

# **IMPACT OF WORKING CAPITAL MANAGEMENT AND CAPITAL STRUCTURE ON THE PROFITABILITY OF JEWELLERY INDUSTRY: A STUDY**

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**Abstract:** For managing liquidity efficiently, a company's management has to decide on the optimum level of current assets and current liabilities that it should carry. A comprehensive ratio which captures the relationship between the level of current assets and current liabilities is the current ratio, calculated as current assets / current liabilities. In this study, current ratio has been used as the indicator for firm liquidity. Operating leverage measures the degree to which a business organization relies on fixed operating costs in its pursuit for maximizing its operating profit. Financial leverage is similar in nature to operating leverage except for the fact that the fixed cost in this case is the interest or financial charges and the positive effect is on earnings before tax. The present study analyses the impact of working capital management and capital structure on the profitability of Jewellery Industries in India. In our analysis, natural log of sales was taken as the proxy for company size (SZ). This helps in smoothing out changes in sales occurring across the years under review. The empirical findings of the study are based on time series data of jewellery companies listed on any one of the Stock Exchanges in India for the years 2009 to 2017.

**Keywords:** Liquidity, Leverage, Working Capital, Jewellery, Company Size.

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**1.0. Introduction:** For managing liquidity efficiently, a company's management has to decide on the optimum level of current assets and current liabilities that it should carry. A comprehensive ratio which captures the relationship between the level of current assets and current liabilities is the current ratio, calculated as current assets / current liabilities. In this study, current ratio has been used as the indicator for firm liquidity.

Operating leverage measures the degree to which a business organization relies on fixed operating costs in its pursuit for maximizing its operating profit. Increase in profits results from spreading a given level of fixed operating costs over a larger number of units of the product. Thus, the degree of operating leverage is higher in those companies whose operating costs include a higher percentage of fixed operating costs. On the other hand companies whose operating costs comprise a relatively high percentage of variable costs have a low operating leverage.

The operating breakeven point is higher for companies with a larger proportion of fixed operating costs. This makes such companies more risky because if the level of sales is not sufficiently high, the fixed operating costs may not be adequately covered, thereby resulting in an operating loss or a low operating profit. Thus, while a high degree of operating leverage will increase operating profit in times of rising sales; operating profits will reduce rapidly when sales are showing a declining trend. A similar impact can be visualized on the bottom line or net profit for a company with a high degree of financial leverage. For the foregoing reasons, a company having high operating cost as percentage of its total costs and also

having a high financial leverage, will expose investors to a high risk. It is therefore important to realistically forecast future sales, if risk is to be contained. If sales are not sufficiently high to adequately cover fixed costs, operating profit may be so low that fixed interest charges are not covered. This would result in a net loss or a negative return on equity.

larger percentage of their assets through debt. Conversely, financial leverage decreases as a company reduces its debt financing and increases equity financing. Thus, the degree of financial leverage will be zero for an all equity financed company. Companies may opt for higher financial leverage for various reasons, e.g. their expectation of a poor response from the investing public for new equity issues or the advantage of tax shield on debt funds. Firm size may possibly influence company profitability, liquidity and cash gaps.

The present study analyses the impact of working capital management and capital structure on the profitability of Jewellery Industries in India. In our analysis, natural log of sales was taken as the proxy for company size (SZ). This helps in smoothing out changes in sales occurring across the years under review.

The empirical findings of the study are based on time series data of jewellery companies listed on any one of the Stock Exchanges in India for the years 2009 to 2017.

**2.0. About the Jewellery Industry in India:** The Gems and Jewellery sector plays a significant role in the Indian economy, contributing around 6-7 per cent of the country's GDP. The gems and jewellery market has more than 500,000 players, with the majority being small players. India is one of the largest exporters of gems and jewellery to UAE, US, Russia, Singapore, Hong Kong, Latin America and China. The Indian government presently allows 100 per cent Foreign Direct Investment (FDI) in the sector. The overall gross exports of Gems & Jewellery in April 2016 were US\$ 3.23 billion. The jewellery market in India is expected to grow at 15.95 per cent over the period 2014-2019.

**The Sector Comprises Of Two Major Segments:**

**Gold:** Comprises around 80% of the Indian jewellery market, balance comprising fabricated studded jewellery (Diamonds and Gemstones). It has High levels of manufacturing and domestic consumption.

**Diamonds:** World's largest cutting and polishing Industry for diamonds And Export potential for polished diamonds / finished diamond jewellery.

**3.1. Brief Review of the Available Literature:** To get a pin-pointed research question in review and also to have an idea of certain pin-pointed research problems, I had to go through the following available literature:

Authors	Variable	Conclusion
H. Jamal Zubairi (2010) <sup>1</sup>	Degree of Operating Leverage, natural log of sales, Degree of Financial Leverage, current ratio (current assets /current liabilities).	Financial leverage has a significant positive impact on profitability of the firms. Operating leverage has a negative and statically significant influence on Profitability. The growth of profitability is positively associated with the size of the firm, and finally An increase in liquidity ratio (CR) leads to an increase in Firm profitability.
Myers (1984) <sup>2</sup>	Debt-equity ratio, leverage	Static Trade-off theory- a direct relationship between profitability and leverage. Pecking Order Theory- an inverse relationship between profitability and leverage.

Modigliani and Miller (1958) <sup>3</sup>	Earnings, market value, corporate taxes, standard deviation of operating income (EBIT)	Debt brings benefits due to availability of tax shield due to interest being treated as a tax deductible expense.
Fama and French (1999) <sup>4</sup>	Total book assets, earnings before interest and extraordinary items but after taxes	Mean reversion is faster when profitability is below its mean and when it is further from its mean in either direction. Mean reversion in profitability produces predictable variation in earnings.
Nissim and Penman (2001) <sup>5</sup>	Return on Common Equity (ROCE), Financial Leverage, Operating Liability Leverage.	Shareholder profitability is leveraged by financing and operating liability leverage; profitability is differentially related to the amount of financing leverage and operating liability leverage. Operating liability leverage not only explains differences in profitability in the cross section but also differences in the change in future Profitability from current profitability.
Gahlon and Gentry (1982) <sup>6</sup>	DOL (degree of operating leverage) and DFL (degree of financial leverage)	DOL and DFL were fair measures of asset risk and beta is related to DOL and DFL.
Mandelker and Rhee (1984) <sup>7</sup>	DOL, DFL and beta.	DOL and DFL explained between 38 to 48 percent changes in a cross-section of data.
Mseddi and Abid (2004) <sup>8</sup>	DOL and DFL	Significant positive impact on company value of both operating and financial leverage. Excess return is a positive and increasing function of DOL, DFL and systematic risk.

**3.2. Research Gap:** All the above literatures reveal that so in-depth empirical study has yet been made on impact of working capital management and capital structure on the profitability of jewellery industry, which is a high-capital-intensive and high-profit making industry. This may be considered as a gap or research question for the present study.

**3.3. Objectives of the Study:** The core objectives of the study are two fold:

1. First, to estimate whether the size of the company, operating leverage, financial leverage and liquidity exhibit a statistically significant linkage with profitability of the companies.
2. Second, to ascertain whether jewellery companies have some distinct traits which are different from other industries and vary from the generally accepted theory? By its nature, jewellery industry is a relatively capital intensive industry and needs heavy financial investment both for establishing a new manufacturing unit and for balancing, modernization or expansion of an existing unit.

**3.4. Methodology of the Study:** This section explains the ways in which the variables are calculated and presents the null hypotheses, along with the methodology used to test the hypotheses besides discussing sample / data sources.

**3.4.1. Explanation of Variables:** Following the work of Eljelly and Abuzar (2004), we used four variables namely, **size of the firm**, **DOL (degree of operating leverage)**, **DFL (degree of financial leverage)** and **liquidity of the firm** in our linear regression model (as explained below) to identify their relative impact (negative or positive) on profitability of the jewellery companies selected as above. The measurement of the variables, in particular such as profitability, operating and financing leverage, itself is a matter of contention between financial economists and practitioners. Differences exist both in

definition and method of computation of these variables. However, to be the part of that debate is beyond the scope of the study. Following the existing literature, we adopted simple but effective measures of the said variables.

**3.4.2. Profitability (as a Dependent Variable):** Profitability refers to the ability of a company to earn a profit. It is a relative measure of success for a business. We measured profitability (PF) as earning before interest and taxes (EBIT) and used it as a dependent variable in multivariate regression analysis to explore the relationship of the said variables with company profitability.

**3.4.3. Size of the Firm:** Company profitability, liquidity and cash cycle may possibly be influenced by firm size in more than one way. For instance, big companies may secure quantity discounts from inventory suppliers since they can afford to purchase larger quantities. Also these companies might be more successful in negotiating a longer repayment period. Furthermore, bigger size companies can be expected to be more resourceful and therefore efficient in collecting receivables from their own credit customers. All these factors contribute towards the greater ability of larger companies in maintaining lower levels of liquidity and cash cycle, as compared to smaller size companies.

Since automobile companies are normally capital intensive, we expect a direct linkage of company size with profitability. In our analysis, natural log of sales was taken as the proxy for company's size (SZ). In this way the changes in sales occurring across the years under review are smoothed out.

**3.4.4. Degree of Financial Leverage (DFL):** Financial leverage comes into play when a part of the company's assets is financed through debt. Through this, a company may try to magnify its EBT (earning before taxes) but losses could also be magnified in case the financial charges after acquiring debt are more than EBIT (earnings before interest and taxes). As debt carries a fixed cost, the greater the proportion of company assets financed by debt, the higher is the financial leverage. Financial leverage of a company may be computed in different ways. For instance some theorists consider the amount of long term debt as representative of financial leverage. The ratios of long term debt to total assets and total debt to total assets are also measures of financial leverage. For the purpose of our study, we have used the ratio of earnings before taxes (EBT) to earnings before interest and taxes (EBIT) for calculating degree of financial leverage (DFL). We preferred this measure since it focuses directly on the impact of interest on income before taxes.

**3.4.5. Degree of Operating Leverage (DOL):** DOL indicates the extent to which a company's operating costs are fixed. A higher proportion of fixed costs imply a higher operating leverage and vice-versa if variable operating costs are a larger component out of the total operating costs. Exactly similar to financial leverage, a higher operating leverage can magnify operating profit. However, if the operating performance of a company, having a high operating leverage declines, the reduction in operating profit is also magnified. Thus, both high operating and financial leverage result in a greater variability of returns representing a higher risk for the company.

We can calculate the degree of operating leverage (DOL) by using the ratio of contribution margin (Sales less Variable Cost) to earnings before interest. However, due to data constraints, an alternative measure of DOL i.e., ratio of percentage change in EBIT to percentage change in sales has been used.

Operating and financial leverage normally move in the same direction; they both increase expected return on equity, but they also increase the risk faced by the shareholders. The business risk part of total risk is affected by operating leverage, whereas financial leverage affects financial risk thus affecting the total risk of the firm.

**3.4.6. Liquidity:** For managing liquidity efficiently, a company's management has to decide on the optimum level of current assets and current liabilities it should carry. Very low levels of current assets expose the company to the risk of not having enough cash for meeting its maturing liabilities, losing customers through a strict credit policy or running out of inventory when an unanticipated upsurge in demand for its products occurs. Conversely carrying very high levels of current assets would reduce aforementioned risks but adversely affect profitability due to excessive investment in these assets, which

at least in part would remain unproductively tied up, either as cash or inventory. Thus the issue of liquidity management boils down to the management deciding on the appropriate trade-off between risk and return. As explained by **Eljelly and Abuzar (2004)**, if efficient liquidity management improves profitability, an inverse relationship should be expected between liquidity and profitability indicators; current ratio (current assets / current liabilities) and EBIT in our case.

**3.4.7. Hypotheses for the Study:** The main object of the study is to know whether the leverage (both operating and financial) affects the profitability of the firms in the jewellery sector of India. In order to achieve this objective we tested the following hypothesis along with two other hypotheses:

1. **Hypothesis (Ho): Higher degree of leverage does not lead to change in profitability in automobile firms listed on Karachi Stock Exchange.**
2. **Hypothesis (Ho): Firm size does not affect profitability.**
3. **Hypothesis (Ho): Profitability of the firm is not significantly affected by the liquidity as measured by its current ratio.**

**3.5. Model Description:** We ran the simple linear regression (OLS) to test the above hypotheses over the period 2006 to 2015 (i.e., for the last 10 years starting from the year ending on March, 2015] (data is given in Appendices). Specifically, the OLS Regression model is defined as follows:

$$PF = \beta_0 + \beta_1 DOL + \beta_2 SZ + \beta_3 DFL + \beta_4 LQ + \varepsilon \quad \dots\dots\dots (1)$$

Where

PF = Profitability

DOL = Degree of Operating Leverage

DFL = Degree of Financial Leverage

SZ = Firm Size measure by Log of Sales

LQ = Liquidity measured by Current Ratio

$\varepsilon$  = the error term with zero mean and constant variance

The possible expected effects of the said variables on firm's profitability are reported in **Table 3.1**.

Expected Relationships Variable	Measure (proxy)	Expected Relationship with Leverage
DOL	% change in EBIT / % change in sales	Positive/Negative
Size	Log of Sales	Positive
DFL	EBT / EBIT	Positive/Negative
Liquidity	Current Assets / Current Liabilities	Negative/No effect

**3.6. Data Collection and Data Source:** The study was confined to the Jewellery sector of India. Due to data constraints top 10 jewellery companies listed on any one of the Stock Exchanges in India were included in the study, although industry comprised of 63 listed companies (source : www.moneycontrol.com). Hence, the sample constituted near about 16 per cent of the population. Their annual report was download in virtual copy from their respective websites and also from www.moneycontrol.com, which is in the nature of secondary data.

**3.7. Study Period:** Financial data of these firms over the years 2009 to 2017 was used (the data sheet on company-wise variables is given as Appendices). Hence, we had 63 firm-year observations for panel regression. The data was obtained from the sample firms' published audited annual accounts.

**4.1.1. Empirical Data Analysis:** This section presents the descriptive statistics and the results of regression analysis. The interpretation and detailed discussion of the empirical findings are also reported in this section. Finally, some explanations, on the basis of economic/financial theory, are given to justify the empirical findings.

**4.1.2. Descriptive Statistics:** Prior to start of formal analysis, we present descriptive statistics in Table 4.1. The table shows the information at the level of the variables. It is noticeable that degree of operating leverage has a higher mean value but is more volatile as compared to financial leverage. But, both are however positively skewed approximately with the same magnitude. Finally, the table shows that the measure of profitability is negatively skewed; implying that profitability gradually increases and then sharply declines, although the negativity is very minimal.

**Table 1 : Descriptive Statistics**

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Current Ratio	93	45	1	47	458	4.93	.654	6.309	39.801	4.495	.250	24.285	.495
Log of Sales	91	9	1	11	602	6.61	.200	1.910	3.649	-.383	.253	.639	.500
Degree of Operating Leverage	81	139	-36	103	201	2.48	1.555	13.993	195.797	4.852	.267	35.081	.529
Degree of Financial Leverage	93	46	-16	29	156	1.67	.366	3.533	12.485	3.857	.250	47.660	.495
Log of Profit	95	8	-1	7	312	3.29	.214	2.086	4.352	-.276	.247	-.622	.490
Valid N (listwise)	81												

Source: Compiled from Secondary Data through SPSS 20

#### 4.1.3. Regression Analysis using OLS Technique

Using OLS regression technique, we ran the regression of the profitability on the degree of operating leverage, the degree of financial leverage, the size of the firm and the liquidity ratio (CR) with the aim to investigate whether these four variables have significant explanatory power. The measures of profitability and sales are used in log form. The remaining three variables namely degrees of financial/operating leverage and equity ratio are, however in percentage form and there is no need to resort to the log form. The regression estimates thus provide the information about the elasticity rather than the slope of the relevant variables. The estimated results are reported in Table 2 to 9 respectively.

Starting with the Null Hypothesis there is dependence of CR, DOL, DFL and LOS on LOP we ran OLS regression and here the Table 4.5 shows that both F-statistic and F-value changes are significant which proves the statistical significance of the OLS Regression Model. Further, Table 4.9 shows that the successive values of estimated residuals are not dependent on each other. This means that there is evidence to accept the null hypothesis that there is no autocorrelation problem in the estimated model.

Regarding the significance of individual variables, the empirical results show that the firms' profitability is positively significantly associated with the degree of financial leverage, as evident from the table 4.4 and 4.5. The P-value is 0.004, as can be seen from the table 4.5. This implies that the null hypothesis (that the degree of financial leverage has no significant impact on profitability) is rejected at 1 percent level of significance.

It can be observed from the table that the estimated value of the R-square is approximately 0.706. This implies that about three quarters of the variation in profitability of the firms is jointly determined by the said four variables. The value of F-statistic (45.646) indicates that the overall model is good. The Durbin-Watson statistic is also close to 1 which implies that the successive values of estimated residuals are not dependent on each other. This means that there is evidence to accept the null hypothesis that there is no autocorrelation problem in the estimated model.

This piece of evidence is in line with the Static Tradeoff Theory that states that more profitable firms have lower expected bankruptcy costs and higher tax benefits (see, for details Jensen (1986) and Hart and Moore (1995)). This implies that the Jewellery sector firms in India prefer to use more debt as compared to equity in their financial structure. However, these findings are in contrast to the Pecking Order Theory, which postulates a negative correlation between the profitability and the degree of the financial leverage (see, for detail Myers (1984) and Myers and Majluf (1984)).

The estimated model also shows that there is a statistically significant and negative association between the profitability of the jewellery sector in India and operating leverage. On the basis of P-value of 0.004 we reject the null hypothesis that the degree of operating leverage has no statistically significant effect on the profitability. The sign of the coefficient is negative which shows a negative relationship, which is in line with the Dynamic Tradeoff theory (see, for details Fischer et al. (1989) and Strebulaeve (2003)).

The probable explanation for the opposite signs of linkage of profitability to financial and operating leverage is that during the later part of the years under review, most of the automobile firms were expanding their production capacity. However, automobile demand witnessed a downward trend mainly due to slow down in economic growth and lease financing becoming expensive due to rising interest rates. Thus, the increased fixed production cost was spread over a relatively lower number of units due to decline in capacity utilization, thereby resulting in a negative relationship between profitability and operating leverage. Despite this, financial leverage and profitability had a positive relationship, indicating that auto firms continue to enjoy such large profit margins that firms using higher proportion of debt in their capital structure were still more profitable than firms using lower proportion of debt.

An interesting finding in the present study is that the profitability of the jewellery sector firms is positively and significantly related to the size of the firms. It is noticeable that the highest coefficient is that of the size of the firm. A one percentage increase in the sales of the firms leads to almost 1.44

percent growth in the profitability of the firms. Large size companies are usually diversified and therefore less likely to go bankrupt. Firm size could therefore be inversely related to bankruptcy and thus directly related to profitability. The significance of the coefficient of the size variable suggests that the firms in jewellery sector increase their profitability by increasing the sales, either by enhancing the volume or the prices per unit.

Finally, profitability is observed to be positively associated with liquidity (CR). The estimated magnitude is 0.182 that is statistically significant at 5 percent level of significance. This goes against the theory. However, this finding seems to be due to the peculiar circumstances of Pakistan's automobile sector, wherein a seller's market has been prevailing for a number of years, due to this automobile firms routinely get 100% cash advances months before the actual delivery, thereby significantly improving their liquidity (CR). This suggests that for profitability growth, it is necessary to increase the current assets as compared to current liabilities (as the liquidity is measured by the ratio of current assets to current liabilities). The level of profitability can be enhanced by adopting active and effective liquidity management strategies.

#### 4.1.4. Diagnostic Checking

To check whether the values of estimated parameters of model remain consistent through the examined time period, we ran the Unit Root test on an overlapping sample. The estimated results are reported in Table 4.10.

This piece of evidence

Group unit root test: Summary				
Series: YEAR, MAR_15, MAR_14, MAR_13, MAR_12, MAR_11, MAR_10, MAR_09, MAR_08, MAR_07, MAR_06				
Date: 09/18/16 Time: 22:51				
Sample: 1 5				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic selection of lags based on SIC: 0				
Newey-West bandwidth selection using Bartlett kernel				
Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	28.1710	1.0000	10	39
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	6.48644	1.0000	9	36
ADF - Fisher Chi-square	1.16352	1.0000	10	39
PP - Fisher Chi-square	0.78675	1.0000	10	39
** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.				

Based on the calculated statistics, the study is unable to reject the null hypothesis that estimated parameters are consistent over time. The ADF test results provide strong evidence to reject the null hypothesis that the estimated residual has a unit root. This implies that the residuals are stationary. It means that the mean and variance of the residuals do not vary with time.

#### 5.1. Findings, Conclusion and Recommendations

In this section, we present the findings of the study, accompanied by the Conclusions and Recommendations.



## 5.2. Findings from the Study:

1. It is noticeable that degree of operating leverage has a higher mean value but is more volatile as compared to financial leverage. But, both are however positively skewed approximately with the same magnitude.
2. The measure of profitability is negatively skewed; implying that profitability gradually increases and then sharply declines, although the negativity is very minimal.
3. Using OLS regression technique, Starting with the Null Hypothesis there is dependence of CR, DOL, DFL and LOS on LOP we ran OLS regression which shows that both F-statistic and F-value changes are significant which proves the statistical significance of the OLS Regression Model.
4. Further, the successive values of estimated residuals are not dependent on each other. This means that there is evidence to accept the null hypothesis that there is no autocorrelation problem in the estimated model.
5. Regarding the significance of individual variables, the empirical results show that the firms' profitability is positively significantly associated with the degree of financial leverage, as evident from the table 4.4 and 4.5. The P-value is 0.004, as can be seen from the table 4.5. This implies that the null hypothesis (that the degree of financial leverage has no significant impact on profitability) is rejected at 1 percent level of significance.
6. It can be observed from the table that the estimated value of the R-square is approximately 0.706. This implies that about three quarters of the variation in profitability of the firms is jointly determined by the said four variables. The value of F-statistic (45.646) indicates that the overall model is good.
7. The Durbin-Watson statistic is also close to 1 which implies that which implies that the successive values of estimated residuals are not dependent on each other. This means that there is evidence to accept the null hypothesis that there is no autocorrelation problem in the estimated model.
8. This piece of evidence is in line with the Static Tradeoff Theory that states that more profitable firms have lower expected bankruptcy costs and higher tax benefits (see, for details Jensen (1986) and Hart and Moore (1995)).
9. This implies that the Jewellery sector firms in India prefer to use more debt as compared to equity in their financial structure. However, these finding are in contrast to the Pecking Order Theory, which postulates a negative correlation between the profitability and the degree of the financial leverage (see, for detail Myers (1984) and Myers and Majluf (1984)).
10. The estimated model also shows that there is a statistically significant and negative association between the profitability of the jewellery sector in India and operating leverage. On the basis of P-value of 0.004 we reject the null hypothesis that the degree of operating leverage has no statistical significant effect on the profitability. The sign of the coefficient is negative which shows a negative relationship, which is in line with the Dynamic Tradeoff theory (see, for details Fischer et al. (1989) and Strebulaeve (2003)).
11. An interesting finding in the present study is that the profitability of the jewellery sector firms is positively and significantly related to the size of the firms. It is noticeable that the highest coefficient is that of the size of the firm.
12. Large size companies are usually diversified and therefore less likely to go bankrupt. Firm size could therefore be inversely related to bankruptcy and thus directly related to profitability.
13. The significance of the coefficient of the size variable suggests that the firms in jewellery sector increase their profitability by increasing the sales, either by enhancing the volume or the prices per unit.
14. Finally, profitability is observed to be positively associated with liquidity (CR). The estimated magnitude is 0.182 that is statistically significant at 5 percent level of significance. This goes against the theory. However, this finding seems to be due to the peculiar circumstances of Indian Jewellery sector, wherein a seller's market has been prevailing for a number of years, due to this automobile firms routinely get 100% cash advances months before the actual delivery, thereby significantly improving their liquidity (CR).
15. This suggests that for profitability growth, it is necessary to increase the current assets as compared to current liabilities (as the liquidity is measured by the ratio of current assets to current liabilities).

The level of profitability can be enhanced by adopting active and effective liquidity management strategies.

16. The ADF test results provide strong evidence to reject the null hypothesis that the estimated residual has a unit root. This implies that the residuals are stationary. It means that the mean and variance of the residuals do not vary with time.

**5.3. Conclusions and Policy Implications:** The study used sample data of 10 firms of the jewellery industrial sector companies listed in any one of the Stock Exchanges in India. The data used covered the period 2009 to 2017. We have thus gathered strong evidence to show that:

1. Financial leverage has a significant positive impact on profitability of the firms.
2. Operating leverage has a negative and statically significant influence on profitability.
3. The growth of profitability is positively associated with the size of the firm, and finally
4. An increase in liquidity ratio (CR) leads to an increase in firm profitability.

The robustness of these findings were tested by running the augmented ADF unit root test to the residual series derived from the estimated model. We found evidence that the association between the profitability and the said variables is stable over the examined sample period. ADF results show that the residuals are stationary. This shows that the estimated model is not only overall statistically significant but also yields consistent parameters. The estimates thus can be used for explaining the variation in profitability and in designing effective managerial strategies to further enhance the profitability of the jewellery sector.

The results relating to impact of size of the firms on profitability are consistent with the results of Eljelly and Abuzar (2004). The firm size is found to have a significant and direct effect on profitability of jewellery Industries in India. However, the evidence regarding liquidity of the firm is in contrast to their findings, that is, liquidity in our case is found to have a positive impact on the profitability of firms. The reason for this, as already elaborated above, is mainly the peculiar prevailing seller's market situation in Pakistan's automobile industry. Thus, a firm can enhance its profitability either by increasing its current assets or by reducing its current liabilities. The degree of operating leverage appears to be statistically significantly linked to profitability in our model; the negative sign of the coefficient being in line with the Dynamic Tradeoff Theory. This is understandable because the increase in capacity of the jewellery firms in the later part of the years under review could not be supported by increased sales due to a slump in demand. There might be some room for further profit maximization by increasing financial leverage but it is not an endless possibility, i.e., a point may be reached where excesses financial leverage would start reducing the profit or magnifying the losses. The key factor for improving industry profitability in the future appears to be increase in capacity utilization which can be get further impetus if interest rates also decline.

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Appendices:

[Not A Part Of The Publication, Supportive Evidence For Review Only]

**Table 2 : Descriptive Statistics**

	Mean	Std. Deviation	N
lop	3.59	1.946	81
cr	4.67	5.836	81
los	6.74	1.878	81
dol	2.48	13.993	81
df1	1.70	3.785	81

Source: Compiled from Secondary Data through SPSS 20

**Table 3: Correlations**

		lop	cr	los	dol	df1
Pearson Correlation	lop	1.000	-.358	.834	-.059	.071
	cr	-.358	1.000	-.519	-.063	-.060
	los	.834	-.519	1.000	-.004	.076
	dol	-.059	-.063	-.004	1.000	-.072
	df1	.071	-.060	.076	-.072	1.000
Sig. (1-tailed)	lop	.	.001	.000	.301	.265
	cr	.001	.	.000	.287	.296
	los	.000	.000	.	.485	.249
	dol	.301	.287	.485	.	.262
	df1	.265	.296	.249	.262	.
N	lop	81	81	81	81	81
	cr	81	81	81	81	81
	los	81	81	81	81	81
	dol	81	81	81	81	81
	df1	81	81	81	81	81

**Table 4 : Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	df1, cr, dol, los <sup>b</sup>	.	Enter

a. Dependent Variable: lop

b. All requested variables entered.

**Table 5 : Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.840 <sup>a</sup>	.706	.691	1.082	.706	45.646	4	76	.004	.895

a. Predictors: (Constant), df1, cr, dol, los

b. Dependent Variable: lop

**Table 6 : ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	213.898	4	53.475	45.646	.004 <sup>b</sup>
	Residual	89.034	76	1.171		
	Total	302.932	80			

a. Dependent Variable: lop

b. Predictors: (Constant), dfl, cr, dol, los

**Table 7 : Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-2.734	.591		-4.628	.000					
	cr	.033	.024	.098	1.347	.182	-.358	.153	.084	.726	1.377
	los	.917	.076	.885	12.136	.000	.834	.812	.755	.728	1.374
	dol	-.007	.009	-.048	-.773	.442	-.059	-.088	-.048	.989	1.011
	dfl	.003	.032	.006	.091	.927	.071	.010	.006	.988	1.012

a. Dependent Variable: lop

**Table 8 : Collinearity Diagnostics<sup>a</sup>**

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	cr	los	dol	dfl
1	1	2.676	1.000	.01	.03	.01	.01	.04
	2	.997	1.639	.00	.00	.00	.86	.09
	3	.793	1.836	.00	.16	.00	.07	.67
	4	.511	2.288	.01	.43	.02	.06	.21
	5	.023	10.771	.99	.38	.97	.01	.00

a. Dependent Variable: lop

**Table 9 : Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.58	6.98	3.59	1.635	81
Std. Predicted Value	-2.548	2.079	.000	1.000	81
Standard Error of Predicted Value	.123	.902	.220	.155	81
Adjusted Predicted Value	-.68	7.01	3.57	1.605	81
Residual	-4.070	1.595	.000	1.055	81
Std. Residual	-3.760	1.474	.000	.975	81
Stud. Residual	-3.799	1.513	.005	.997	81
Deleted Residual	-4.156	1.766	.014	1.123	81
Stud. Deleted Residual	-4.194	1.526	-.007	1.039	81
Mahal. Distance	.047	54.608	3.951	10.339	81
Cook's Distance	.000	.370	.016	.055	81
Centered Leverage Value	.001	.683	.049	.129	81

a. Dependent Variable: lop

**Variables for the Regression**

YEAR	Mar '15	Mar '14	Mar '13	Mar '12	Mar '11	Mar '10	Mar '09	Mar '08	Mar '07	Mar '06
DOL	12.91	0.23	-2.82	1.58	1.96	-1.06	6.09	1.69	0.82	-
DFL	4.06	-0.39	1.19	1.7	1.92	1.5	1.8	1.46	1.36	1.31
CR	4.47	3.2	3.01	3.23	3.92	5.86	4.75	3.55	11.16	10.03
LOS	7.34	7.25	7.15	6.98	6.62	6.18	6.45	6.19	5.73	5.44
PBIT	237.06	195.01	204.97	198.09	134.14	85.08	63.12	69.92	59.84	42.56

**Current Assets and Liabilities of the Selected Sample Companies**

COMPANIES	fund	particulars	Mar '15	Mar '14	Mar '13	Mar '12	Mar '11	Mar '10	Mar '9	Mar '8	Mar '7	Mar '6
Rajesh Exports	application of fund	Total Current Assets	14,500.67	10,017.64	12,950.17	11,091.02	9,781.11	14,500.67	10,017.64	12,950.17	11,091.02	9,781.11
Rajesh Exports	application of fund	Current Liabilities	8,755.61	5,283.08	8,630.00	6,687.10	6,391.61	8,755.61	5,283.08	8,630.00	6,687.10	6,391.61
PC Jeweller	application of fund	Total Current Assets	4,271.49	3,330.44	2,653.34	1,870.36	993.36	668.42	390.99	164.9		
PC Jeweller	application of fund	Current Liabilities	1,858.99	1,447.69	1,757.29	875.72	609.01	475.37	140.49	83.37		
Gitanjali Gems	application of fund	Total Current Assets	7,519.76	6,393.10	6,104.80	4,823.19	3,605.75	2,626.98	2,383.25	1,811.00	1,434.79	1,029.16
Gitanjali Gems	application of fund	Current Liabilities	1,479.56	922.97	3,040.10	2,079.47	1,251.18	605.55	772.99	847.24	565.49	307.25
Tribhovandas Bhimji Zaveri	application of fund	Total Current Assets	1,147.02	1,187.59	1,060.99	510.24	442.87	292.48	232.53	164.69	103.14	
Tribhovandas Bhimji Zaveri	application of fund	Current Liabilities	227.02	277.93	324.79	194.19	180.44	81.54	51.89	51.01	26.07	
Thangamayil	application	Total	290.59	294.73	359.46	495.18	379.2	213.48	124.96	65.72	36.58	21.08

Jewellery	of fund	Current Assets										
Thangamayil Jewellery	application of fund	Current Liabilities	134.84	113.55	91.53	186.19	38.91	24.45	8.39	8.49	3.2	1.3
Renaissance Jewellery	application of fund	Total Current Assets	557.46	610.57	453.16	362.98	413.95	272.24	339.79	201.21	192.6	169.91
Renaissance Jewellery	application of fund	Current Liabilities	205.65	181.39	128.88	38.28	95.94	39.58	97.6	32.64	50.31	71.98
Goldiam International	application of fund	Total Current Assets	122.93	115.47	116.11	97.88	77.59	56.73	75.39	95.28	121.09	113.6
Goldiam International	application of fund	Current Liabilities	30.87	36.4	27.42	23.62	13.52	12.45	19.83	20.54	15.04	26.75
Lypsa Gems and Jewellery	application of fund	Total Current Assets	153.51	137.99	146.75	130.14	70.4	106.6	0.45	0.34		
Lypsa Gems and Jewellery	application of fund	Current Liabilities	92.01	99.56	102.96	108.49	50.13	38.34	0.09	0.09		
Tara Jewels	application of fund	Total Current Assets	954.92	984.83	920.97	948.71	852.75	534.56	630.84	374.1		
Tara Jewels	application of fund	Current Liabilities	232.92	317.02	293.48	284.78	315.85	175.98	239.35	165.9		
Swarnasarita Gems	application of fund	Total Current Assets	103.47	89.62	53.44	67.28	17.83	13.41	45.79	55.96	1.4	1.3
Swarnasarita Gems	application of fund	Current Liabilities	6.46	29.69	9.54	24.45	2.63	0.62	8.38	26.96	0.03	0.04



**Profits before Tax of the Selected Sample Companies:**

Companies	Particulars	Mar '15	Mar '14	Mar '13	Mar '12	Mar '11	Mar '10	Mar '09	Mar '08	Mar '07	Mar '06
<b>Rajesh Exports</b>	Profit Before Tax	332.81	273.29	489.61	431.88	268.79	207.23	98.55	232.13	104.25	70.17
<b>PC Jeweller</b>	Profit Before Tax	539.31	480.83	291.34	263.74	166.37	88.51	21.98	13.84		
<b>Gitanjali Gems</b>	Profit Before Tax	18.55	-23.95	264.79	258.74	228.93	149.34	130.78	148.68	91.67	54.32
<b>Tribhovandas Bhimji Zaveri</b>	Profit Before Tax	39.5	83	123.58	86.93	60.26	24.8	15.25	13.92	12.04	
<b>Thangamayil Jewellery</b>	Profit Before Tax	14.2	-32.99	-20.77	43.06	87.35	47.04	23.52	13.57	10.42	4.73
<b>Renaissance Jewellery</b>	Profit Before Tax	37.22	32.84	19.58	44.61	34.48	25.98	21.17	11.78	20.55	14.52
<b>Goldiam International</b>	Profit Before Tax	14.3	13.19	12.77	10.82	8.04	2.92	-14.16	0.54	20.34	25.94
<b>Lypsa Gems and Jewellery</b>	Profit Before Tax	5.34	4.71	4.24	2.96	2.92	1.53	0.49	0.2		
<b>Tara Jewels</b>	Profit Before Tax	46.66	62.43	85.45	67.58	50.87	29.8	11.19	22.13		
<b>Swarnasarita Gems</b>	Profit Before Tax	4.52	2.63	2.06	1.53	2.36	-1.87	16.81	20.33	0.69	2.17

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