$ |
| (15) Current Maturities of LTD Coverage | $CMLC = (\text{CFFO} - \text{Dividends}) : \text{Current Maturities of Long Term Debt}$ |
| (16)Cash Dividend Coverage | $CDC = \text{CFFO} : \text{Dividends}$ |
| 17. Cash Acquisition | $CA = (\text{CFFO} - \text{Dividend}) : \text{Cash Paid for Acquisition}$ |
| (18)Cash Return on Assets | $CRA = \text{CFFO Before Interest and Taxes}^{11} : \text{Total Assets}$ |
| (19) Internal Generation of Cash Available to Creditors and Investors ¹² | $IGCACI = \text{CFFO} : (\text{Total Debt} + \text{Stockholders' Equity})$ |
| (20) Return to Stockholders | $RS = \text{CFFO} : \text{Stockholders' Equity}$ |
| (21) Long Term Debt Coverage | $LTDC = \text{CFFO} : \text{Long Term Debt}$ |
| (22) Interest Payment Coverage | $IPC = (\text{CFFO} + \text{Interest Payment}) : \text{Interest Payment}$ |
| (23) Fixed Charges Coverage | $FCC = (\text{CFFO} + \text{Fixed Charges}^{13}) : \text{Fixed Charges}$ |
| (24) Operating Cash Flow ¹⁴ | $OCF = \text{CFFO} : \text{Current Liabilities}$ |
| (25) Cash Interest Coverage | $CIC = (\text{CFFO} + \text{Interest Paid} + \text{Taxes Paid}) : \text{Interest Paid}$ |
| (26) Cash Current Debt Coverage | $CCDC = (\text{CFFO} - \text{Cash Dividend}) : \text{Current Debt}$ |
| (27) Capital Expenditure | $CE = \text{CFFO} : \text{Capital Expenditure}$ |
| (28) Total Debt | $TD = \text{CFFO} : \text{Total Debt}$ |

The financial statements being used to calculate the cash flow ratios are shown at the Table 2 below:

Table 2: Usage of financial statements in Calculating the Cash Flow Ratios

| Number of cash flow ratio | Use of Statement of Cash flow | Use of Income statement | Use of Balance Sheet |
|---------------------------|-------------------------------|-------------------------|----------------------|
| 1.Cash Flow adequacy | + | - | - |
| 2 Cash Flow adequacy II | + | - | - |
| 3. Dividend Payout | + | - | - |

¹⁰ The numerator "cash from sales" was calculated like that: Net sales+Decrease in Account Receivable – Increase in Accounts receivable". It is considered connected with the previous period. The difference between current period and previous period is either positive or negative. Increase in Account Receivable decreases the "cash from sales" and decrease in account receivable increases the "cash from sales".

¹¹ It is calculated adding Interest and Taxes to CFFO.

¹² Output of this ratio is equal with the ratio 9. However, the two ratios have different comments because of their different numbers in their denominator. The ratio 9's denominator covers "assets" while the ratio 19's denominator covers debt and owner's equity. They are actually same numbers.

¹³ This number was calculated by using some subnumbers from the Cash Flow Statement. The subnumbers are repayments of term debt, repayment of commercial paper (net), and cash paid for interest. The repayments of term debt, repayment of commercial paper (net) are subitems of CFFF activities. The cash paid for interest is independent of the three main group. It is the last item of the Cash Flow Statement.

¹⁴The ratios number 24- 28 were cited from Mills and Yamamura (1998:55-58).

| | | | |
|--|---|---|---|
| 4.Reinvestment of Cash | + | - | - |
| 5. Debt Coverage | + | - | + |
| 6. Depreciation Effect | + | - | - |
| 7. Return of Sales to CFFO | + | + | - |
| 8. Operating Index | + | + | - |
| 9. CFFO to Assets | + | - | + |
| 10. CFFO to Annual Interest Payments | + | - | - |
| 11. Overall Cash Flow | + | - | - |
| 12. Cash Flow Per Share | + | - | - |
| 13. Return of Sales to Cash | + | + | - |
| 14. Cash Debt Coverage | + | - | + |
| 15. Current Maturities of LTD Coverage | + | - | + |
| 16. Cash Dividend Coverage | + | - | - |
| 17. Capital Acquisition | + | - | - |
| 18. Cash Return on Assets | + | - | + |
| 19. Internal Generation of Cash Available to Creditors and Investors | + | - | + |
| 20. Return to Stockholders | + | - | + |
| 21. Long Term Debt Coverage | + | - | + |
| 22. Interest Payment Coverage | + | - | - |
| 23. Fixed Charges Coverage | + | - | - |
| 24. Operating Cash Flow | + | - | + |
| 25. Cash Interest Coverage | + | - | - |
| 26. Cash Current Debt Coverage | + | - | + |
| 27. Capital Expenditure | + | - | - |
| 28. Total Debt | + | - | + |

As it could be seen from the Table 2, the Statement of Cash flow is used to calculate the all 28 cash ratios flow. This shows that the statement of cash flow is very important for the cash flow ratio analysis. The income statement is necessary to calculate 3 ratios only. The Balance Sheet is necessary to calculate 11 cash flow ratios.

The cash flow ratios need only the Statement of Cash Flow to calculate are Cash Flow adequacy, Cash Flow adequacy II, Dividend Payout,

Reinvestment of Cash, Depreciation Effect, CFFO to Annual Interest Payments, Overall Cash Flow, Cash Flow Per Share, Cash Dividend Coverage, Capital Acquisition, Interest Payment Coverage, Fixed Charges Coverage, Cash Interest Coverage, and Capital Expenditure. They are 14 ratios. It is 50% of the ratios.

The cash flow ratios need the Statement of Cash Flow and the Income Statement to calculate are Return of Sales to CFFO, Operating Index, and

Return of Sales to Cash. They are 3 ratios. It is 10.71% of the ratios.

The cash flow ratios need the Statement of Cash Flow and the Balance Sheet to calculate are Debt Coverage, CFFO to Assets, Cash Debt Coverage, Current Maturities of LTD Coverage, Cash Return on Assets, Internal Generation of Cash Available to Creditors and Investors, Return to Stockholders, Long Term Debt Coverage, Operating Cash Flow, Cash Current Debt Coverage, and Total Debt. They are 11 ratios. It is 39.29 % of the ratios.

2.2. Analysis of the Cash Flow Ratios

The cash flow ratios could be explained as below.

1. Cash Flow Adequacy I

This ratio covers some figures from the Cash Flow Statement. It shows how much CFFO is produced in comparison with long term debt payment, asset acquisition and dividend payment. For example, if it is 2, the business produces 2 fold CFFO of the three sub-numbers long term debt payment, asset acquisition and dividend payment of cash flow statement.

2. Cash Flow Adequacy II

This ratio's content is different than that of the first ratio even their name is same. This ratio's denominator is pretty different than that of the first. Capital expenditure and inventory increase are not covered by the first cash flow adequacy ratio. Instead of capital expenditure and inventory increase, the first adequacy ratio covers long term debt payment and asset acquisition. For this reason, the results of the two adequacy ratios are different than that of each other.

3. Dividend Payout

This ratio calculates dividend paid to the stockholders to cash flows from operations. As it is known, the CFFO is produced by the business. It is not produced by cash flow from financing (CFFF) activities or cash flow from investment (CFFI) activities. So, it is very important for the owners. Let's assume that, the CFFO is less than the dividend paid, or vice

versa, dividend paid is more than the CFFO, it could be explained that the business has provided financial source from the banks or other financial institutions with financial cost which will be paid by the business in the future. It may be in the near future.

It could be measured how much cash is distributed to the owners created by the business. Is it enough for the owners, or not. This requires comparison the ratio with the ratios of other businesses operating in the same industry.

4. Reinvestment of Cash

This ratio calculates how much cash was it invested for asset acquisition from CFFO. Whether the CFFO is enough to invest to non-current assets or not could be determined by this ratio. If it is under 1, it means that the CFFO was enough to complete missing non-current assets. However, if the ratio is over 1, its meaning is that the CFFO is not enough to add the productive capacity, the business needs financing source or selling another current and / or non-current asset or assets.

5. Debt Coverage

This ratio determines total debt to the CFFO. It answers to the question "can all debt be paid with the CFFO". If the ratio is over 1, it means that the total debt is more than the CFFO. The business could not create enough CFFO to pay all debt. If the ratio is under 1, it means that the total debt is less than the CFFO. The business could create enough CFFO to pay all debt. Actually, total debt will not be paid in the current year because except "current maturities of long term debt" long term debt will not paid in the current year. For this reason, it could be less than 1. The real payment will be short term debt plus current maturities of long term debt. To interpret the ratio, the amounts of short term debt including current maturities of long term debt and long term debts should be known.

6. Depreciation Effect

Depreciation is an important cash source. What percent of cash is created by depreciation is

important. It measures operating level of the non-current assets.

7. Return of Sales to CFFO

This ratio measures how sales turns to CFFO. If it is more than 1 there are two probabilities. Either sales decreased or the CFFO increased extremely.

8. Operating Index

With this ratio, how much CFFO was created from operating income is calculated. The operating income is the income after cost of sales and operating expenses. Operating income is before other income or expense and before provision for income tax.

9. CFFO to Assets

The ratio measures CFFO created by total assets. It is not asset profitability. It is the CFFO creating power of the assets. How efficient the business used its assets could be measured by this ratio based on cash flow. At this ratio, data from the statement of cash flow and balance sheet are used. Efficient and effective usage of assets is important to produce high CA ratio. For effective and efficient usage of the assets, a successfully management is a precondition.

10. CFFO to Annual Interest Payments

This ratio measures how many fold CFFO are produced by the annual interest payments. Interest payments have been paid to finance the business. After production and sales the business produces the CFFO. For this reason, the manager could wonder how successful the credit being providing by paying the interest was used. The more ratio means that the financing sources have been used more efficient and effective than before.

11. Overall Cash Flow

This ratio defines if the business could produce enough CFFO or not to meet financing cash outflows and investing cash outflows. This is overall cash flows because the numerator and denominator cover all cash flows of the business. The three parts of the cash in the statement of cash flows are used to calculate the

ratio. Whether the business could create or not enough cash to meet cash outflows is very important for the business's success. This ratio measures this.

12. Cash Flow per Share

This ratio measures how much dollars a stock earns. Cash flow per share is different from the earning per share (EPS). This is a cash based ratio. The investor learns how much money an investor earned via the cash flow per share ratio. It is not an accrual based measure. It includes the collection of accounting receivables. This ratio could be used by investors. Potential investors could wonder how much money a business produces. This ratio determines how much money the business produces per share.

The company produced positive cash flows in the years 2018 in 2019. These were 28 cents and "1 dollar and thirty two" cents per share in the years respectively. The one of the negative cash flow years was the Covid-19 year, 2020.

13. Return of Sales to Cash

The collection policy of a business could be controlled by this ratio. A ratio over 1 means more "cash from sales" than "sales". It means that some account receivable was collected from the old account receivables. A ratio under 1 means more account receivable than the year before. The credit sales have increased for different reasons something like market conditions. If the ratio is exactly 1, it means that collections of old accounting receivables are equal with the current year's account receivables. "Cash from sales" shows the cash a sale a business creates. It is a very important measure to fix the collection success of a business. Cash flow statement and income statement are necessary to calculate the ratio. Decreasing "account receivables" shows increasing "cash from sales".

14. Cash Debt Coverage

The ratio measures how many fold or percent CFFO a business produces after dividend paid to the owners to total debt. How financing with debt is productive or not is determined via this

cash flow ratio. Produced “CFFO mines dividend payment” via debt is shown with this ratio.

15. Current Maturities of LTD Coverage

This ratio measures CFFO after dividend paid to current maturities of long term debt. If it is more than 1, it means that the business could produce more CFFO after dividend paid than the current maturities of long term debt. If the ratio increases, it means that, the business can pay its current maturities of long term debt more easily with the CFFO after dividend paid. If it decreases, it means that the business could produce less CFFO after dividend to pay the current maturities of long term debt. This ratio could decrease with the increase of dividend paid. Of course, the increase of current maturities of long term debt decreases the ratio, too. Let's think about a business has regular current debt to be paid. In this situation, the payment ability could be not enough to pay all current debt. For this reason, this ratio should be watched carefully.

16. Cash Dividend Coverage

This ratio measures CFFO to dividends. It means how many fold CFFO of dividend the business produces. If it is 0.80, it produced 80% of dividend it paid. It means cash flow for dividend payment from only operating activities. It does not contain the cash flow from financing and investing activities.

17. Cash Acquisition

The cash flow ratio explains how much cash payment of acquisition the business has paid by CFFO after dividend. If it is more than 1, it means that the company produced more CFFO after dividend than that of payment for the acquisition.

18. Cash Return on Assets

This ratio calculates how much CFFO before interest and taxes is produced by total assets. The numerator CFFO before interest and taxes is different than earnings before interest and taxes (EBIT). The CFFO before interest and taxes is a cash-based measure. The EBIT is an accrual based measure. It could be thought that CFFO before interest and taxes is more realistic

than the EBIT. Its reason is that the CFFO before interest and taxes is spendable immediately. It is already cash. The EBIT could not be spendable immediately because it is accrual based. For example, it could be uncollected account receivables which could not be spent for the business's cash need already. The ratio shows how efficient the assets were used to produce CFFO before interest and taxes.

19. Internal Generation of Cash Available to Creditors and Investors

The ratio measures how much CFFO was produced by using all financing sources because passive side of balance sheet covers short term liabilities, long term liabilities, and owner's equity. Total debt at the ratio covers short term debt and long term debt. For this reason, it covers all passive side of the balance sheet. If a business produces more CFFO, the ratio will approach to 1.

20. Return to Stockholders

The ratio measures how much CFFO the business produces with its stockholders equity. It is not the return on equity (ROE). This is cash version of the ROE. It is a cash-based measurement of the ROE. If the ratio is high enough, it means that the company produces enough cash. The more return to stockholders ratio means the more collecting success for account receivables. The stockholders are the owners of the business. The owners could be glad if this ratio increases. At the same time, potential investors could have a positive opinion about the business if the ratio increases. If the ratio decreases, the owners will not be glad, so do potential investors.

21. Long Term Debt Coverage

This ratio helps to definite how many fold or percent CFFO is created with the long term liabilities of the business. Actually, the long term debt except current maturities of long term debt will not be paid in the current year. However, it will continue financing the productive operations.

22. Interest Payment Coverage

The ratio determines how much cash the interest payment produces. The nominator covers CFFO + interest payment, not only CFFO. The importance of financing cost to produce CFFO is determined by this ratio. CFFO and interest payment means CFFO before interest payment.

23. Fixed Charges Coverage

Fixed charges are to be paid to continue the production and other operations of the business.

Fixed Charges covers cash outflows from administrative cost, interest cost, payment of long term debt principal, payment of short term debt principal, and property tax (Loudeback and Others, 1993:364-365; Moyer and Others, 1995:519-520).

24. Operating Cash Flow

The current liabilities are the liabilities which will be paid in 1 year. That is, they should be returned to CFFO to be paid in time. This ratio measures this. If the ratio is over 1, it means that the business produces more CFFO than the current liabilities.

25. Cash Interest Coverage

This ratio measures how many fold CFFO before interest and tax payment is produced to pay interest payment. This means that how much CFFO before interest and tax payment the interest payment produced. It shows how efficient and effective the interest payment which was paid for debt financing was used.

26. Cash Current Debt Coverage

The ability of payment current debt with after dividend payment CFFO could be measured by this ratio. The reason to subtract dividend

payment is its not being a CFFO item. It is a cash flow from financing activities. As a result, the ratio shows after dividend CFFO produced by current debt.

27. Capital Expenditure

This ratio aims measuring how many fold or per cent CFFO is produced to meet the capital expenditure made by the business. A ratio under 1 shows less CFFO than the capital expenditure the business made.

28. Total Debt

Total debt ratio determines how much CFFO the business produces with his total debt. Its calculation requires balance sheet and cash flow statement. The total debt covers current liabilities and long term liabilities. Decreasing of total debt in the denominator increases the ratio. Increasing the total debt decreases the ratio. If the CFFO increases when the total debt is fixed the ratio increases, too. It means that the total debt has been used effectively. For

Instance, the financing source provided by the bond issue is a kind of long term debt. When CFFO is increased, the interest payment because of the bond issued by the company will be paid the CFFO which was produced by the operations.

3. Cash Flow Ratio Analysis of the Apple Corporation

3.1. Calculation of the Ratios of the Corporation

The cash flow ratios of the Apple Corporation calculated by the writer are shown at the Table 3 below:

Table 3: Cash Flow Ratios of Apple Corporation Calculated by the Writer

| Name of the Ratio | 2017 | 2018 | 2019 | 2020 | % Change 2017-2018 | % Change 2018-2019 | % Change 2019-2020 |
|---------------------------------------|------|------|------|------|-----------------------|-----------------------|-----------------------|
| 1.Cash Flow adequacy | 2.24 | 2.31 | 2.08 | 2.37 | +3.13 | -9.96 | +13.94 |
| 2 Cash Flow adequacy II ¹⁵ | 2.30 | 2.96 | 2.80 | 3.78 | +28.70 | -5.41 | +35.00 |

¹⁵ Inventory increase numbers of the denominators were calculated like that:

2020 column: 4,061 (2020 inventory account)- 4,106 (2019 inventory account) = -45

| | | | | | | | |
|--|-------|-------|-------|-------|---------|---------|---------|
| 3. Dividend Payout | 0.20 | 0.18 | 0.20 | 0.17 | -10.00 | +11.11 | -15.00 |
| 4.Reinvestment of Cash | 0.19 | 0.17 | 0.15 | 0.09 | -10.53 | -11.76 | -40.00 |
| 5. Debt Coverage | 3.76 | 3.34 | 3.57 | 3.20 | -11.17 | +6.89 | -10.36 |
| 6. Depreciation Effect | 0.16 | 0.14 | 0.18 | 0.14 | -12.50 | +28.57 | -22.22 |
| 7. Return of Sales to CFFO | 0.28 | 0.29 | 0.27 | 0.29 | +3.57 | -6.90 | +7.41 |
| 8. Operating Index | 1.06 | 1.09 | 1.09 | 1.22 | +2.83 | 0 | +11.93 |
| 9. CFFO to Assets | 0.17 | 0.21 | 0.20 | 0.25 | +23.53 | -4.76 | +25.00 |
| 10. CFFO to Annual Interest Payments | 30.70 | 25.62 | 20.27 | 26.87 | -16.55 | -20.88 | +32.56 |
| 11. Overall Cash Flow | 1.00 | 1.08 | 1.54 | 0.89 | +8.00 | +42.59 | -42.21 |
| 12. Cash Flow Per Share ^{16, 17} | -0.01 | 0.28 | 1.32 | -0.60 | +103.57 | +371.43 | -154.55 |
| 13. Return of Sales to Cash | 0.99 | 0.98 | 1.01 | 1.02 | -1.01 | +3.06 | +0.99 |
| 14. Cash Debt Coverage | 0.21 | 0.25 | 0.22 | 0,26 | +19.05 | -12.00 | +18.18 |
| 15. Current Maturities of LTD Coverage | 7.92 | 7.25 | 5.39 | 7,57 | -8.46 | -25.66 | +40.45 |
| 16. Cash Dividend Coverage | 5.03 | 5.65 | 4.91 | 5.73 | +12.33 | -13.10 | +16.70 |
| 17. Capital Acquisition | 4.03 | 4.54 | 4.97 | 7.54 | +12.66 | +9.47 | +51.71 |
| 18. Cash Return on Assets | 0.21 | 0.25 | 0.26 | 0.29 | +19.05 | +4.00 | +11.54 |
| 19. Internal Generation of Cash Available to Creditors and Investors | 0.17 | 0.21 | 0.21 | 0.25 | +23.53 | 0 | +19.05 |
| 20. Return to Stockholders | 0.48 | 0.72 | 0.77 | 1.23 | +50.00 | +6.94 | +59.74 |
| 21. Long Term Debt Coverage | 0.46 | 0.55 | 0.49 | 0.53 | +19.57 | -10.91 | +8.16 |
| 22. Interest Payment Coverage | 31.70 | 26.62 | 21.27 | 27,87 | -16.03 | -20.10 | +31.03 |
| 23. Fixed Charges Coverage | 12.49 | 9.10 | 4.81 | 5.86 | -27.14 | -47.14 | +21.83 |
| 24. Operating Cash Flow | 0.64 | 0.66 | 0.66 | 0.77 | +3.13 | 0 | +16.57 |
| 25. Cash Interest Coverage | 37.24 | 30.07 | 25.73 | 31.04 | -19.25 | -14.43 | +20.64 |
| 26. Cash Current Debt Coverage | 0.51 | 0.55 | 0.52 | 0.63 | +7.84 | -5.45 | +21.15 |
| 27. Capital Expenditure | 5.16 | 5.82 | 6.61 | 11.04 | +12.79 | +13.57 | +67.02 |
| 28. Total Debt | 0.27 | 0.30 | 0.28 | 0.31 | +11.11 | -6.67 | +10.71 |

2019 column:4106 (2019 inventory account)-3,956(2018 inventory account)=150

2018 column:3,956 (2018 inventory account)-4,855(2017 inventory account)=-899

2017 column:4,855 (2017 inventory account)-2,132 (2016 inventory account)=2,723

¹⁶ Numbers of shares used in computing earning per share are used to compute Net cash flow per share, too. The numbers of shares are increased because of common stock split. On August 28, 2020, the company effected a four-for –one stock split to shareholders of record as of August 24, 2020. For this reason, all share information has been retroactively adjusted to reflect the stock split.(US Security and Exchange Commission,Form 10-K, September 26, 2020, Apple Inc., Comission File Number:001-36743, p.36).

¹⁷ The share numbers after the stock split were provided from the Form 10-K , September 26,2020, Apple Inc, p.19.

3.2 The Cash Flow Ratio Analysis of the Corporation

1. Cash Flow Adequacy I

The Apple's cash flow adequacy I ratio was 2.24, 2.31, 2.08, and 2.37 in the years 2017-2020, respectively. It means that the CFFO was 2.24, 2.31, 2.08, and 2.37 fold of its long term debt payment plus asset acquisition plus dividend paid in the years, respectively. The company could pay its long term debt payment, asset acquisition and dividend payment with its own CFFO easily.

2. Cash Flow Adequacy II

The Apple's cash flow adequacy II ratio was 2.30, 2.96, 2.80, and 3.78 in the years 2017-2020, respectively. It means that the CFFO was 2.30, 2.96, 2.80, and 3.78 fold of its capital expenditure plus inventory increase plus cash dividend paid in the years, respectively. The company could pay its capital expenditure, inventory increase and dividend payment with the CFFO created by the company.

3. Dividend Payout

The Apple's dividend payout ratio was 0.20, 0.18, 0.20, and 0.17 in the years 2017-2020, respectively. That is it paid as dividend 20%, 18%, 20%, and 17% of its CFFO in the years 2017-2020, respectively. This means it paid about 20% of CFFO to the owners.

4. Reinvestment of Cash

The Apple's reinvestment of cash ratio was 0.19, 0.17, 0.15, and 0.09 in the years 2017-2020, respectively. It means that 19%, 17%, 15%, and 9% of CFFO were enough for asset acquisition in the years 2017-2020, respectively. The company could meet its asset acquisition its own CFFO easily.

5. Debt Coverage

The Apple's debt coverage ratio was 3.76, 3.34, 3.57, and 3.20 in the years 2017-2020, respectively. This means that from 3.76 fold total debt to 3.20 fold total debt to the CFFO.

6. Depreciation Effect

The Apple's depreciation effect was 0.16, 0.14, 0.18, and 0.14 in the years 2017-2020, respectively. It means that the shares of depreciation in the CFFO were 16%, 14%, 18%, and 14% the CFFO in the years.

7. Return of Sales to CFFO

The Apple's return of sales to CFFO was 0.28, 0.29, 0.27, and 0.29 in the years 2017-2020, respectively. It means that the CFFO is 28%, 29%, 27%, and 29% of the Sales in the years.

8. Operating Index

The Apple's operating income was 1.06, 1.09, 1.09, and 1.22 in the years 2017-2020, respectively. It means more CFFO from the operating income. Especially, the CFFO was 1.22 fold of the operating income. It was the Covid-19 year.

9. CFFO to Assets

The Apple's operating income was 0.17, 0.21, 0.20, and 0.25 in the years 2017-2020, respectively. It means that the CFFO was 17%, 21%, 20 %, and 25% of total assets in the years.

10. CFFO to Annual Interest Payments

The Apple's CFFO to annual interest payments were 30.70, 25.62, 20.27, and 26.87 in the years 2017-2020, respectively. It means that the company has created 30.70, 25.62, 20.27, and 26.87 fold CFFO of the annual interest payment. Decreasing ratios to 25.62 and 20.27 in 2018 and 2019 respectively shows that the efficient and effective use of the financing sources provided from the debt decreased in the company.

11. Overall Cash Flow

The Apple's overall cash flow ratios were 1.00, 1.08, 1.54, and 0.89 in the years 2017-2020, respectively. The company created CFFO 1.54 fold of the total of its financing and investment outflows in 2019. However, it decreased to 0.89 or 89% in 2020.

12. Cash Flow per Share

The Apple's cash flow per share ratio was -0.01, 0.28, 1.32, and -0.60 in the years 2017-2020, respectively. That is the Company produced

0.01 and 0.60 U.S. Dollar net cash outflows in 2017 and 2020, respectively. It means 1 cent and 60 cents in the years respectively. These are negative cash flow years or periods.

The company produced positive cash flows in the years 2018 in 2019. These were 28 cents and “1 dollar and thirty two” cents per share in the years respectively. The one of the negative cash flow years was the Covid-19 year, 2020.

13. Return of Sales to Cash

The Apple's return of sales to cash ratio was 0.99, 0.98, 1.01, and 1.02 in the years 2017-2020, respectively. It seems from the ratios of the four years, there is no problem about the collection of account receivables in the company. The ratios of all years analyzed are very close to 1. That is the company does credit sales and collects in time.

14. Cash Debt Coverage

The Apple's cash debt coverage ratio was 0.21, 0.25, 0.22, and 0.26 in the years 2017-2020, respectively. The company produces after dividend CFFO by 21%, 25%, 22%, and 26% percent of its total debt in the years, respectively.

15. Current Maturities of LTD Coverage

The Apple's current maturities of long term debt coverage ratio was 7.92, 7.25, 5.39, and 7.57 in the years 2017-2020, respectively. The ratios means that after dividend CFFO was 7.92 fold, 7.25 fold, 5.39 fold, and 7.57 fold of the current maturities of long term debt in the years, respectively. The current maturities of long term debt account is a short term debt so it must have been paid in the current term. The after dividend CFFOs are about 5-8 folds of the debt. The company does not have any problem about the debt.

16. Cash Dividend Coverage

The Apple's cash dividend coverage ratio was 5.03, 5.65, 4.91, and 5.73 in the years 2017-2020, respectively. It means that the company produced 5-6 folds CFFO of dividend paid in the years.

17. Cash Acquisition

The Apple's cash acquisition ratio was 4.03, 4.54, 4.97, and 7.54 in the years 2017-2020, respectively. It means that the company produced CFFO after dividend about 4-8 folds of the cash paid for acquisition.

18. Cash Return on Assets

The Apple's cash return on assets ratio was 0.21, 0.25, 0.26, and 0.29 in the years 2017-2020, respectively. The company has produced 21%, 25%, 26%, and 29% CFFO before interest and taxes of the assets. At the same time, the ratio has been being improved for the years. It improved from 21% to 29% in the years.

19. Internal Generation of Cash Available to Creditors and Investors

The Apple's internal generation of cash available to creditors and investors ratio was 0.17, 0.21, 0.21, and 0.25 in the years 2017-2020, respectively. It means that the CFFO was 17%, 21%, 21%, and 25% of the debt plus equity. The ratio has also been improved for the years. It improved from 17% to 25% of its financial sources.

20. Return to Stockholders

The Apple's return to stockholders ratio was 0.48, 0.72, 0.77, and 1.23 in the years 2017-2020, respectively. It means 48%, 72%, 77%, and 1.23 fold of the stockholders. It improved from 48% to 1.23 fold in the years.

21. Long Term Debt Coverage

The Apple's long term debt coverage ratio was 0.46, 0.55, 0.49, and 0.53 in the years 2017-2020, respectively. This means that the business could create CFFO BY about half of its long term debt.

22. Interest Payment Coverage

The Apple's interest payment coverage ratio was 31.70, 26.62, 21.27, and 27.87 in the years 2017-2020, respectively. The company produces about 21-32 fold CFFO before interest payment of interest payment. The financing cost interest payment could be paid with the company's own internal resources easily.

23. Fixed Charges Coverage

The Apple's fixed charges coverage ratio was 12.49, 9.10, 4.81, and 5.86 in the years 2017-2020, respectively. That means that CFFO before fixed charges were 12.49, 9.10, 4.81, and 5.86 fold of the fixed charges in the years, respectively.

24. Operating Cash Flow

The Apple's operating cash flow ratio was 0.64, 0.66, 0.66, and 0.77 in the years 2017-2020, respectively. The company produces CFFO by about two thirds of its current liabilities.

25. Cash Interest Coverage

The Apple's cash interest coverage ratio was 37.24, 30.07, 25.73, and 31.04 in the years 2017-2020, respectively. It means that the company produced 37.24, 30.07, 25.73, and 31.04 fold CFFO before interest and tax payment of interest payment in the years, respectively.

26. Cash Current Debt Coverage

The Apple's cash current debt coverage cash ratio was 0.51, 0.55, 0.52, and 0.63 in the years 2017-2020, respectively. It means a little more CFFO after dividend payment than the current debt.

27. Capital Expenditure

The Apple's capital expenditure ratio was 5.16, 5.82, 6.61, and 11.04 in the years 2017-2020, respectively. The company produced 5.16, 5.8, 6.61, and 11.04 fold CFFO of the capital expenditures in the years 2017-2020, respectively. That is, it produces enough CFFO to meet the capital expenditure.

28. Total Debt

The Apple's total debt ratio was 0.27, 0.30, 0.28, and 0.31 in the years 2017-2020, respectively. It means that the company produced 0.27%, 0.30%, 0.28%, and 0.31% CFFO of the total debt in the years 2017-2020, respectively.

4. Utilization of the Cash Flow Ratios in Financial Management

Cash flow ratios could be used in the financial management of businesses. General logic about the subject is that: Every cash flow ratio could be

used for the financial analysis. It can be thought as a second group ratio in addition of classical ratios to analysis the business. Its reason is the importance of the classical ratios like profitability, liquidity, asset management, debt management, and market value ratios. For this reason, cash flow ratios can be used as additional financial analysis tools. In addition to the additional tool for financial analysis, the cash flow ratios can be used for some functions of the financial management depending on their contents.

The cash flow ratios may be utilized by some functions of financial management. This may be explained ratio by ratio as below:

1. Cash Flow Adequacy I: The ratio can be used in financial analysis, working capital management, dividend policy, capital structure, and capital budgeting.
2. Cash Flow Adequacy II: The ratio can be used in financial analysis, working capital management, dividend policy, and capital budgeting.
3. Dividend Payout: The ratio can be used in financial analysis, working capital management, and dividend policy.
4. Reinvestment of Cash: The ratio can be used in financial analysis, working capital management, and capital budgeting.
5. Debt Coverage: The ratio can be used in financial analysis, working capital management, capital structure, and leverage.
6. Depreciation Effect: The ratio can be used in financial analysis, working capital management, and capital budgeting.
7. Return of Sales to CFFO: The ratio can be used in financial analysis and working capital management.
8. Operating Index: The ratio can be used in financial analysis and working capital management.
9. CFFO to Assets: The ratio can be used in financial analysis, working capital management, and capital budgeting.

10. **CFFO to Annual Interest Payments:** The ratio can be used in financial analysis, working capital management, capital structure, and leverage.

11. **Overall Cash Flow:** The ratio can be used in financial analysis, working capital management, capital budgeting, and capital structure.

12. **Cash Flow per Share:** The ratio can be used in financial analysis, working capital management, valuation, and dividend policy.

13. **Return of Sales to Cash:** The ratio can be used in financial analysis and working capital management.

14. **Cash Debt Coverage:** The ratio can be used in financial analysis, working capital management, dividend policy, capital structure, and leverage.

15. **Current Maturities of LTD Coverage:** The ratio can be used in financial analysis, working capital management, dividend policy, capital structure, and leverage.

16. **Cash Dividend Coverage:** The ratio can be used in financial analysis, working capital management, and dividend policy.

17. **Cash Acquisition:** The ratio can be used in financial analysis, working capital management, dividend policy, and capital budgeting.

18. **Cash Return on Assets:** The ratio can be used in financial analysis, working capital management, leverage, and capital budgeting.

19. **Internal Generation of Cash Available to Creditors and Investors:** The ratio can be used in financial analysis, working capital management, capital budgeting, and capital structure.

20. **Return to Stockholders:** The ratio can be used in financial analysis Other than financial analysis; the ratio can be used in working capital management, and capital structure.

21. **Long Term Debt Coverage:** The ratio can be used in financial analysis, working capital management, capital structure, and leverage.

22. **Interest Payment Coverage:** The ratio can be used in financial analysis, working capital management, capital structure, and leverage.

23. **Fixed Charges Coverage:** The ratio can be used in financial analysis and working capital management.

24. **Operating Cash Flow:** The ratio can be used in financial analysis, working capital management, and capital structure.

25. **Cash Interest Coverage:** The ratio can be used in financial analysis, working capital management, capital structure, and leverage.

26. **Cash Current Debt Coverage:** The ratio can be used in financial analysis, working capital management, capital structure, and dividend policy.

27. **Capital Expenditure:** The ratio can be used in financial analysis, working capital management, and capital budgeting.

28. **Total Debt:** The ratio can be used in financial analysis, working capital management, capital structure, and leverage.

Cash flow ratios utilized in the functions of financial management are shown at the Table 4 below:

Table 4: Cash Flow Ratios Used in the Function of Financial Management

| Financial Management Function | Number of the cash flow ratio used | Number and names of the cash flow ratios used |
|-------------------------------|------------------------------------|---|
| Financial analysis | 28 | All of the cash flow ratios |
| Working capital management, | 28 | All of the cash flow ratios |

| | | |
|-------------------|----|--|
| Capital structure | 14 | 1.Cash Flow adequacy, 5. Debt Coverage, 10. CFFO to Annual Interest Payments, 11. Overall Cash Flow, 14. Cash Debt Coverage, 15. Current Maturities of LTD Coverage, 19. Internal Generation of Cash Available to Creditors and Investors, 20. Return to Stockholders, 21. Long Term Debt Coverage, 22. Interest Payment Coverage, 24. Operating Cash Flow, 25. Cash Interest Coverage, 26. Cash Current Debt Coverage, 28. Total Debt |
| Capital budgeting | 10 | 1.Cash Flow adequacy,2. Cash Flow adequacy II, 4.Reinvestment of Cash, 6. Depreciation Effect, 9. CFFO to Assets, 11. Overall Cash Flow, 17. Capital Acquisition,18. Cash Return on Assets, 19. Internal Generation of Cash Available to Creditors and Investors, 27. Capital Expenditure |
| Leverage | 8 | 5.Debt Coverage, 10.CFFO to Annual Interest Payments, 14. Cash Debt Coverage, 15. Current Maturities of LTD Coverage, 18.Cash Return on Assets, 21. Long Term Debt Coverage,22. Interest Payment Coverage, 25. Cash Interest Coverage |
| Dividend policy | 8 | 1.Cash Flow adequacy, 2 Cash Flow adequacy II, 3. Dividend Payout, 12. Cash Flow Per Share, 14. Cash Debt Coverage, 15. Current Maturities of LTD Coverage, 16. Cash Dividend Coverage, 17. Capital Acquisition |
| Valuation | 1 | 12. Cash Flow Per Share |

5. Conclusion

Cash flow ratios may be utilized as a tool of financial management. The importance rank of the functions of the financial management are determined like below:

-Financial analysis: All of the cash flow ratios may be used in the function of financial management. The reality that the cash flow ratios are calculated by using the financial statements including the Income statement, Balance Sheet, and Statement of Cash Flows. The classical ratios calculated used income statement and balance sheet is valid. The cash flow ratios could be thought as a supplemental ratio analysis to the classical ratio analysis. It includes the statement of cash flows to the other two financial statements. The statement of cash flows is very important in calculating the cash flow ratios. As it could be seen from the Table 2, the Statement of Cash flow is used to calculate the all 28 cash ratios flow. There is a need to calculate the Income Statement is only for 3 cash flow ratios and the Balance Sheet is for 11 cash flow ratios. This shows that the cash flow

ratios are different than the classical ratios. As a result, the cash flow ratios contribute the financial analysis function very much.

- Working capital management: The working capital management covers cash management, too. All of the cash flow ratios could be used in the function of working management. They are already cash based ratios so they can be used to learn cash based issues. It means working management function of financial management. Debt, dividend, capital acquisition, interest payment etc. all requires cash. For this reason, cash flow stability is a necessary. The all cash flow ratios are designed to define cash flow issues.

- Capital structure, capital budgeting, dividend policy, leverage and valuation: These financial management functions use some cash flow ratios to define their problems and try to solve the problems.

The cash flow ratio analysis could be utilized by the financial management study field of finance to improve, to enrich, and to diversify its function.

Appendix

Data from the Financial Statements of the Apple Corporation Used to Calculate the Ratios

| Data | Financial Statement | 2020 | 2019 | 2018 | 2017 |
|---|------------------------------------|----------|----------|----------|----------|
| Sales | Income Statement | 274,515 | 260,174 | 265,595 | 229,234 |
| Operating income | Income Statement | 66,288 | 63,930 | 70,898 | 61,344 |
| Inventory | Balance Sheet | 4,061 | 4,106 | 3,956 | 4,855 |
| Total assets | Balance Sheet | 323,888 | 338,516 | 365,725 | 375,319 |
| Current debt ¹⁸ | Balance Sheet | 105,392 | 105,718 | 115,929 | 100,814 |
| Current maturities of long term debt coverage | Balance Sheet | 8,797 | 10,260 | 8,784 | 6,496 |
| Long term debt | Balance Sheet | 153,157 | 142,310 | 141,712 | 140,458 |
| Total debt | Balance Sheet | 258,549 | 248,028 | 258,578 | 241,272 |
| Stockholders' equity | Balance Sheet | 65,339 | 90,488 | 107,147 | 134,047 |
| Cash from sales ¹⁹ | Income Statement and Balance Sheet | 281,321 | 260,434 | 260,283 | 227,114 |
| Depreciation and Amortization | Cash Flow Statement | 11,056 | 12,547 | 10,903 | 10,157 |
| Cash Flow From Operations | Cash Flow Statement | 80,674 | 69,391 | 77,434 | 63,598 |
| Cash Flow From Operations Before Interest and Tax ²⁰ | Cash Flow Statement | 93,177 | 88,077 | 90,873 | 77,908 |
| Long Term Debt Payment | Cash Flow Statement | 12,629 | 8,805 | 6,500 | 3,500 |
| Dividend Paid | Cash Flow Statement | 14,081 | 14,119 | 13,712 | 12,769 |
| Cash Flow From Financing | Cash Flow Statement | (86,820) | (90,976) | (87,876) | (17,347) |
| Fixed charges ²¹ | Cash Flow Statement | 16,594 | 18,205 | 9,559 | 5,592 |
| Payments for acquisition of property, plant and equipment ²² | Cash Flow Statement | 7,309 | 10,495 | 13,313 | 12,451 |

¹⁸ This number is named as "total current liabilities" at the balance sheet of the company.

¹⁹ The numerator "cash from sales" was calculated like that: Net sales+Decrease in Account Receivable – increase in Accounts receivable". It is considered connected with the previous period. The difference between current period and previous period is either positive or negative.

²⁰ This number was calculated by adding "Cash paid for income taxes, net" and "cash paid for interest" from the statement of cash flow to the CFFO.

²¹ This number was calculated by using some subnumbers from the Cash Flow Statement. The subnumbers are repayments of term debt, repayment of commercial paper (net),and cash paid for interest. The repayments of term debt, repayment of commercial paper (net) are subitems of CFFF activities. The cash paid for interest is independent of the three main group. It is the last item of the Cash Flow Statement.

²² This number is used at the item "asset acquisition" at the ratios 1 and 4, at the item "capital expenditure" at the ratios 2 and 27, and at the item "cash paid for acquisition" at the ratio 17.

| | | | | | |
|--------------------------------|---------------------|-------------|--------|--------|----------|
| Cash Flow From Investment | Cash Flow Statement | (4,289) | 45,896 | 16,066 | (46,446) |
| Net Cash Flow ²³ | Cash Flow Statement | - 10,435 | 24,311 | 5,624 | -195 |
| Tax payment (net) | Cash Flow Statement | 9,501 | 15,263 | 10,417 | 11,591 |
| Interest payment ²⁴ | Cash Flow Statement | 3,002 | 3,424 | 3,022 | 2,092 |

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²³ This is seen at the Cash Flow Statement as "Increase/(Decrease) in cash, cash equivalents and restricted cash".

²⁴ This number is used at the item "annual interest payment" at the ratio 10, at the item "interest payment" (same as this name) at the ratio 22, and at the item "interest paid" at the ratio 25.