Working capital policies and profitability: A case of manufacturing sector in Pakistan

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ABSTRACT

Working capital management directly effects profitability of any firm. In this study, we select a sample of 33 Pakistani manufacturing firms for the period of 6 years from 2005-2010.We examined the effect of different policies of working capital management AIP (aggressive investment policy) and AFP (aggressive financing policy) on ROA (Return on asset), ROE (Return on equity), ROC (Return on capital). Descriptive analysis and regression analysis are used. The outcome of study shows that there is a significant relationship of ROA and ROC with AIP and AFP. Which means that change in AFP and AIP causes change in ROA and ROC. This study also shows that there is insignificant relationship of ROE with AIP and AFP.

Introduction

Working capital management defined as the "management of current assets and current liabilities, and financing these current assets". It is important for shareholders to create value, minimize risk and maximize profit. Working capital management is very curious element to analyze the organization's outcomes while conducting daily operations. Maintaining liquidity and managing operations to make sure for managers that its running position is good. Working capital represents the operating liquidity that is available for business, firms or any other related entity. Net working capital is calculated (WC= current assets_ current liabilities). When current asset<current liabilities then the organization has working capital reduced. It is a danger sign for company. It means that the company may run into trouble to pay back creditors in the short term and decrease the profitability. When current assets > the current liabilities then it means that the company can afford to pay its short term liabilities and increase the profitability. current liabilities and Current assets include these accounts receivables, inventory and account payable. In these accounts the managers have direct impact on business.

In this study we examine the impact of Working capital on profitability in manufacturing sector for a sample of 33 firms, for the period of 6 years from 2005-2010.In this study we use variables such as ROE (return on equity), ROA (return on asset), ROC (return on capital), AIF (aggressive investment policy), AFP (aggressive financing policy).

Objective of Study;

The objective of our research is to find the impact of working capital policies on profitability of manufacturing firms without compromising for the liquidity of this firm and also to minimize the risk and maximize the profit.

The main objective of WC management is to maintain the balance among each of working capital elements. The company's profitability depends upon the financial managers and check how these financial managers effectively manage receivable, inventory and payables .Managers can increase the funds for the purpose of expansion the projects by reduction of investment increase in CA. High level current assets reduces risk of liquidity. This study explores aggressive investment and financial polices investigates their impact on profitability.

Significance of Study

Working capital management concerns with the management of current liabilities and current assets. It is very essential because it has direct effect on profitability and liquidity of the companies. By Greater level of current assets firm can easily gain more return. However, firms with few current assets face difficulty in maintaining the smooth process or operations.

Efficient management involves controlling and planning current assets and current liabilities in a way eliminates the risk of inability due to short term liabilities. Mostly small companies, current liabilities are the principle sources of external financing, do not have access to the longer term capital market. The fast growing but larger company also make of current liability financing. So the management responsibilities require a continuouss day-to-supervision.

Literature Review

Zubairi examined impact of W.C and capital structure on automobile firm's profitability. Variables used were Size of firms, DFL (degree of financial leverage), DOL (degree of operating leverage) and firm's liquidity. Data used for the purpose ranges 2000-2008 and analyzed through regression analysis. The study found that firm's automobile profitability is negatively associated with the degree of operating leverage and firm's profitability are positively associated with the degree of financial leverage. An interesting outcome in paper was that the profitability of automobile sector firms was significantly and positively related to the size of the firms. The profitability was observed to be directly associated with the firms liquidity. Mostly the automobile firms are expanding their production

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potential. However, automobile demand has a downward trend because of slowdown in economic growth and lease financing becoming expensive due to upward trend of interest rates. Increased fixed production cost spread over a relatively lower number of units due to deduction in utilization capacity. So, there was a negative relationship between operating leverage and profitability and positive relationship between financial leverage and profitability.

Rehman and Nasar (2007) examined impact of W.C on profitability. In this selected 94 firms of KSE for the period 6 years. Data analyzed for the year 1999-2004.Six variables are used in this study CCC (cash conversion cycle), NOP (net operating profit), CR (current ratio) and ACP (average collection period).Regression analysis and Pearson's correlation are used for analysis.

They found that there is a strong inverse relation between variable of working capital and firm's profitability. It means that CCC increases it will lead to decreasing profitability of companies and manager can create a positive trend for shareholder by reducing CCC to a possible minimum level.

They found that there is inverse relation between profitability and liquidity also found that there positive relation between profitability and size of the firm and its and inverse relation between firm debt and its profitability.

Nazir, Afza (2009) examined the W.C and factor that determine W.C requirements of the firm. For this purpose a study of 132 manufacturing firm from 14 industrial groups between the period 2004-2007 regression analyses is used.

Working capital is highly essential in company when W.C requirement are not properly managed and are allocated more than required, the management ineffective and reduces benefit of short term investment.In contrast, if W.C is low then firm's may miss a lot of profitable investment opportunity or suffer short term liquid problems.

Nazir and Afza analyzes that may be many and internal and external factor that are included the firm's meeting unexpected capital requirement and ignoring inefficient capital management. They used Tobin's q and growth as internal company related factor and industry dummy and level of economic activities as external macroeconomic factor EA. The variable used OC (operating cycle), OCF (operating cash flows), level of economic activity, growth ,ROA (return on asset).

They found internal factor Tobin's q is positively effecting the requirement of W.C of the firm. ROA has shown positive relationship. The other variables OCC, level of economic activity (EA) and growth and size is positively associated with the W.C requirement.

Afzal (2008) examined the relationship between conservative and aggressive W.C policies for 17 industrial groups of public limited companies listed at KSE for the period 1998-2003 ordinary least square regression model used to find relationship of returns of firm and W.C approaches. Variables are used AIP (aggressive investment policy), AFP (aggressive financing policy).

The effect of WC policies on the profitability has been analyze through frequency use profitability measures by using these variables like ROA and ROE by using cross section regression.

Afzal (2008) examine the relative relationship among the aggressive policies and found difference among financing policies and WC investment across many industries. Moreover these policies are remarkable stable for the period of six years. Positive and significant correlation between financing policies and investment for industries shows that these industries which pursue aggressive W.C policies. Found a inverse relationship

among the profitability of firm, W.C investment aggressiveness and financing policies. According to this result the negative returns of firm's yield if they follow an aggressive W.C policy.

Mwalla (2012) examined that impact of W.C management policies on the firm's profitability and value. Select data as 57 industries firm's registered in Amman stock market period was 2001-2009.using variables ROA, natural firm size, sales growth, total current liabilities to total asset ratio, leverage and GDP growth. The result shows that the conservative investment polices by having short term investment level high has positive effect on firms return's and its value while aggressive investment policy using by long term investment have negative impact on the firms profitability and its value. Financing polices result shows the aggressive financing policy by increasing current liabilities to finance firm activities will negatively impact on firm profitability and its value. The operating activities of firm's have positive effect on the firm's profitability and its value.

Finally he found the sales growth, size of firm and GDP growth have positively impact on the firm's value and profitability, the result shows that there is no effect of leverage on firm's profitability, but significant impact on value of firm.

Hayajneh (2011) investigated relationship between W.C profitability efficiency on the 53 manufacturing firms for the period (2000-2006).using variables average payment period (APP), average conversion inventory period (ACIP), average receivables collection period (ARCP).the result shows a negative relationship between the CCC and profitability. This study shows the positive relationship between the growth of sales ,size of sales and profitability. Also found that a significant positive association between profitability measure and current ratio this study examine significant negative association between profitability and financial leverage.

Qazi et.All (2011) examined the correlation between W.C and profitability of firms. Sectors are selected automobile oil and gas time period is for 2004-2009.Variables are average account receivable, networking capital, financial asset to total asset and inventory turnover in days. They found that in the regression result the number of days of account receivable, net working capital and inventory turnover in days are positive and all independent variable are negative.

Correlation result firms profitability is positively correlated with networking capital. Other three independent variables are negatively correlated with profitability of firm and remaining two variables are weakly correlated with the firms profitability.

Mathuva in (2010) investigated influence of W.C management components on corporate profitability. Choose sample of 30 firms registered on the Nairobi stock exchange for period 1993-2008.Variable are net operating profit(NOP), average payment period(APP), average collection period(ACP), financial asset ratio(FFAR),GDP growth rate firm size, and CCC. They found the NOP has negatively relation with CCC and ACP and NOP are negatively related. They also found the NOP is positively related with APP and ICP. The negative relation is among ACP and NOP can be express by the fact is that the firm which maintain high level of inventory by reducing cost of possible interruption in process of production. The positive relation between APP and NOP can be express by the fact that lagging payment to supplier ensures that the firm has few cash for purchase more inventories for the sale purpose.

Key finding that high negative relationship between the CCP and ACP, highly positive relationship between ICP and firms return and also highly positive relationship profitability and APP.

Charitou et.All (2010) investigate the effect of W.C management on firm's financial performance in an emerging the hypothesize that W.C management leads to improved profitability. The data analyzed for the year 1998-2007.using variables ROA, stock, debtor, creditor, CCC, sales, grow, debt. They found that the stock is inversely related to profitability. The sales growth has a positive related with ROA, meaning that the growth leads to increase in profitability and high leverage debt are less profitable due to the fact that these firms has high default risk and also found that the DEBTOR variable is negatively related to profitability.

Mojtahedzadeh et.All (2011) shows the relationship between W.C management and corporate profitability. Sample of 101 listed companies the data analyzed for the year 2004-2008.using variable as independent are period of collection of receivable, inventory retention period, cash conversion cycle and dependent variables are ratio of fixed financial asset, sales, financial debt ratio. They found the inverse relationship of cash conversion cycle, debt settlement period and period of collection of receivable with profitability and found the relationship between the average period of inventory retention and profitability was not confirmed significant relationship exist between W.C management and profitability.

Karaduman et.All (2010) examined that the W.C management is most the important determinants of firm's market value it's directly affect the firms return. The main objective is to provide some empirical evidence on impact of W.C management on the selected companies profitability listed in the Istanbul stock exchange period of 2005-2008.They use as a dependent variable ROA, as a independent variable are account receivable, account payable, inventory, and control variable leverage, size and GDP growth rate. They found the firms return on asset is increased by reducing number of days account receivable, number of day's inventory and account payable. Reducing cash conversion cycle provide positive impact to company return on asset. They found the control variable while debt ratio negatively affects its profitability and size has positive impact on profitability GDP growth rate positively related with company profitability.

Ali and khan (2011) examined that the important factor that have an influence on W.C management on manufacturing firms in Pakistan. They select the top 20% capital intensive firm from each of the four sectors namely Engineering, Sugar, Chemical and fuel and energy and the data analyzed for the period 2000-2008.the determinants that may have an effect on W.C are firms growth, leverage, cash flows, ROA, size of firm, real gross domestic product and unemployment rate. They found that the chemical firms are managing their W.C requirement and liquidity balances more efficiently also found that poor condition effect on W.C requirement. This suggests that W.C requirement and liquidity need increase for firms when the economy is in poor economic condition. They show that all sectors are not able to remain equally efficient with their W.C policies as they are differently affected by macroeconomic condition.

Afza and Nazir (2011) focus on the long run financial decision they have particularly studied investment, dividends, capital structure among other topics. However short run asset and liabilities are curious. Select the cement sector of Pakistan the data analyzed for the year 1988-2008.using variable ROI, ROA, length of net trade cycle, cash conversion cycle (CCC). They found the cement sector did well perform during the study period.

Khan et.All (2011) examined that the effects of W.C management on firm's profitability. Select the different many

sectors as engineering, chemical, allied and sugar the data analyzed for the year 2004-2009.Using variables, average collection period, average payment period, current ratio, firm size, debt ratio inventory turnover. They found that the average collection has insignificant impact on profitability expect in allied and sugar sector. At that time debt ratio has in significant impact on firms expect in engineering sector and the average payment period has insignificant only effect in allied and sugar sector. current ratio, firms size and Inventory turnover has significant effect on return all sectors.

Alrjoub et.All (2012) examined that the W.C management in cement unit in Rajasthan selected as a sample 4 companies namely as JK cement, shree cement, binani cement and ACC limited. Data analyzed for the 5 years from 2006-2010. Using variables size of inventory, size of receivable, inventory turnover ratio, the ratio of inventory to current asset and ratio of receivable to current assets amongst the cement companies. They found a strong negative relationship between cash conversion cycle and profitability measured through gross operating profit. They found the turnover of inventory directly affect the profitability.

Kaddumi and Ramadan (2012) examined that the impact of W.C management on the firms outcome. Select 49 Jordan industries and the data analyzed for the year 2005-2009. Using variables average age of inventory (AAI), average collection period (ACCP), cash conversion cycle (CCC) and net trade cycle (NTC), average payment period (APP).They found that W.C stronger impact on the performance of the firm and has a basic role in maximizing shareholder wealth by making firm role profitable through shortening NTC and CCC. Inverse relation of ACP, age of inventory and APP shows positive relationship with profitability they also found the positive impact of current assets to total asset ratio on firms profitability and negative effect of the current liabilities to total asset ratio on firm's profitability.

Rehaman et.All (2010) examined that the impact of W.C management on firm's performance in Pakistan. Select 204 manufacturing firm's and the data analyzed for the year 1998-2007.using variables net operating profit (NOP), inventory turnover in days (ITID), net trading cycle(NTD), average payment period (APP), cash conversion cycle (CCC), average collection period (ACP), gross working capital turnover ratio (GW.CTR), financial debt ratio(FDR), current asset to total asset ratio (CATAR), current liabilities to total asset ratio (CLTAR), size of firm's and sales growth. They found that the W.C management has a stronger effect on profitability.CCC, NTD have negative effect on net operating profit of a selected companies. The negative association of ACP with net operating profit and also found that the negative association between the ITD with NOP for the manufacturing sector as a whole.

Alam et.All (2011) examined that impact of W.C management on scarifying of companies without compromising for the liquidity of the firm. Select the 65 companies from KSC. The data analyzed for the year 2005-2009.using variables Tobin Q, ROA, ROI, (CCC), (CR), (CATAR), (DTAR).They found the result Tobin Q has positive relation with CATAR, CLTAR ,DTAR and negative relation with DTAR ,CLTAR, CCC and they also found that the ROIC with CLTAR,CATAR, ACLR are positively related.

Gill et.All (2010) examined the relationship among W.C and profitability. Select 88 American firm. The data analyzed for a period 3 years 2005-2007. Variables are account receivable, account payable, cash conversion cycle, inventory, financial debt ratio, fixed financial ratio and firm size. They found the significant relation between the profitability measured

through gross operating profit and cash conversion cycle. They found W.C has greater impact on firm's profitability.

Saghir et.All (2011) investigates the relationship between profitability and W.C management. They select 60 textile firms listed at KSE and data analyzed for the year 2001-2006.Using as independent variables number of days inventory, number of days account receivable, cash conversion cycle ,number of days account payable and as dependent variable is profitability. They found the result that the negative relation between profitability measured by and cash conversion cycle and ROA.

Data and Methodology;

This study examined the impact of WC on profitability in PAK manufacturing sector for a sample of 33 firms, period of 6 years 2005-2010. Select variables as ROE (return on equity), ROA (return on asset), ROC (return on capital), AIF (aggressive investment policy), AFP (aggressive financing policy).

Independent variables;

Aggressive investment policy in which investor bear higher risk in order to get higher return. Using aggressive investment policy investors invest in young industries with high potential growth, rather than low risk. For example aggressive investors are more likely to speculative investment than to buy treasury bonds. AIP results in minimum level investment in current assets as compared to fixed assets. On the other hand, conservative investment policy results in higher level of investment in liquid assets with opportunity cost and less profitability. Calculated as Total current asset divided by total asset. lower ratio shows relatively aggressive policy.

Aggressive financing policy an investor investing a company asset and gain the high rate of return on investment. Utilize high level of less long term capital and less cost short term debt, when lowering capital cost, increase risk of the short term liquidity problems. In contrast the conservative policy use high cost capital but postpone the repayment of debt and avoid using equity. By using the aggressive financing policy less chance of bad debts and recover money more quickly. Calculated as Total current liability divided by total asset. Higher ratio shows a relatively aggressive policy.

The effect of these policies on profitability has been analyzed by using the profitability ratios ROA, ROE and ROC. The impact is find through the using descriptive analysis and regression analysis.

Dependent variables;

ROA (return on asset) gives an idea how the company management using its assets to generate the earning. ROA is used as a financial tool that determines the level of return that a company has generated by using its total assets. Companies are usually considered when they efficient use of total asset than generate the higher returns and can attract more investor to invest in company and also attract the lender.roa reflect the earning generated by the capital invested.Calculated as ROA = Net profit / Total asset

ROE is used as financial tool that shows the return of firm or profit of a firm has generated using the equity of its owners.ROE measures the firms profitability by revealing how much profit is generated by the firms using the money of its shareholders have invested.

Calculated as follows.

ROE = Net profit / Equity share capital

ROC is also used as financial tool that shows the how effectively a firm uses the money that are borrowing or lending that are invested in firms operations. If the return on capital of a firm exceeds its WACC, then the firms created value. If the return on capital is of a firm less than the WACC, then the firms destroying its value.

Calculated as follows.

ROC = Net income / Equity + long term debt

Model;

ROA $= \alpha + \beta 1(AIP) + \beta 2(AFP) + \varepsilon \ldots\ldots\ldots\ldots (1)$

ROE $= \alpha + \beta 1(AIP) + \beta 2(AFP) + \varepsilon \ldots\ldots\ldots\ldots (2)$

ROC $= \alpha + \beta 1(AIP) + \beta 2(AFP) + \varepsilon \ldots\ldots\ldots\ldots (3)$

Where;

ROA = Return on Assets of firm of for the period of 6 years 2005-2010.

ROE = Return on equity of firm of for the period of 6 years 2005-2010.

ROC = Return on capital of firm of for the period of 6 years 2005-2010.

AIP = Total Current Assets to Total Assets Ratio for the period of 6 years 2005-2010.

AFP = Total Current liabilities to Total Assets Ratio for the period of 6 years 2005-2010

α = intercept

ε = error term

Results;

Interpretation

Description analysis shows the standard deviation and average of different variables that we use in our study. It is a first step in our study. Dependent variables are ROA, ROE, and ROC. According to this analysis the average value of ROA is 12.8 and standard deviation is 12.10 which show that the 12.10 percent risk.roa median is 8.4. The average value of ROE is 39.2 and standard deviation is 99.9.this shows that this is more risky.ROE median is 18.7. The average value of ROC is 28.3 and standard deviation is 83.7.this shows that this is more risky but less than from ROC.ROC median is 14.6. Independent variable is AIP and AFP these variables effect on dependent variable. AIP average value is 0.6.standared deviation is 0.3 shows that there is minimum risk and median is 0.6. AFP average value is 0.6. Standard deviation is 0.9 shows that there is also minimum risk and the median are 0.5.

ROA;

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.4
R Square	0.1
Adjusted R Square	0.1
Standard Error	19.7
Observations	198.0

ANOVA					
	df	SS	MS	F	Significance F
Regression	2.0	11,582.7	5,791.4	14.9	0.0
Residual	195.0	75,642.3	387.9		
Total	197.0	87,225.0			

Descriptive statistics:

	Descriptive Statistics	Overall							
ROA			ROE		ROC		AIP		AFP	
Mean	12.8	Mean	39.2	Mean	28.3	Mean	0.6	Mean	0.6
Standard Error	1.5	Standard Error	7.1	Standard Error	5.9	Standard Error	0.0	Standard Error	0.1
Median	8.4	Median	18.7	Median	14.6	Median	0.6	Median	0.5
Mode	-	Mode	-	Mode	-	Mode	-	Mode	-
Standard Deviation	21.0	Standard Deviation	99.9	Standard Deviation	83.7	Standard Deviation	0.3	Standard Deviation	0.9
Sample Variance	442.8	Sample Variance	9,981.1	Sample Variance	7,001.5	Sample Variance	0.1	Sample Variance	0.8
Kurtosis	107.0	Kurtosis	70.3	Kurtosis	125.0	Kurtosis	(0.6)	Kurtosis	42.6
Skewness	9.1	Skewness	7.8	Skewness	10.6	Skewnes	(0.5)	Skewness	5.6
Range	266.1	Range	1,065.8	Range	1,065.8	Range	1.0	Range	9.1
Minimum	-	Minimum	-	Minimum	-	Minimum	-	Minimum	-
Maximum	266.1	Maximum	1,065.8	Maximum	1,065.8	Maximum	1.0	Maximum	9.1
Sum	2,536.4	Sum	7,753.1	Sum	5,603.0	Sum	116.8	Sum	125.1
Count	198.0	Count	198.0	Count	198.0	Count	198.0	Count	198.0

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	1.3	3.6	0.4	0.7	(5.9)	8.5	(5.9)	8.5
AIP	11.3	5.5	2.1	0.0	0.4	22.1	0.4	22.1
AFP	7.7	1.5	5.0	0.0	4.7	10.7	4.7	10.7

In this we use the regression analysis. R square shows the percentage change in dependent variables due to independent variables. R square is 0.13279. This shows the 13.279 percent change in dependent variable ROA, due to independent variables AIP and AFP.

ROA $= 1.2957 + 11.2767(\text{AIP}) + 7.69248(\text{AFP}) + \varepsilon \ldots\ldots\ldots\ldots(1)$

In this 11.2767 percent change ROA due to AIP and 7.69248 percent change in ROA due to AFP.

AIP P-value 0.041and it is significant value and positively correlated with dependent variables.AFP P-value 1.2343E-06 it is significant value and positively correlated with dependent variables. This model is significant.

ROE;

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.08
R Square	0.01
Adjusted R Square	(0.00)
Standard Error	100.11
Observations	198.00

ANOVA					
	df	SS	MS	F	Significance F
Regression	2.00	11,835.4	5,917.7	0.6	0.6
Residual	195.00	1,954,434.6	10,022.7		
Total	197.00	1,966,270.0			

R square shows the percentage change in dependent variables due to independent variables. R square is 0.03782. This shows the 3.782 percent change in dependent variable ROC due to independent variables AIP and AFP.

ROC $= 1.2957 + 11.2767(\text{AIP}) + 7.69248(\text{AFP}) + \varepsilon$

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	21.05	18.5	1.1	0.3	(15.4)	57.5	(15.4)	57.5
AIP	30.27	27.9	1.1	0.3	(24.8)	85.3	(24.8)	85.3
AFP	0.39	7.8	0.0	1.0	(15.0)	15.8	(15.0)	15.8

This model is insignificant.

ROC;

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.2
R Square	0.0
Adjusted R Square	0.0
Standard Error	82.5
Observations	198.0

ANOVA					
	df	SS	MS	F	Significance F
Regression	2.0	52,159.2	26,079.6	3.8	0.0
Residual	195.0	1,327,127.9	6,805.8		
Total	197.0	1,379,287.1			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	(10.3)	15.2	(0.7)	0.5	(40.4)	19.7	(40.4)	19.7
AIP	62.8	23.0	2.7	0.0	17.4	108.2	17.4	108.2
AFP	2.5	6.4	0.4	0.7	(10.2)	15.2	(10.2)	15.2

In this 11.2767 percent change ROC due to AIP and 7.69248 percent change in ROC due to AFP.

AIP P-value 0.041and it is significant value and positively correlated with dependent variables. AFP P-value 1.2343E-06 it is significant value and positively correlated with dependent variables. This model is significant.

Conclusion

The studies examine the relative relationship between the dependent variables and independent variables. We select the 33 other manufacturing companies for the period of 2005-2010. Relationship between the dependent ROA, ROE, ROC and independent variables AIP and AFP has been examined through regression analysis and descriptive statistics. We found the significant relationship of ROA and ROC with AIP and AFP this means that the positive relationship between these variables. Its means when independent variables AIP and AFP increase or decrease then ROA and ROC also increase or decrease. We also found that there is insignificant relationship of ROE with AIP and AFP this means that the negative relationship between this variables. Its means when independent variables AIP and AFP increase then dependent variable ROE decrease. When independent variables AIP and AFP decrease then dependent variable ROE increase.

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