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Some Improvements in Cash Flow Based Corporate Finance (CFCF) Model

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ABSTRACT

Cash flow based corporate finance (CFCF) model (Yilmaz,2022) determined 29 cash flow ratios and assigned them to eight functions. In this article, a new cash flow ratio was added to the cash flow ratios and then the 30 ratios were separated into three groups. Meanwhile, two of six function, financial analysis and leverage were cancelled. Their functions were distributed to the remaining functions the working capital management, capital budgeting, merger&acquisition, capital structure, dividend policy, and corporate valuation. Then, the 30 ratios were assigned to the six functions. At the last section, the six functions were explained in more detail. The 30 cash flow ratios were used 46 times while the six functions were being explained.

Keywords: Cash, Corporate Finance, Cash Flow, CFCF Model

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1.Introduction

A different dimension of corporate finance could be thought as a cash flow based corporate finance. There is a confusion about accrual and cash-based applications in business world. A Corporation could have profit but could not be paid its debt and another Corporation could have loss but could be paid its debt. This confusion could be decreased by cash flow insights. In this article, a new model about corporate finance built in Yilmaz (2022) will be explained more detailed than that of its first situation. There are some additions and innovations to the model. Grouping the cash flow ratios, an addition of a new cash flow ratio, decreasing the number of functions, resignation of cash flow ratios to the functions of corporate finance, decreasing the number of ratios assigned to the function, and more detailed explanation of improved functions are the improvements in the Cash Flow Based Corporate Finance (CFCF) model.

2.Some Improvements in the CFCF Model

2.1. Addition of a New Cash Flow Ratio to the Model

A ratio coded as ACFR9 Cash Flow Per Share II was added to the CFCF model. The new ratio is seen at the Table 1 below:

Table 1: The New Ratio Being Added to Yilmaz (2022) Cash Flow Ratios

Code and name of ratio	Calculation of the ratio
ACFR9.Cash Flow Per Share II	Net Cash Flow From Operations: The Number of Shares Outstanding

It will be explained in the Section 2.2. With this addition, the number of cash flow ratios used in this model arrived to thirty from twenty-nine. I think that it is an important improvement for the CFCF model.

2.2. Grouping the cash flow ratios

Cash flow ratios could be studied in three groups as to used financial statements during their calculation. The three groups are the Group A, the Group B, and the Group C.

2.2.1. Group A Cash Flow Ratios

This ratio group is calculated used Cash flow Statement only. They need no other financial statement to be calculated. This group of the cash flow ratios is the most important ratio group because of the article's subject. Article studies cash flow based corporate finance and this group of ratios is calculated used only cash flow statement. It is very suitable for matching because all the numerators and denominators of these group ratios cover a number or more than a number from cash flow statement. For this reason, these ratios were grouped as Group A. The writer thinks that the Group A cash flow ratios is a starting point to his cash flow based corporate finance model and the most important group for the model.

This group of ratios covers 16 ratios. They are shown at the Table 2 below:

Table 2: Group A Cash Flow Ratios

Code[1] and name of ratio	Calculation of the ratio
ACFR1.[2] Cash Flow Adequacy	CFFO[3] :(Long Term Debt Payment+ Asset Acquisition + Dividend Paid)

[1] The ratios' "Yilmaz (2022) codes" are shown at the Appendix 2, Appendix 3, and Appendix 4 for Group A, Group B, and Group C, respectively.
[2] The ratios ACFR1, and ACFR3- ACFR5 were cited from Giacomino and Mielkeelke (1993:57).
[3] It means "Cash Flow From Operations".

ACFR2[4].Cash Flow Adequacy II[5]	CFFO: (Capital Expenditure +Inventory Increase [6]+Cash Dividend)
ACFR3. Dividend Payout	Dividend Paid: CFFO
ACFR4.Reinvestment of Cash	Asset Acquisition: CFFO
ACFR5.Depreciation Effect	Depreciation: CFFO
ACFR6 [7] CFFO to Annual Interest Payments	CFFO: Annual Interest Payments
ACFR7[8] Overall Cash Flow	CFFO: (Financing Cash Outflows+ Investing Cash Outflows)
ACFR8.Cash Flow Per Share[9]	Net Cash Flow[10]: Number of Shares
ACFR9.Cash Flow Per Share II[11]	Net Cash Flow From Operations[12]:The Number of Shares Outstanding[13]
ACFR10.Cash Dividend Coverage	CFFO: Dividends
ACFR11.Capital Acquisition	(CFFO- Dividend): Cash Paid for Acquisition
ACFR12.Interest Payment Coverage	(CFFO +Interest Payment): Interest Payment
ACFR13.Fixed Charges Coverage	(CFFO+ Fixed Charges [14]): Fixed Charges
ACFR14.Cash Interest Coverage[15]	(CFFO + Interest Paid +Taxes Paid): Interest Paid
ACFR15.Capital Expenditure	CFFO: Capital Expenditure
ACFR16.Free Cash Flow	FCF: CFFO

Number of items used to calculate the ratios is shown at the Table 3 below:

Table 3: Numbers of Usage of Items in the Group A Ratios

Names of Items	Number of usages	% Usage in the ratios	% Usage in total items
cash flow from operations (CFFO)	14	87.50	33.33
asset acquisition, cash paid for acquisition, capital expenditure [16]	5	31.25	11.90

[4] This ratio was cited from Bernstein (1989:566-567).
[5] The "II" added to the end of "cash flow adequacy" was fulfilled by this writer to separate it from the ACFR1 with same name "cash flow adequacy".
[6] The "inventory increase" is calculated by subtracting former year's inventory account from current year's inventory account.
[7] This ratio was cited from Ferris and Others (1992:219).
[8] This ratio was cited from Louder back and Others (1993:336).
[9] The ratios number ACFR8 and ACFR10-ACFR13 were cited from Shim ve Siegel (1992: 96 - 99 ve 624).
[10] Net Cash Flow is calculated like that: Net Cash flow= Cash flow from Operations + Cash Flow From Investment Activities +Cash flow from Investing activities. Another calculation could be: Net cash flow= cash receipts-cash payments.
[11] This ratio was cited from Institute of Management Accountants (1994:18). The real name of this ratio is "cash flow per share". However, the name of ACFR8 before this ratio is also "cash flow per share". Actually, the coverage of these two ratios is different. While the numerator of the ACFR8 is "net cash flow", the numerator of ACFR9 is "net cash flow from operations". These two concepts have different coverages. While the ACFR 8 covers all cash flows including from operating, investing, and financing activities, the ACFR9 covers only operating activities. For this reason, the writer of this paper added the "II" to the end of the ratio name "cash flow per share".
[12] The concept "net cash flow from operations" is used instead of "cash flow from operations" in the non- cash flow statement calculations for operational cash flow. That's, This item in the ratio ACFR9 could be accepted as CFFO for calculation purpose.
[13] The number of shares outstanding are the shares issued but not held in the company's treasury. They are available in the secondary market.
[14]Fixed charges are to be paid to continue the production and other operations of the business. Fixed charges cover 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).
[15] The ratios number ACFR14 and ACFR15 were cited from Mills and Yamamura (1998:55-58).
[16] The concept "asset acquisition" (Giacomino and Mielke,1993:57) is used at the ratios ACFR1 and ACFR4, the concept "capital expenditure" is used at the ratios ACFR2 (Bernstein, 1989:566-567) and ACFR15 (Mills and Yamamura (1998:55-58), and the concept "cash paid for acquisition" (Shim and Siegel,1992:96-99 and 624) is used at the ratio ACFR10. The reason they are seen at the same square is they mean same thing.

dividend paid, cash dividend, dividends[17]	5	31.25	11.90
annual interest payment, interest payment, interest paid[18]	5[19]	31.25	11.90
fixed charges	2[20]	12.5	4.76
long term debt payment	1	6.25	2.38
inventory increase	1	6.25	2.38
Depreciation	1	6.25	2.38
financing cash outflows	1	6.25	2.38
investing cash outflows	1	6.25	2.38
net cash flow	1	6.25	2.38
number of shares	1	6.25	2.38
Taxes paid	1	6.25	2.38
Free cash flow	1	6.25	2.38
Net Cash Flow From Operations	1	6.25	2.38
The Number of Shares outstanding	1	6.25	2.38
Total	42	16	42

2.2.2. Group B Cash Flow Ratios

This group cash flow ratios uses cash flow statement and balance sheet. These ratios connect with cash flow basis and accrual basis. This group of ratios covers 11 ratios. They are shown at the Table 4 below:

Table 4: Group B Csh Flow Ratios

Code and name of ratio	Calculation of the ratio
BCFR1[21] Debt Coverage	Total debt: CFFO
BCFR2.CFFO to Assets[22]	CFFO: Total Assets
BCFR3.Cash Debt Coverage[23]	(CFFO-Dividends): Total Debt
BCFR4.Current Maturities of Long Term Debt Coverage	(CFFO -Dividends): Current Maturities of Long Term Debt
BCFR5.Cash Return on Assets	CFFO Before Interest and Taxes [24]: Total Assets
BCFR6.Internal Generation of Cash Available to Creditors and Investors [25]	CFFO: (Total Debt +Stockholders' Equity)
BCFR7.Return to Stockholders	CFFO: Stockholders' Equity
BCFR8.Long Term Debt Coverage	CFFO: Long Term Debt
BCFR9.Operating Cash Flow[26]	CFFO: Current Liabilities

[17] The concept “dividend paid” is used at the ratios ACFR1 and ACFR3 (Giacomino and Mielke,1993:57), the concept “cash dividend” is used at the ratio ACFR2 (Bernstein, 1989:566-567), and the concept “dividends” is used at the ratios ACFR10 and ACFR11(Shim ve Siegel, 1992: 96 – 99 and 624). The reason they are seen at the same square is they mean same thing.

[18] The concept “annual interest payment” is used at the ratio ACFR6 (Ferris and Others (1992:219), the concept “interest payment” is used at the ratio ACFR12 (Shim ve Siegel, 1992: 96 – 99 and 624), and the concept “interest paid” is used at the ratio ACFR14 (Mills and Yamamura, 1998:55-58). The reason they are seen at the same square is they mean same thing.

[19] It was used 5 times but only in 3 ratios. It was used 2 times in 2 ratios. The two ratios are ACFR12 and ACFR14. The other usage field is ACFR6.

[20] It was used 2 times in the ratio ACFR13.

[21] This ratio and BCFR2 were cited from Giacomino and Mielke (1993:57)

[22] Output of this ratio is equal withe the ratio BCFR6. However, the two ratio have different comments because of their different numbers in their denominators. The ratio BCFR2’s denominator covers “assets” while the ratio BCFR6’s denominator covers debt and owner’s equity. They are actually same numbers.

[23] The ratios BCFR3-BCFR8 were cited from Shim ve Siegel (1992: 96 - 99 ve 624).

[24] It is calculated adding Interest and Taxes to CFFO.

[25] Output of this ratio is equal with the ratio BCFR2. However, the two ratios have different comments because of their different numbers in their denominator. The ratio BCFR2 ’s denominator covers “assets” while the ratio BCFR6’s denominator covers debt and owner’s equity. They are actually same numbers.

[26] The ratios number BCFR9-BCFR11 were cited from Mills and Yamamura (1998:55-58).

BCFR10.Cash Current Debt Coverage	(CFFO- Cash Dividend): Current Debt
BCFR11.Total Debt	CFFO: Total Debt

Number of items used to calculate the ratios is shown at the Table 5 below:

Table 5: Numbers of Usage of Items in the Group B Ratios

Names of Items	Number of Usage	% Usage in the ratios	% Usage in total items
Cash flow from operations (CFFO)	10	90.91	38.46
total debt	4	36.37	15.38
dividends, cash dividend	3[27]	27.27	11.54
total assets	2	18.18	7.69
stockholders' equity	2	18.18	7.69
current liabilities, current debt	2[28]	18.18	7.69
current maturities of long term debt	1	9.10	3.85
CFFO before interest and taxes	1	9.10	3.85
long term debt	1	9.10	3.85
Total	26	11	26

2.2.3. Group C Cash Flow Ratios

This group cash flow ratios uses cash flow statement and income statement. The traditional corporate finance based on an accrual insight. This means that it gives importance earning or accruement instead of cash flow. These ratios connect with cash flow basis and accrual basis.

This group of ratios covers 3 ratios. They are shown at the Table 6 below:

Table 6: Group C Cash Flow Ratios

Code and name of ratio	Calculation of the ratio
CCFR1[29].Return of Sales to CFFO	CFFO: Sales
CCFR2.Operating Index	CFFO: Operating Income
CCFR3.Return of Sales to Cash[30]	Cash From Sales: Sales

Number of items used to calculate the ratios is shown at the Table 7 below:

Table 7: Numbers of Usage of Items in the Group C Ratios

Names of Items	Number of Usage	% Usage in the ratios	% Usage in total items
Cash flow from operations (CFFO)	2	66.67	33.33
Sales	2	66.67	33.33
operating income	1	33.33	16.67
cash from sales	1	33.33	16.67
Total	6	3	6

[27] It was used 3 times in 3 ratios. The two ratios used “dividends” are BCFR3 and BCFR4. The cash dividend” is used at the BCFR10.
[28] “Current debt” is used at the ratio BCFR10 and “current liabilities” is used at the ratio BCFR9.
[29] This ratio and CCFR2 were cited from Giacomino and Mielke (1993:57)
[30] The ratio CCFR3 was cited from Shim ve Siegel (1992: 96 - 99 ve 624).

2.3. Cancellation of two functions and replacing them to the other functions

One of the improvements in CFCF model was cancellation of the functions Financial Analysis and Leverage. The reason was to simplify the model eliminating some dualities.

The reason of cancellation of financial analysis is the disreputability of the ratios assigned to financial analysis. For instance, the ratios ACFR3, ACFR10, ACFR11, BCFR3, BCFR4, and BCFR10 cover dividend payment related item" in their numerators or denominators. Their related cash based function is cash based dividend policy. If I did not cancel them, it would be a duality about this ratios' usage.

Cancellation of cash based leverage was for same logic. For instance, Eight of ten ratios replaced in CFCF (2022) were transferred to cash flow based capital structure function of this article. Their codes in the 2022 article were CFR5, CFR10, CFR14, CFR15, CFR18, CFR21, CFR22, and CFR25. Their after- grouping codes are BCFR1, ACFR6, BCFR3, BCFR4, BCFR5, BCFR8, ACFR12, and ACFR14, respectively. They all are debt related ratios so they measure leverage because of fixed payments. Duality was obstructed by doing this cancellation and transferring.

2.4. Decreasing of the number of ratios used in the functions

The usage number of ratios was 109 in Yilmaz (2022). This has bed decreased to 46 in this article. This new usage includes the new ratio ACFR9, too. Cash flow ratio usage of the functions of CFCF model is shown at the Table 8 below:

Table 8: Cash Flow Ratios used in the Functions of CFCF Model

Cash Flow Ratio	Working capital management	Capital budgeting	Merger& Acquisition	Capital structure	Dividend policy	Valuation	Total usage
ACFR1	X						1
ACFR2	X						1
ACFR3					X		1
ACFR4		X	X				2
ACFR5		X	X				2
ACFR6	X			X			2
ACFR7	X						1
ACFR8					X	X	2
ACFR9					X	X	2
ACFR10					X		1
ACFR11		X	X		X		3
ACFR12	X			X			2
ACFR13	X						1
ACFR14	X			X			2
ACFR15		X	X				2
ACFR16					X		1
BCFR1				X			1
BCFR2	X						1
BCFR3				X	X		2

BCFR4	X			X	X		3
BCFR5				X			1
BCFR6				X			1
BCFR7				X			1
BCFR8				X			1
BCFR9	X			X			2
BCFR10	X			X	X		3
BCFR11				X			1
CCFR1	X						1
CCFR2	X						1
CCFR3	X						1
Total	14	4	4	13	9	2	46

As it could be seen from the Table, the usage of ratios has bed decreased from 109 to 46. If the new ratio ACFR9 is excludes, the use of 29 ratio of Yilmaz (2022) have bed decreased to 44. This is 40.37% of 109 usage. I think that it is it is very important simplification to understand and apply the CFCF model.

It could be seen from the Table 9 that the only three ratios are used three times in the functions of the model. They are ACFR11, BCFR4, and BCFR10.Their calculations are like that:

Table 9: The Cash Flow Ratios Used 3 Times in the CFCF Model

Code and name of ratio	Calculation of the ratio
ACFR11.Capital Acquisition	(CFFO- Dividend): Cash Paid for Acquisition
BCFR4. Current Maturities of Long Term Debt Coverage	(CFFO – Dividends): Current Maturities of Long Term Debt
BCFR10. Cash Current Debt Coverage	(CFFO- Cash Dividend): Current Debt

ACFR11 is used in the functions capital budgeting, merger acquisition and dividend policy. It is meaningful to use the ratio for three functions because its coverage is interested in all of the three ratios. Already, in the model (CFCF), the functions capital budgeting and merger acquisition use same four ratios. The one of them is this ratio, ACFR11. Dividend policy uses this ratio because dividend payment affects the output of this ratio. The more dividend payment, the less the ratios output. As a result, every function from the three functions could use this ratio.

BCFR4 is used in the functions working capital management, capital structure, and dividend policy. The relevance of working capital management with the ratio BCFR4 is through the item CFFO. Current maturities of long term debt item is directly related to long term debt. It is used to finance fixed investments. It is a part of capital structure. It represents debt side of the capital structure. The more debt, the more risk and financial leverage. The higher the ratio BCFR4, the more capability to pay the current maturities of long term debt. This item actually a part of current debt so it could be paid in short term. Dividend policy could use this ratio because dividend payment affects this ratio. If a business wants more ratio, it could decrease its dividend payments to the owners.

BCFR10 is used in the functions working capital management, capital structure, and dividend

policy. The ratio's explanation is very close to the BCFR4. They both are used for the same functions. The only difference is current debt's independency from long term debt. It is used to see playability of current debt with its homemade cash production, the CFFO. More current debt means less output of the BCFR10.

It could be seen from the Table 10 that ACFR4, ACFR5, ACFR6, ACFR8, ACFR9, ACFR12, ACFR14, ACFR15, BCFR3, and BCFR9 are used two times in the functions of the model. Their calculations are like that:

Table 10: The Cash Flow Ratios Used 2 Times in the CFCF model

Code and name of ratio	Calculation of the ratio
ACFR4. Reinvestment of Cash	Asset Acquisition: CFFO
ACFR5.Depreciation Effect	Depreciation: CFFO
ACFR6. CFFO to Annual Interest Payments	CFFO: Annual Interest Payments
ACFR8. Cash Flow Per Share	Net Cash Flow: Number of Shares
ACFR9. Cash Flow Per Share II	Net Cash Flow From Operations: The Number of Shares Outstanding
ACFR12. Interest Payment Coverage	(CFFO +Interest Payment): Interest Payment
ACFR14. Cash Interest Coverage	(CFFO + Interest Paid +Taxes Paid): Interest Paid
ACFR15. Capital Expenditure	CFFO: Capital Expenditure
BCFR3. Cash Debt Coverage	(CFFO-Dividends): Total Debt
BCFR9. Operating Cash Flow	CFFO: Current Liabilities

ACFR4 is used in the function's capital budgeting and merger acquisition. As it could be accepted, the two function could be thought a different part of same subject. The parts are investment from inside and investment from outside. Two of them are total investment of a business. For this reason, same logic is valid for both of two functions. The item "asset acquisition" in the numerator could be thought "investment" for capital budgeting and "asset acquisition" for merger&acqusitions. It measures how many holds or what per cent investment or acquisition of CFFO is produced. It means the business's investment or acquisition via its cash flow which it produced itself, that's CFFO.

ACFR5 is used in the function's capital budgeting and merger acquisition, too. Its logic is same as ACFR4. Depreciation is though the depreciation of acquired assets in the M&A function. What per cent of CFFO is produced by depreciation is main purpose of the ratio ACFR5 for the two functions capital budgeting and M&A.

ACFR6 is used in the functions working capital management and capital structure. Its items are CFFO and annual interest payments. The annual interest payments are financing cost for long term debt. This means debt for investment purchasing or produced. CFFO is produced by a business itself through its working capital management. Current assets or gross working capital exists for production of product or service (in service corporations). As a result, this ratio shows the dimensions of long term debt for cash flow based capital structure and producibility of

the financing cost through the cash flow which a business produced itself for cash flow working capital management. That is, the ACFR6 is used for the two functions, too.

ACFR8 is used in the functions dividend policy and valuation. The items of the ratio are net cash flow and number of shares. Cash flow per share ratio is used in dividend policy to determine if a company has “net cash flow” to distribute cash dividend to its owners. As it is known, profit or earning could not paid to the owners this ratio could be thought as a more logical and realistic than that of the accrual PAT (profit after tax) from the view of cash flow which is main idea of this articles. There is no doubt that this ratio should be used in the cash flow based dividend policy.

ACFR9 is used in the same functions as ACFR 8. The two ratios are a little different from each other. The numerator of ACFR9 is “net cash flow from operations, not “net cash flow”. It means ACFR9 covers only CFFO. Concept “net” considers “cash in’s and “cash out’s in CFFO. The denominator of ACFR9 excludes the treasury stocks from the number of shares.

ACFR12 is used in the functions working capital management and capital structure. The items used in this ratio are CFFO and interest payment. The interest payment shows debt use of the corporation. The company paying interest has two kinds of financing sources in its capital structure. This ratio is important for both working capital management and capital structure. To know if a business produces enough CFFO or not is important for working capital management function and to measure of the abnormality or normality of size of interest payment to size of business is important for capital structure function.

ACFR14 is used for the same functions as ACFR12. It is interesting that the numerator of ACFR14 covers the item “tax paid” in addition to CFFO and interest payment.

Tax paid is added to the CFFO and interest payment in the numerator to compare the interest payment. How many folds or what percent CFFO+interest payment+tax paid of interest payment is produced by a business could be seen via this ratio. The comment is same as ACFR12 for both working capital management and capital budgeting.

ACFR15 is used in the function’s capital budgeting and merger acquisition. This ratio compares capital expenditures with CFFO. The normality or abnormality of capital expenditure for capital budgeting function and efficiency and effectivity of working capital management is measured through this ratio. That is, this ratio is important and necessary for both functions.

BCFR3 is used in the functions capital structure and dividend policy. It covers CFFO, dividend payment, and total debt. Capital structure is represented with total debt which is an accrual item from the balance sheet. With this ratio, “after debt payment CFFO” is compared with total debt. The size of nominator and, of course, the output depends of dividend payment. This shows the ratio’s interest to dividend policy.

BCFR9 is used in the functions working capital management and capital structure. This ratio covers “net working capital” items with the cash dimensioned CFFO. How much CFFO is produced with the current liabilities which is an accrual item is seen through this ratio. Two of the items are about working capital management and current liabilities are about capital structure.

Remaining 17 cash flow ratios are used in only one function. The functions in which they are used are shown at the Table above. It protects confuse

2.5. More Detailed Explanation about CFCF Model

2.5.1. Assignment of the Ratios to the Functions

After some improvements in the CFCF model, the distribution of the cash flow ratios to the functions of CFCF are shown at the Table 11 as below:

Table 11: Summary List of the Ratios Assigned to the Functions

Code of the Function of CFCF	Number of CFRs used in the function	Codes of the Ratios Assigned
CFWCM	14	ACFR1, ACFR2, ACFR6, ACFR7, ACFR12, ACFR13, ACFR14, BCFR2, BCFR4, BCFR9, BCFR10, CCFR1, CCFR2, CCFR3
CFCB	4	ACFR4, ACFR5, ACFR11, ACFR15
CFMA	4	ACFR4, ACFR5, ACFR11, ACFR15
CFCS	13	ACFR6, ACFR12, ACFR14, BCFR1, BCFR3, BCFR4, BCFR5, BCFR6, BCFR7, BCFR8, BCFR9, BCFR10, BCFR11
CFDP	9	ACFR3, ACFR8, ACFR9, ACFR10, ACFR11, ACFR16, BCFR3, BCFR4, BCFR10,
CFV	2	ACFR8, ACFR9
Total	46	ACFR1-16, BCFR1-11, CCFR1-3

As it could be seen from the Table, cash flow ratios in three groups are assigned to six functions. They are working capital management, capital budgeting, mergers&acqusitions, capital structure, dividend policy, and valuation.

A Comparison of functions and ratios used in the functions is shown at the Appendix 5.

2.5. 2.. Explanation of the Functions of CFCF Model

2.5.2. 1.. Cash Flow Based Working Capital Management

In this section, cash flow based working capital management will be explained through 14 cash flow ratios. These are seen at the Table 5 above. As it could be seen from the table, they cover three kinds of ratios.

Group A cash flow ratios used during cash flow based working capital management are:

Table 12: Group A Cash Flow Ratios Used in Working Capital Management

Code and name of ratio	Calculation of the ratio
ACFR1. Cash Flow Adequacy	CFFO :(Long Term Debt Payment+ Asset Acquisition+ Dividend Paid)
ACFR2. Cash Flow Adequacy II	CFFO: (Capital Expenditure +Inventory Increase)
ACFR6. CFFO to Annual Interest Payments	CFFO: Annual Interest Payments
ACFR7. Overall Cash Flow	CFFO: (Financing Cash Outflows+ Investing Cash Outflows)
ACFR12. Interest Payment Coverage	(CFFO +Interest Payment): Interest Payment
ACFR13. Fixed Charges Coverage	(CFFO+ Fixed Charges): Fixed Charges
ACFR14. Cash Interest Coverage	(CFFO + Interest Paid +Taxes Paid): Interest Paid

As it could be seen from the Group A ratios, (CFFO) cash flow from operations, long term debt payment, asset acquisition, dividend payment, capital expenditure, inventory increase, annual interest payments, financing cash outflow, investing cash outflows, interest payment, fixed charges, and taxes paid items are used in the calculation of the ratios. All of the seven Group A ratios cover CFFO in their coverage. This Show the importance of cash flows from operations. It could be though cash based version of operating income. CFFO is produced by business. It is not provided from outside.

ACFR1 shows how much CFFO is produced in comparison with the long term debt payment, asset acquisition and dividend payment. For example, if it is 2, the business produces 2 of folds CFFO of the three sub-numbers long term debt payment, asset acquisition and dividend

payment of cash flow statement. This is very important for cash flow based working management because a finance manager of a corporation wants if the corporation has the ability to create enough cash to finance its fixed investments and repayment of its financiers.

ACFR2 ratio's content is different than that of the first ratio even if 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.

ACFR6 measures how many folds of CFFO are produced by the annual interest payments. Interest payments have been paid to finance a business. After production and sales, the business produces the CFFO. For this reason, the manager could wonder how successful the credit being provided by paying the interest was used. The more ratio means that the debt has been used more efficient and effective than before.

ACFR7 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 a business's success. This ratio measures this.

ACFR12 determines how much cash a business's 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. If interest payment is relatively high, CFFO before interest payment probably will be higher because the nominator will be higher.

ACFR13 shows how many folds or what per cent "CFFO+fixed charges" is produced using fixed charges. "CFFO+fixed charges" could be said as "CFFO before fixed charges". How efficient and effective the fixed charges are used could be understood via this ratio. Relatively high ratio means efficiently and effectively usage of fixed charges.

ACFR14 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 produces. It shows how efficient and effective the interest payment which was paid for debt financing was used. I think, this ratio also measures the capability of paying taxes in addition to "CFFO+Interest paid". As you will remember, the ACFR12 (interest payment coverage) does not measure this.

The Group B cash flow ratios used for cash flow based working capital management are:

Table 13: Group B Cash Flow Ratios Used in Working Capital Management

Code and name of ratio	Calculation of the ratio
BCFR2. CFFO to Assets	CFFO: Total Assets
BCFR4. Current Maturities of LTD Coverage	(CFFO -Dividends): Current Maturities of Long Term Debt
BCFR9. Operating Cash Flow	CFFO: Current Liabilities
BCFR10. Cash Current Debt Coverage	(CFFO- Cash Dividend): Current Debt

As it could be seen from the Group A ratios, CFFO, total assets, dividends, current maturities

of long term debt, current liabilities, cash dividends, and current debt items are used to calculate this ratio. CFFO was used in all of the four ratios. This shows that the CFFO is most important item in calculating the Group A ratios.

BCFR2 shows CFFO production of corporate assets, BCFR9 shows return of current liabilities to CFFO, BCFR4 shows comparison of current maturities of long term debt and CFFO after dividend, and BCFR10 shows comparison of current debt and CFFO after cash dividend.

BCFR2 measures CFFO created by total assets. It is not asset profitability. It is the CFFO creating power of the assets. How efficient a business uses its assets could be measured by this ratio. Efficient and effective usage of assets is important to produce high BCFR2 ratio.

BCFR4 calculates "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 decreases 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.

BCFR9 measures how efficient and effectively current liabilities are used to create CFFO so 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 its current liabilities.

BCFR10 measures the ability of payment current debt with "after dividend payment CFFO". The reason to subtract dividend payment is it's 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.[31]

The Group C cash flow ratios used for cash flow based working capital management are:

Table 14: Group C Cash Flow Ratios Used in Working Capital Management

Code and name of ratio	Calculation of the ratio
CCFR1. Return of Sales to CFFO	CFFO: Sales
CCFR2. Operating Index	CFFO: Operating Income
CCFR3. Return of Sales to Cash	Cash From Sales: Sales

As it could be seen from the Group C ratios, sales, operating income, cash from sales, and CFFO are the items to calculate the ratios. CCFR1 and CCFR2 uses CFFO to compare i.e., sales and operating income, respectively. It is interesting that CCFR2 compares accrual "operating income" and cash based "Cash Flow from Operations (CFFO)". CCFR3 shows the importance of credit sales in total sales.

CCFR1 shows the productivity of working capital to produce cash. Higher ratio means that a business produces abundant cash flow from its operations to sales. If a company has less ratio than that of industry average, its finance manager should question the company's collection policy. The corporation could have some mistakes about its collecting policy such as giving more time to collect its consumers than

[31] In BCFR9 and BCFR10, the terms "current liabilities" and "current debt" have been used in same meaning by same writers (Mills and Yamamura,1998:55-58), indirectly. This article's writer did not change their words liabilities and debt for the sake of the source's writers.

that of the rival companies.

CCFR2 calculates CFFO to operating income. Its result shows how many folds or what percentage CFFO of operating income is created. Operating income is an accrual account that shows earning before "other income and other expenses" but after all cost and expenditure for main operation of a company. The other income and other expenses are non-operating income and expenses. An example of other income is interest and dividend income, and an example of other expenses is interest expenses. That is, operating income is "Earning Before Tax and "Non Operating Income and Expenses". It could be abbreviated as EBTNOIE[32]. Cash-based working capital management could use this ratio to measure how efficient and effective a company produces its cash flow (CFFO) instead of its profit because of profit is an accrual concept which does not guarantee cash payments. Its explanation is that a company has much costs such as labor, raw materials, consumable manufacturing supplies, and general overhead and operating expenses such as selling, general and administrative expenses and research and development expenses. EBTNOIE shows income after cost of production and operating expenses. This is not cash, but accrual concept. These does not mean cash flow. However, CFFO in the numerator of the ratio means cash flow. We could say that if cash from operating is more or equal than that of operating income, it means that cost and operating expenses could be paid as a cash flow created or produced by the corporations itself.

CCFR3 shows the collection policy of a business. 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.

There are two important points about the utilization of the Group C ratios. The one of them is that all of the Group C ratios are used during working capital management. The other point is that Group C ratios are used in only working capital management function of the CFCF model.

2.5.2.2. Cash Flow Based Capital Budgeting

The cash flow ratios used for cash flow based capital budgeting is:

Table 15: Group A Cash Flow Ratios Used in Capital Budgeting

Code and name of ratio	Calculation of the ratio
ACFR4. Reinvestment of Cash	Asset Acquisition: CFFO
ACFR5. Depreciation Effect	Depreciation: CFFO
ACFR11. Capital Acquisition	(CFFO- Dividend): Cash Paid for Acquisition
ACFR15. Capital Expenditure	CFFO: Capital Expenditure

As it could be seen from the ratios used cash flow based capital budgeting, asset acquisition, CFFO, depreciation, dividend, cash paid for acquisition, capital expenditure items are used in the ratios. From them, asset acquisition, cash paid for acquisition, and capital expenditure

[32] This abbreviation has been produced to explain the concept "operating income".

mean same thing. They all means fixed investment of a corporate. However, in this article, the original words[33] of the writers cited has been protected.

All items of cash flow based capital budgeting could be found from cash flow statements. This shows the degree or power of this sub-chapter (cash flow based capital budgeting) about becoming really cash based.

These four ratios could be used to measure cash based amount of investment through ACFR4, ACFR 11, and ACFR 15. They show how many folds or what percentage of cash flow from operations (CFFO) is invested by cash via ACFR4, how many folds or what percentage of "CFFO after dividend" of investment by cash is created via ACFR11, and how many folds or what percentage of CFFO of investment by cash is created via ACFR15.

ACFR4 measures whether the CFFO is enough to invest to noncurrent assets or not. 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 some fixed assets. The ratio explains corporation's financing needs for its fixed investments. Using this ratio could be important for corporations in an economic environment in which financing costs is very high and continues to be higher and higher. In this situation, the company could limit the ratio with 1. It means investment by its CFFO.

ACFR11 The cash flow ratio explains how much cash payment has been fulfilled to acquisition by "CFFO after dividend" which was produced by the business. If it is more than 1, it means that the company has produced more CFFO after dividend than that of payment for the acquisition. Let's assume that the ratio is only 10%. So, 10 folds of CFFO after dividend has been spent for cash acquisition.

ACFR15 aims measuring how many folds or per cent CFFO is produced to meet the capital expenditure made by a business. A ratio under 1 shows less CFFO than the capital expenditure the business produces.

ACFR5 is a little different ratio than the three ratios explained above. It aims to explain the relationship between depreciation and CFFO. ACFR5 measures operating level of the non-current assets. With a physical investment, amount of depreciation increases. It decreases profit, but increases cash flow from operations (CFFO). The effect of an investment on CFFO could be measured through this ratio. If the ratio is near 1, it means more of the CFFO comes from the depreciation. This shows the contribution of an investment to the CFFO.

The use of the concept cash flow in traditional capital budgeting (accrual-based capital budgeting) should not be misunderstood because the concept means "profit after tax-depreciation". It is not a number from cash flow statement

2.5.2.3. Cash Flow Based Merger&Acqusition

The cash flow ratio used for cash flow based merger acquisition decisions is:

Table 16: Group A Cash Flow Ratios Used in Merger&Acqusition

Code and name of ratio	Calculation of the ratio
ACFR4. Reinvestment of Cash	Asset Acquisition: CFFO
ACFR5. Depreciation Effect	Depreciation: CFFO
ACFR11. Capital Acquisition	(CFFO- Dividend): Cash Paid for Acquisition

[33] Giacomino and Mielke (1993:57) use the concept "asset acquisition" in ACFR4), Shim and Sigel (1992:96-99 and 624) use the concept (in ACFR11)" cash paid for acquisition", and Mills and Yamamura (1998:55-58) use the concept "" capital expenditure" (in ACFR15) for same meaning.

ACFR15. Capital Expenditure	CFFO: Capital Expenditure

The explanation of cash flow based merger & acquisition could be thought such as cash flow based capital budgeting studied above at 3.2.3. [34] The logic is the same. While capital budgeting decisions are valid for internal fixed asset investments, the merger&acqusition decisions are valid for external fixed asset investment. The two of them are fulfilled for the growth of a business.

3.2.4. Cash Flow Based Capital Structure

The cash flow ratios used to explain the cash flow based capital structure cover thirteen ratios. The three of them are the Group A ratios and the ten of them are the Group B ratios.

The Group A cash flow ratios used for cash flow based cash flow based capital structure are:

Table 17: Group A Cash Flow Ratios Used in Capital Structure

Code and name of ratio	Calculation of the ratio
ACFR6. CFFO to Annual Interest Payments	CFFO: Annual Interest Payments
ACFR12. Interest Payment Coverage	(CFFO +Interest Payment): Interest Payment
ACFR14. Cash Interest Coverage	(CFFO + Interest Paid +Taxes Paid): Interest Paid

The Group A ratios used in cash flow based capital structure is ACFR6, ACFR12, and ACFR14. The items covered by the Group A ratios used to explain cash flow based capital structure is cash flow from operations (CFFO), annual interest payments, interest payment, interest paid, and taxes paid. The items annual interest payments, interest payment, and interest paid have same meaning. It is interest paid by a corporation. There are cash out in all of the three concepts[35].

The numerator of the three Group A ratios covers CFFO and the denominators of the three ratios cover an item about interest payment. The numerator of ACFR12 adds “interest payment” to the CFFO and the numerator of ACFR14 adds “interest paid” and “taxes paid” to the CFFO. As it could be seen from the three Group A ratios, the relationship among interest payment, tax payment and CFFO is main study field of the ratios.

ACFR6 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.

ACFR12 determines how much cash a business’s 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. If interest payment is relatively high, CFFO before interest payment probably will be higher because the nominator will be

[34] Van Horne (1971:9 and 175) says that he considers mergers and acquisitions from the standpoint of an investment decision. These external investment opportunities can be evaluated in the same general manner as an investment proposal that is generated internally. A prospective acquisition is much the same as any investment proposal: thereis an initial outlay of cash or stock, followed by expected future benefits. The major difference is that with acquisitions, the initial cost may not be established, it is frequently subject to bargaining.

[35] Look at the Footnote 17 for the Writers using the different concepts about interest payment.

higher. A corporate manager should be careful when he/she comments the ratio during cash flow based corporate finance (CFCF).

ACFR14 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 produces. It shows how efficient and effective the interest payment which was paid for debt financing was used. I think, this ratio also measures the capability of paying taxes in addition to "CFFO+Interest paid". ACFR12 (interest payment coverage) does not measure this.

The Group B cash flow ratios used for cash flow based capital structure is:

Table 18: Group B Cash Flow Ratios Used in Capital Structure

Code and name of ratio	Calculation of the ratio
BCFR1.Debt Coverage	Total debt: CFFO
BCFR3. Cash Debt Coverage	(CFFO-Dividends): Total Debt
BCFR4. Current Maturities of Long-Term Debt	(CFFO -Dividends): Current Maturities of Long-Term Debt
BCFR5. Cash Return on Assets	CFFO Before Interest and Taxes: Total Assets
BCFR6. Internal Generation of Cash Available to Creditors and Investors	CFFO: (Total Debt +Stockholders' Equity)
BCFR7. Return to Stockholders	CFFO: Stockholders' Equity
BCFR8. Long Term Debt Coverage	CFFO: Long Term Debt
BCFR9. Operating Cash Flow	CFFO: Current Liabilities
BCFR10. Cash Current Debt Coverage	(CFFO- Cash Dividend): Current Debt
BCFR11. Total Debt	CFFO: Total Debt

The Group B ratios used in cash flow based capital structure are all of the Group B ratios except BCFR2. It is "CFFO: Total Assets". Its denominator covers all the assets. It does not show the issues about capital structure. It looks like a cash based version of ROA.

All of the other Group B ratios could be used to explain the cash flow based corporate capital structure. They use the items total debt, current maturities of long term debt, total assets, stockholder's equity, long term debt, current liabilities, and current debt from balance sheet and Cash flow from operations (CFFO), dividends, CFFO before interest and taxes, and cash dividend from cash flow statement. The concepts current liabilities and current debt mean same thing which is short term liabilities. The dividends and cash dividend mean same thing which is cash dividend[36].

Cash flow from operations (CFFO) is the most item of these ratios. All of the ratios cover CFFO. This item is compared to total debt, current liabilities of long term debt, total assets (total passive), current debt, stockholder's equity, and long term debt.[37]

BCFR1 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

[36] Look at the Footnotes 22 and 25 for the Writers using the different concepts about dividend payment.

[37] In BCFR9 and BCFR10, the terms "current liabilities" and "current debt" have been used in same meaning by same writers (Mills and Yamamura,1998:55-58), indirectly. This article's writer did not change their words liabilities and debt for the sake of the source writers.

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 pay 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, he amounts of short term debt including current maturities of long term debt and long term debts should be known.

BCFR3 measures how many folds or what 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.

BCFR4 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.

BCFR5 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.

BCFR6 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.

BCFR7 measures how much CFFO the business produces with its stockholder’s 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 stockholder’s 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.

BCFR8 helps to define how many folds 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.

BCFR9 measures CFFO to current liabilities. If the ratio is over 1, it means that the business produces more CFFO than the current liabilities.

BCFR10 measures the ability of payment of current debt with CFFO after dividend payment could be measured by this ratio. The reason to

subtract dividend payment is it's 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.

BCFR11 measures 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.

3.2.5 Cash Flow Based Dividend Policy

The Group A cash flow ratios used for cash flow based dividend policy is:

Table 19: Group A Cash Flow Ratios Used in Dividend Policy

Code and name of ratio	Calculation of the ratio
ACFR3. Dividend Payout	Dividend Paid: CFFO
ACFR8. Cash Flow Per Share	Net Cash Flow: Number of Shares
ACFR9. Cash Flow per Share II	Net Cash Flow from Operations: The Number of Shares Outstanding
ACFR10. Cash Dividend Coverage	CFFO: Dividends
ACFR11. Capital Acquisition	(CFFO- Dividend): Cash Paid for Acquisition
ACFR16. Free Cash Flow	Free Cash Flow: CFFO

The cash flow ratio group covers six ratios. The ratios cover dividend paid, CFFO, net cash flow, number of shares, net cash flow from operations, the number of shares outstanding, dividends, dividend, cash paid for acquisition, and free cash flow. The dividend paid, dividends, and dividend have same meaning.

The CFFO is used in four ratios. These are ACFR3, ACFR10, ACFR11, and ACFR16. In these ratios, CFFO is compared with dividend paid, free cash flow, and cash paid for acquisition.

ACFR8 and ACFR9 fulfill "cash flow per share" style calculations. This concept is similar to "earnings per share" in traditional (accrual) finance. When the two ratios are calculating their outputs, they use different concepts. ACFR8 uses the concepts "net cash flow" and "number of shares". It divides the first item to the second item. There is no different detail to find from cash flow statement. The two concepts or items could be found from the cash flow statement. However, during ACFR9 calculation, there needs some specific information and carefulness. ACFR9 needs the concepts are "net cash flow from operations" and "the number of shares outstanding".

ACFR3 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 bearing the financial cost which will be paid by the business in the future. It may be in the near future. It measures 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.

ACFR8 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 wander how much money a business produces. This ratio determines how much money the business produces per share.

ACFR9 measures net cash flow from operations per shares outstanding. Its numerator covers "net cash flow from operations" and the denominator covers "number of shares outstanding". Its output is different than ACFR9. Especially, denominator does not cover treasury stock. It means how much money a company produced via its operations to distribute to the capital market, that is to its outside investors.

ACFR10 measures CFFO to dividends. It means how many folds CFFO of dividend a business produces. If it is 0.80, it means that the business has produced itself 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. It could be said that this ratio measure "cash operating efficiency". For instance, if the ratio 1 or above, it means that "A company produced CFFO itself and distributed the cash produced to its owners".

ACFR11 explains how much cash payment has been fulfilled for acquisition by "CFFO after dividend" which was produced by the business. If it is more than 1, it means that the company has produced more CFFO after dividend than that of payment for the acquisition. Let's assume that the ratio is only 10%. So, 10 folds of CFFO after dividend has been spent for cash acquisition. Be careful, it is a remaining cash after paying dividend so the comment or the analysis should be more positive than not paying yet.

ACFR16 shows the proportion of free cash flow in CFFO. It means a business produces how percentage of its operating cash flow as a free cash flow. To compare with other companies, this ratio is more use full than the amount of free cash flow.

The Group B cash flow ratios used for cash flow based dividend policy is:

Table 20: Group B Cash Flow Ratios Used in Dividend Policy

Code and name of ratio	Calculation of the ratio
BCFR3. Cash Debt Coverage	(CFFO-Dividends): Total Debt
BCFR4. Current Maturities of Long Term Debt Coverage	(CFFO -Dividends): Current Maturities of Long Term Debt
BCFR10. Cash Current Debt Coverage	(CFFO- Cash Dividend): Current Debt

BCFR3 measures how many folds or what per cent CFFO a business produces after "dividend payment 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. It means the productivity of debt. The higher the ratio the better the use of debt. The debt has been used effectively and efficiently.

BCFR4 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 could 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. Let us not forget that cash flow based dividend policy insight and application require cash flow to pay dividend. There is no obligation to pay dividend if a business did not enough cash flow.

BCFR10 measures the ability of payment current debt with "CFFO after dividend". The reason to subtract dividend payment is it's not being a CFFO item. It is a cash flow from financing activities. The balance of dividend payment with current debt could be fixed with this ratio. It should not be forgotten that debt is a risk source for the business.

3.2.6. Cash Flow Based Corporate Valuation

The cash flow ratios used for cash flow based corporate valuation are:

Table 21: Group A Cash Flow Ratios Used in Valuation

Code and name of ratio	Calculation of the ratio
ACFR8. Cash Flow Per Share	Net Cash Flow: Number of Shares
ACFR9. Cash Flow Per Share II	Net Cash Flow From Operations: The Number of Shares Outstanding

The cash flow concepts are net cash flow, net cash flow from operations, number of shares and number of shares outstanding.

The ACFR8 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 earns via the cash flow per share ratio. It is not an accrual based measure. It includes the collection of accounting receivables and payment of accounting payable. Potential investors could wonder how much money a business produces. This ratio is a good measure for valuation.

ACFR 9 covers "net cash flow from operations" instead of "net cash flow" in the ACFR8. This is an important difference because it covers only net of cash flow from operations. This concept does not cover the other cash flow groups something cash flow from financing.

4.Conclusion

Cash Flow Based Corporate Finance (CFCF) model has been more practical with these improvements.

Grouping the cash flow ratios made rich the comments fulfilled by financial managers, CFOs or CEOs by separating the ratios to the Groups. Its reason is fulfilling the grouping via using different financial statement/s. While the Group A ratios use only cash flow statement, the Group B ratios need cash flow statement and balance sheet, and the Group C ratios need cash flow statement and income statement. It means that the Group A ratios covers all cash flow dimensions of a business. There is no accrual item, not paid or not collected, in the statement and of course in the Group A ratios. The CFO could sure from that. For the Group B and Group C ratios, this could not be said. They both cover some accrual items from balance sheet (for Group B) and from income statement (for Group C).

This model does not exclude the accrual corporate finance. However, it targets to add new opinions and tools to "general corporate finance" theory. For this reason, items from balance sheet and income statement are used together with cash flow statement side by side to calculate the Group B and Group C ratios. In this

way, information to manage corporate finance is diversified. Through Group B ratios, investment and financing dimensions are met with cash flow dimension of corporation. Via the Group B ratios, the two kinds information are integrated to produce more useful information for a corporation. The third ratio group, the Group C ratios, is very useful to integrate cost and income information with cash flow information to produce the cash flow dimension of cost and revenues. If cost and revenue produce cash flow it could be thought as pretty good.

This article's purpose is not cancelled accrual corporate finance but to add it cash flow dimension to increase corporate's value. İf here is enough profit and there is an enough cash flow, it is very good for a company. If they are not enough, the finance manager or CFO should study on the issues and try to solve these issues.

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Appendix 1: Codes Used in Cash Flow Based Corporate Finance Model

Code	Full name of the code	Code	Full name of the code
CBWCM	Cash flow based working capital management	ACFR14	Group A cash flow ratio 14
CBCB	Cash flow based capital budgeting	ACFR15	Group A cash flow ratio 15
CBMA	Cash flow based merger&acqusition	ACFR16	Group A cash flow ratio 16
CBCS	Cash flow based capital structure	BCFR1	Group B cash flow ratio 1
CBDP	Cash flow based dividend policy	BCFR2	Group B cash flow ratio 2
CBV	Cash flow based corporate valuation	BCFR3	Group B cash flow ratio 3
ACFR1	Group A cash flow ratio 1	BCFR4	Group B cash flow ratio 4
ACFR2	Group A cash flow ratio2	BCFR5	Group B cash flow ratio 5
ACFR3	Group A cash flow ratio 3	BCFR6	Group B cash flow ratio 6
ACFR4	Group A cash flow ratio 4	BCFR7	Group B cash flow ratio 7
ACFR5	Group A cash flow ratio 5	BCFR8	Group B cash flow ratio 8
ACFR6	Group A cash flow ratio 6	BCFR9	Group B cash flow ratio 9
ACFR7	Group A cash flow ratio 7	BCFR10	Group B cash flow ratio 10
ACFR8	Group A cash flow ratio 8	BCFR11	Group B cash flow ratio 11
ACFR9	Group A cash flow ratio 9	CCFR1	Group C cash flow ratio 1
ACFR10	Group A cash flow ratio 10	CCFR2	Group C cash flow ratio 2
ACFR11	Group A cash flow ratio 11	CCFR3	Group C cash flow ratio 3
ACFR12	Group A cash flow ratio 12	CFFO	Cash flow from operations
ACFR13	Group A cash flow ratio 13	-	-

Appendix 2: Yilmaz (2022) Codes of Group A Ratios

Code (this article)	Code Yilmaz (2022)	Code (this article)	Code Yilmaz (2022)
ACFR1	CFR1	ACFR9	--------[38]
ACFR2	CFR2	ACFR10	CFR16
ACFR3	CFR3	ACFR11	CFR17
ACFR4	CFR4	ACFR12	CFR22
ACFR5	CFR6	ACFR13	CFR23
ACFR6	CFR10	ACFR14	CFR25
ACFR7	CFR11	ACFR15	CFR27
ACFR8	CFR12	ACFR16	CFR29

Appendix 3: Yilmaz (2022) Codes of Group B Ratios

Code (this article)	Code Yilmaz (2022)	Code (this article)	Code Yilmaz (2022)
BCFR1	CFR5	BCFR7	CFR20
BCFR2	CFR9	BCFR8	CFR21
BCFR3	CFR14	BCFR9	CFR24
BCFR4	CFR15	BCFR10	CFR26
BCFR5	CFR18	BCFR11	CFR28
BCFR6	CFR19	------	…….

Appendix 4: Yilmaz (2022) Codes of Group C Ratios

Code (this article)	Code Yilmaz (2022)	Code (this article)	Code Yilmaz (2022)
CCFR1	CFR7	CCFR3	CFR13
CCFR2	CFR8	….....	……

Appendix 5: A Comparison of This Article and Yilmaz (2022) article

Code of the Function of CFCF	Number of CFRs used in the function in this article	Codes of the Ratios Assigned in this article	Number of CFRs used in the function in Yilmaz (2022) article	Codes of the Ratios Assigned in Yilmaz (2022) article
CFFinAn	Cancelled function	Cancelled function	29	All of the 29 ratios in Yilmaz (2022)
CFWCM	14	ACFR1, ACFR2, ACFR6, ACFR7, ACFR12, ACFR13, ACFR14, BCFR2, BCFR4,	29	All of the 29 ratios in Yilmaz (2022)

[38] There was no ACFR9 in Yilmaz (2022) article.

		BCFR9, BCFR10, CCFR1, CCFR2, CCFR3		
CFCB	4	ACFR4, ACFR5, ACFR11, ACFR15	11	CFR1, CFR2, CFR4, CFR6, CFR9, CFR11, CFR17, CFR18, CFR19, CFR27, CFR29
CFMA	4	ACFR4, ACFR5, ACFR11, ACFR15	3	CFR4, CFR17, CFR29
CFCS	13	ACFR6, ACFR12, ACFR14, BCFR1, BCFR3, BCFR4, BCFR5, BCFR6, BCFR7, BCFR8, BCFR9, BCFR10, BCFR11	15	CFR1, CFR5, CFR10, CFR11, CFR14, CFR15, CFR19, CFR20, CFR21, CFR22, CFR24, CFR25, CFR26, CFR28, CFR29
CFLev	Cancelled function	Cancelled function	10	CFR5, CFR10, CFR14, CFR15, CFR18, CFR21, CFR22, CFR25, CFR28, CFR29
CFDP	9	ACFR3, ACFR8, ACFR9, ACFR10, ACFR11, ACFR16, BCFR3, BCFR4, BCFR10,	10	CFR1, CFR2, CFR3, CFR12, CFR14, CFR15, CFR16, CFR17, CFR26, CFR29
CFV	2	ACFR8, ACFR9	2	CFR12, CFR29