

The Impact of Financial Ratio and Financing Constraint of Firm; a Study of Pakistan Refineries Perspective

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Abstract—This study is projected to examine and evaluate the financial performance of the two crude oil refineries i.e. Attock Refinery Limited (ARL) and Pakistan Refinery Limited (PRL). The presumption grants an impression of the performance of both processing plants, in the past seven years, based on financial ratio. The ratio analysis implied for both refineries illustrate favorable consequences in general and special Moreover, Pakistan Refinery Limited has strong capacity to congregate its current liabilities than Attock Refinery Limited. What's more, the income of both the refineries has exposed rapid enhancement except they have demonstrated decline in the year 2009. ROA and ROE have shown that Pakistan Refinery Limited (PRL) has performed competently in administration of its assets and shares' holder money to generate sales as compared to Attock Refinery Limited (ARL). This study recommended that ARL has liquidation dilemma and the management ought to invest in liquid assets to heighten confidence of the shareholders and lenders. Many activities in these refineries necessitate decidedly specialized capability, expertise and acquaintance that are not readily available in Pakistan. This study has provided an unyielding foundation for in depth and rigorous research in oil refining in general and in Pakistan in particular. T-statics has been applied as a tool to get the inferences.

Index Terms— Attock and Pakistan refinery limited, Financial Performance, Financial Ratios, Paired T-statistic.

1 INTRODUCTION

World population is increasing day by day and is predicate from the estimates as in 1961-63 it was 3.2 billion and in 2004-05, it was 6.4 billion moreover forecasted to reach and grew to 9.2 billion in 2049-50. This increase in population at world level shows that there will be definitely an increase in requirements for shelter, water, foodstuff, needed energy and power to fulfill their demands and so commencing increased pressure on the atmosphere [1]. Oil is the main and important source of energy and other multi-purpose use and accounts for 34% to 36%--37% of the world's chief power and energy sources. The reserves of oil and gas, uranium, coal, minerals are deplete with fulfilling the world increasing demand for energy usage due to high population and at the same time, appealing to put pressure for the energy consumption on nuclear, solar and other environmentally friendly and green energy resources [2].

1.1 OIL INDUSTRY HISTORY

The history of oil industry is somehow more than five thousand years old and people of the Middle East used to make their boats waterproof and to paint their property and other possessions by using the oil that sipped out of the ground. The people also used that oil to medicate kind of diseases [3]. Later then oil of whale was used to lighting fire. However, Oil is always an important asset to human beings in early years as well as today because of its diverse applications and also its hike in price affects inflation of other products directly or indirectly [4]. The history of oil industry also propose that the demand has more than the supply and to meet this increased demand many people were looking into a permanent solution that leads to the development of oil companies and oil industry. These companies first focused on drilling out of oil from grounds but due to increased demand as of industrialization decided on seabed as well. According to oil industry history the first oil well were planned and built in the Gulf of Mexico at a place some 100 meter deep and it was the beginning of making the structured well both on lands and water. European oil wells had made during the 1920s [5].

1.2 OIL SECTOR IN PAKISTAN

British Petroleum is presently the major oil producer in Pakistan. British Petroleum survey conducted in 2008 reported that Pakistan, on average consume round about 362.38 thousand b/day in the year 2007. Information technology is moving towards a new pace of privatization so its direct impact on Pakistan economy and as well as its oil industry will be that, it will go through progression of evolution and development. For consideration of example, the government to sell 37% of its 75% shares and to hand over the administration duty to the privately owned firm [6] has advertised Qadirpur oil and gas field. Pakistan is putting its major efforts to improve the oil and gas industry as to better utilize the natural sources and to have a state of the art production basis. Pakistan has planned its petroleum policy as having focus on private sector to invest in oil and gas segment. The discovery of exploratory Pakhro well no. 1 is a most important success discovered by oil and gas Development Company limited (OGDCL) [7]. The refining of oil products worldwide continues to remain depressed due to increased prices of these products and usually the products are demand in little capacity for which the production capacity is high. Due to this many oil refining companies in Europe and Singapore has previously started functioning at low production capacity. The four refineries operated in Pakistan with a capacity of 6.52 million tons per year in 1998 and it increased to 6.67 million tons per year in the year 1999; however, PARCO will start functioning later on this year [8].

Attock Refinery Ltd is having the credit to lead the way of crude oil refining in this territory since 1922. ARL is having the superiority on the basis that it is the first refinery in Pakistan, which started provision of main items by using computerized metering system in 1987 and all the way through pipeline [9]. It is also of great importance that first certificate was award to ARL for quality control laboratory in 1999, by International Standard Organization and is engaged in providing different types of fuel for strategic defense; industrial power need and other daily recurring needs are fulfill. The Pakistan Refinery Limited is the biggest oil refinery of Pakistan started functioning since 1960. PRL since

its inception is serving as the major producer and trader of petro items to the local, national and international markets as well as to the defense forces of Pakistan.[10].

1.3 OBJECTIVES OF STUDY

The precise objectives of the study include analyze, compare and identify the main flaws issues in the financial performance of the financial performance of Privately Limited Oil Refineries namely Attock Refinery Limited (ARL) and Pakistan Refinery Limited (PRL). To present suggestions for the development in the Refinery Industry based on research findings.

2 LITERATURE REVIEW

Williams (1980) conducted study on petroleum policy and Mexican domestic politics and taking into consideration left opposition, regional dissidence, and official apostasy stated that oil and gas industry has greater effect on those states or territories, which produces oil and has enforced that there is close connection and joint persuasion of both trade and industry change and opinionated change. [11], critically studied the ratio analysis by examining overseas companies balance sheet, income statements and cash flow statements and the usage and mis-usage of international ratio analysis. The result stated clearly that ratio which is suitable for measuring the financial risk and return have frequently distorted as pertaining to overseas firms. Renshaw [12], conducted study on US economy by interpreting, as increases in crude oil prices identified zero development in the United States wealth and assured that the downfall in the economy due to petroleum prices is an old tragedy. The study also mentioned that since 1947 about 9 years in total, the United States oil rates augmented about more than 5 percent from one year to another. Diakoulaki et al. [13] adopted a multi-criteria method for analyzing the routine working of companies and these multi-variety tools got vast usage for elaborating and forecasting of the company pattern. The results obtained from some multi-criteria analysis has tried and utilized on a bulky sample of Greek Pharmacy-industries, to show how well general financial ratios are indicator of companies overall [14].

2.1 MATERIAL AND METHOD

This study are link to Financial Performance of Pakistan Refineries Perspective, it provides a clear picture of financial performance of Pakistan Refineries Perspective. For this purpose, in this study computing financial ratios and comparative analyses between the two periods will undertaken through statistical "t" distribution, as the same method was used [15]. (Taking $\alpha = 0.05$).

2.3 HYPOTHESIS

H₀; The problem of liquidation and first-rate management of liquid asset in ARL does not healthier than PRL.

H1; The problem of liquidation and first –rate management of liquid asset in ARL healthier than PRL.

3 STATISTICAL MODEL

When the observations from two samples are pair either naturally or by design, we find the difference between two observations of each pair. Treating the differences as a random sample from a normal population with mean $\mu_D = \mu_1 - \mu_2$ and unknown standard deviation (δD), we perform a one-sample t-test on them. This is calling a pair difference t-test or a paired t-test. Testing the hypothesis $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$ is equivalent to $H_0: \mu_D = 0$ against $H_1: \mu_D \neq 0$. Let $d_i = x_{1i} - x_{2i}$ denote the difference between the two sample observations in the i^{th} pair. Then the sample mean and standard deviation of the differences are

$$\bar{d} = \frac{\sum d_i}{n}$$

$$s_d = \frac{\sum (d_i - \bar{d})^2}{n - 1}$$

Where n represent the number of pairs.

Assuming that (i) d_1, d_2, \dots, d_n is a random sample of differences and (ii) the differences are normally distributed, the test-statistic.

$$t = \frac{\bar{d}}{s_d / \sqrt{n}}$$

Follows a t-distribution with $v = n - 1$ degrees of freedom. The rest of the procedure for testing the null hypotheses $H_0: \mu_D = 0$ is the same (Chaudhry and Kamal 2007) [16].

4 RESULTS AND DISCUSSION

In this section, we highlight results of financial, trend and statistical analysis of Pakistan Refinery Limited (PRL) and Attock Refinery Limited in light of the objectives stated for the study.

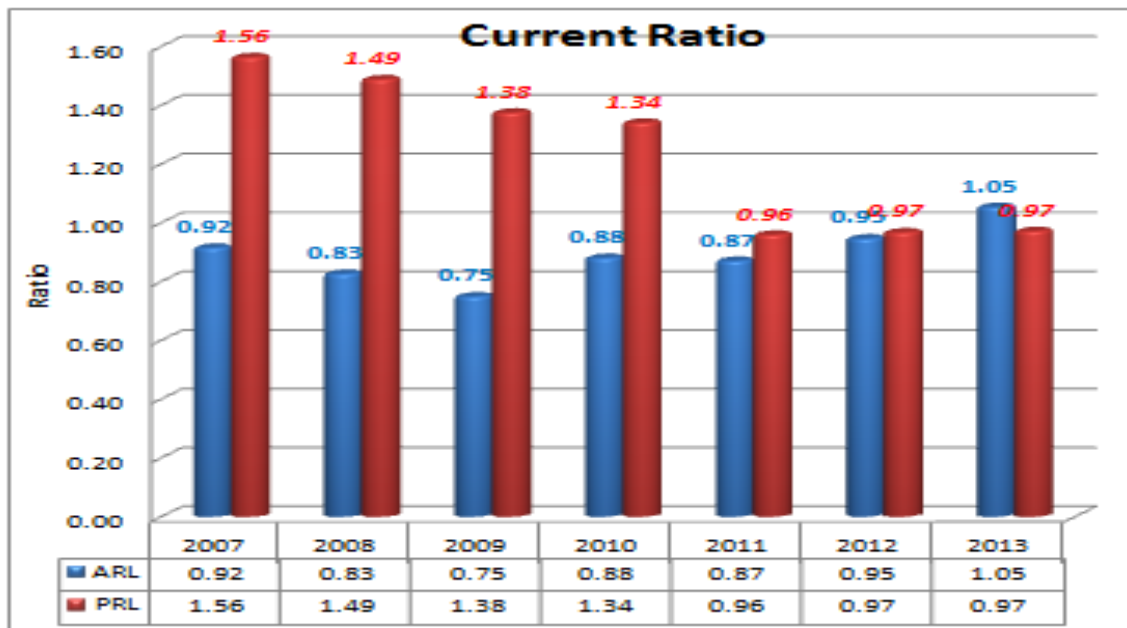
4.1. Short Term Solvency Ratio or Liquidity Ratio

4.1.1. Current Ratio

4.1.2. Quick ratio or Acid test ratio

4.1.1 CURRENT RATIO

TABLE 1
Current Ratio of Attock Refinery Ltd and Pakistan Refinery Ltd



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comparison of the results obtained from current ratio of both the refineries. The current ratio for ARL decreased at increasing rate from the year 2008 to 2009 and there has significant rise in 2010 and 2011 but at a declining rate. It means that ARL has not sufficient current assets to meet its existing liabilities. While on the other hand PRL current ratio shows that it has been declining in its current assets after all current liabilities are meet, but at peak in 2007 then started decreasing at rapid rate from the year 2009 to 2013. By comparing these two refineries, we concluded that ARL is excellent in managing its current assets to meet its short-term liabilities than PRL.

4.1.2 Quick Ratio or Acid Test Ratio

TABLE 2
Quick Ratio of Attock Refinery Ltd and Pakistan Refinery Ltd

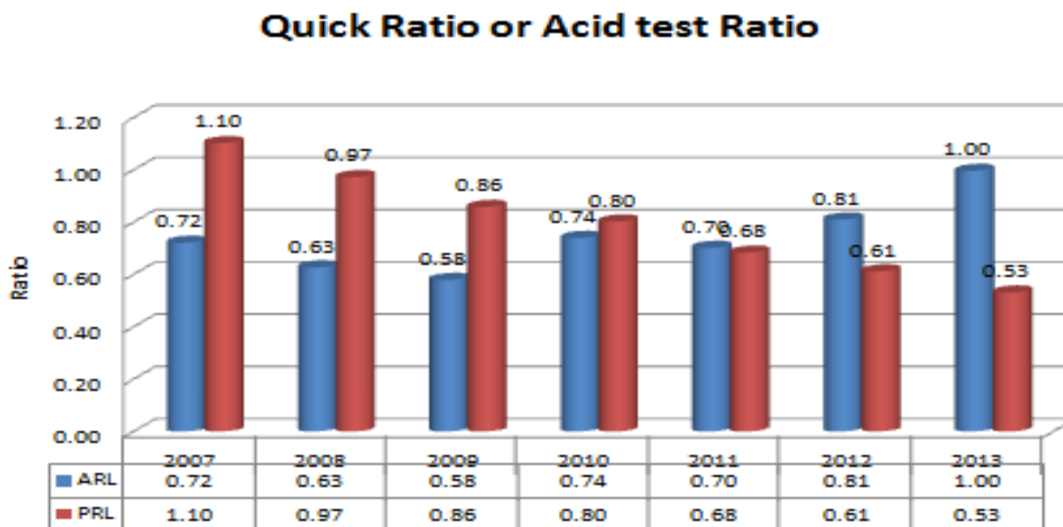


Table 2 shows that quick ratio for ARL is below standard at all levels or years and it's very low in the year 2008 and 2009. This result clearly highlights that ARL was just able to pay off 70 percent of its currently liabilities by liquidating its current assets, excluding inventory in the year 2007. It clearly shows that ARL has lessens its most liquid assets to meet its short-term liabilities. PRL quick ratio is healthier and above standard in the year 2007 and equals in 2008 but the ratio declined at decreased rate from year 2008 to 2013. In year 2007 and 2008, PRL was able to full pay off its obligations by liquidating its most current assets but in the remaining years, PRL could not meet its current liabilities by liquidating all of its current assets. Therefore, in the quick ratio PRL pose is healthier than ARL.

4.2. PROFITABILITY RATIOS

TABLE 3

Profit Margins of Attock Refinery Ltd and Pakistan Refinery Ltd

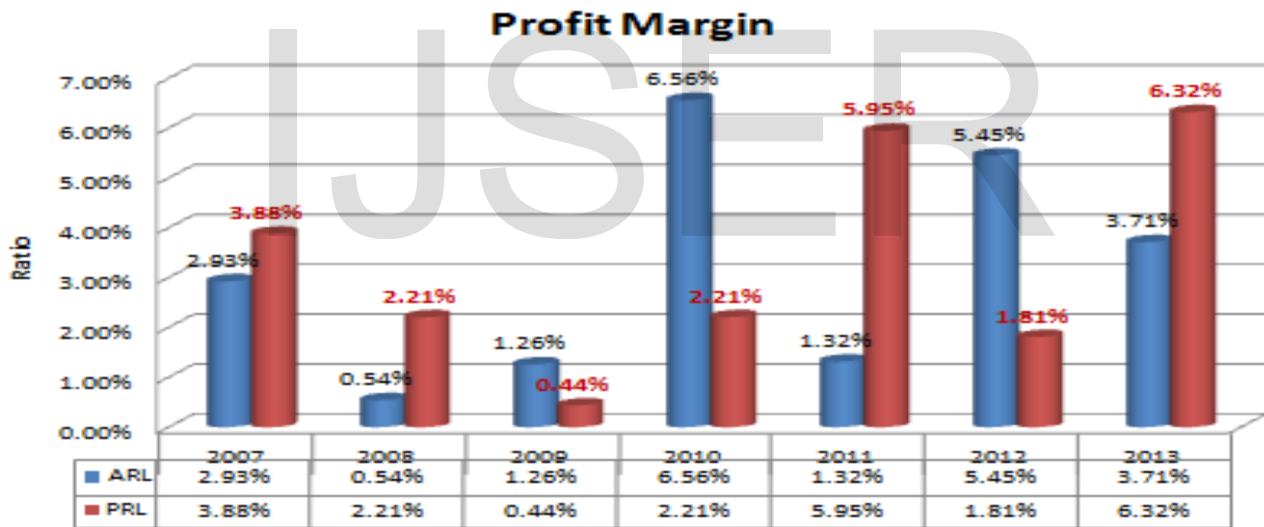


Table 3 expose a picture of profit margin for ARL declined as we go from 2007 to 2008 and it got increased in 2009 and 2010 and again decreased in 2013, but it was opposite in case of PRL. The profit margin ratio for PRL continue to decrease as we go through years 2007 to 2010 and then it got improvement in the year 2013. So, the ARL is more effective of the cost control and converting revenue to actual profit than the PRL.

4.2.1 RETURN ON ASSETS (ROA)

Table 4

Return on Assets of Attock Refinery Ltd and Pakistan Refinery Ltd

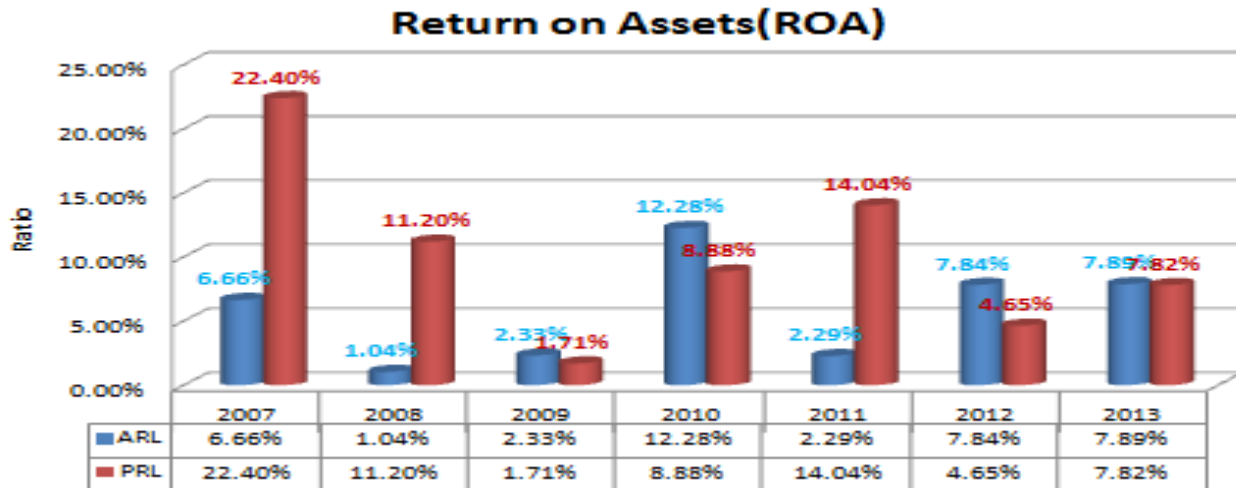


Table 4 indicates the increasing trend in both the oil refineries assets from year 2007 to 2008 but ARL is having decreased assets at year 2008 while PRL assets got decreased in the same year. The net income of both refineries is decreased as we go through 2008 to 2009. The net income of ARL is increased in year 2010 and got decreased again in 2011 but the net income of PRL decreased in 2007 gaining motion and highlighted a loss in the year 2009, the major reason was low sales revenue in this year with high cost of goods sold.

4.2.2 RETURN ON EQUITY (ROE)

TABLE 5

Return on Equity (Roe) Of Attock Refinery Ltd and Pakistan Refinery Ltd

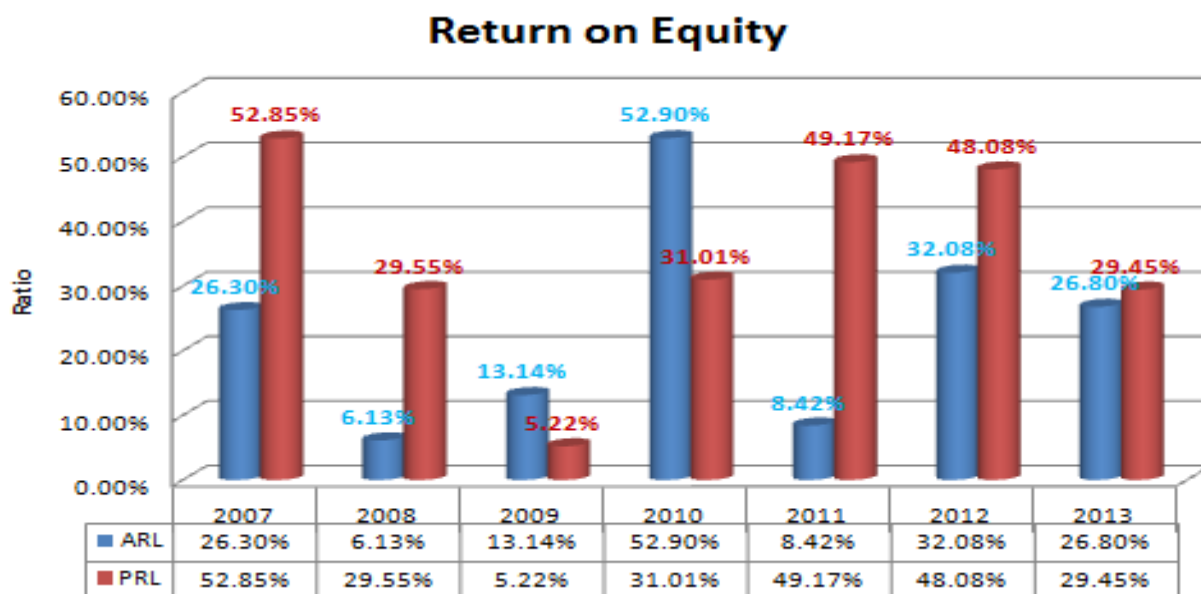


Table 5 shows that total owners' equity or shareholders' equity of both the oil refineries have increased at increasing rate from year 2007. Except for PRL whose owners' or share holders equity decreased in the year 2009. The net income of both refineries ARL and PRL decreased when we go through years 2011 to 2013. The net income of ARL increased in year 2007 and 2008 and got decreased again in 2009, while the net income of PRL decreased in 2009 gaining shift in 2010, the main cause behind this was low volume of sales revenue in year 2009 with high cost of goods sold.

4.3 ASSET MANAGEMENT RATIOS
4.3.1 FIXED ASSETS TURNOVER RATIO

TABLE 6
 Fixed Assets Turnover of Attock Refinery Ltd and Pakistan Refinery Ltd

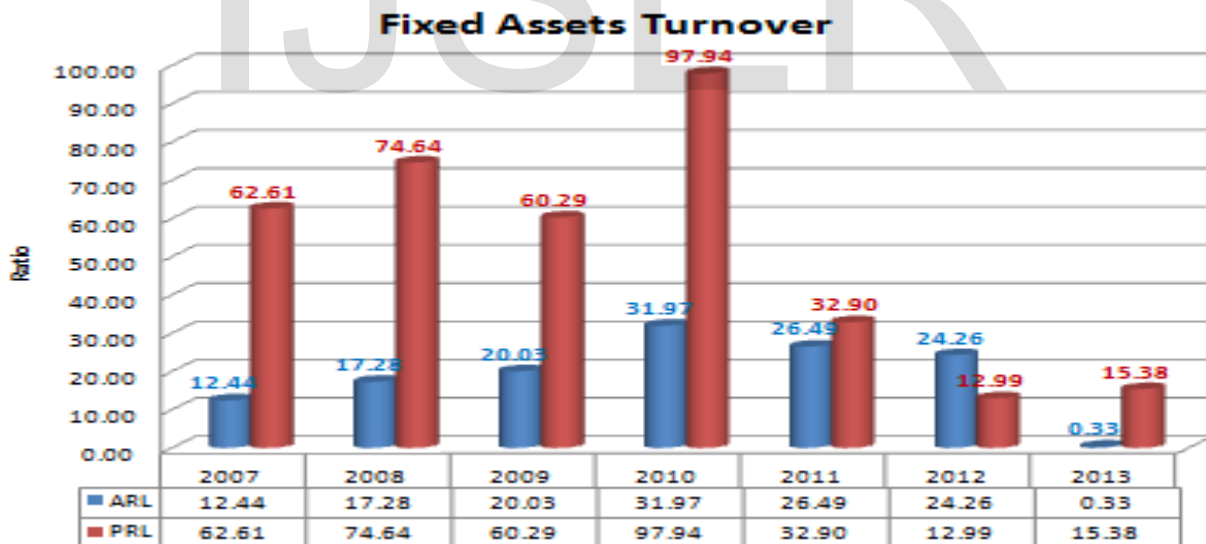


Table 6 shows a favorable tendency of ARL assets turnover with an increase each year except for 2013 due to the positive results of return on assets. The table shows that ARL generate 12.4 times revenue of its net fixed assets in 2007, similarly 17.28, 20.03, 31.97 and 24.26 times revenue of its net fixed assets from 2007 to 2012, which clearly depicts competent performance. While PRL generated much more on utilizing its net fixed assets. PRL generated 62.6 times revenue of its fixed assets with respect to 2007, 74.64, 60.29, 97.94, 32.90 times, for year 2007 to 2011 respectively. In comparison, PRL has performance has satisfactory and in an efficient manner in managing its fixed asset turnover that ARL.

4.3.4 TOTAL ASSETS TURNOVER

TABLE 7

Total Assets Turnover of Attock Refinery Ltd and Pakistan Refinery Ltd

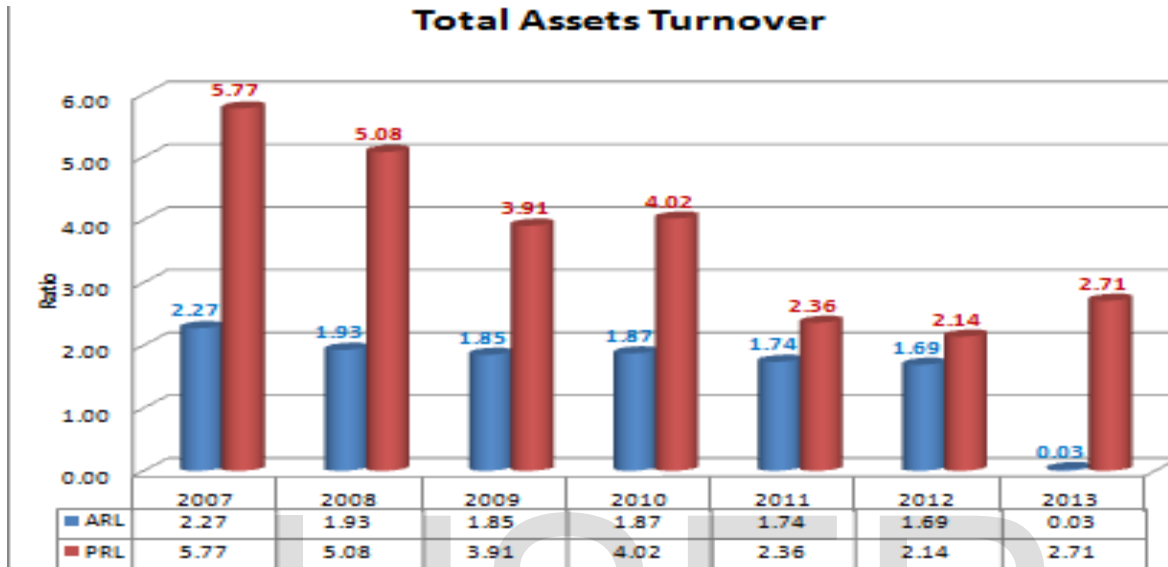


Table 7 shows that ARL has no favorable trend of total asset turn over from year 2007 to 2013 and has showed a gradually decline record, which means that ARL has not efficiently utilized its total assets to generate sales revenue. This table also shows that ARL generates 2.3 times revenue of its total assets in 2007 and then it goes on decrease as 1.9, 1.8, 1.8, and 1.7 in years 2007 to 2011 respectively. As we can see from the table, PRL has performed well with respect to ARL and its turn over ratios shows that it has performed efficiently its assets to generate revenues. PRL has generated 5.7 times revenue of its total assets in 2007, but despite the fact that total assets are increase regularly, this ratio goes on decline as 5.1 times, 3.9, 4, and 2.3 in 2009 to 2013.

4.4 DEBT MANAGEMENT RATIOS

4.4.1. DEBT RATIO

TABLE 8

Debt Ratio of Attock Refinery Ltd and Pakistan Refinery Ltd

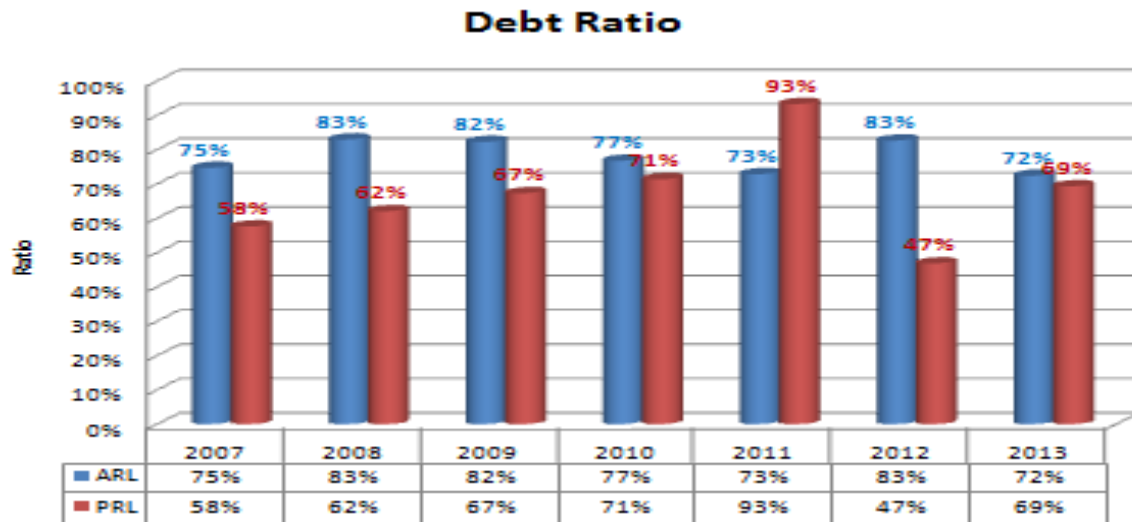


Table 8 shows that how much percentage of ARL and PRL assets are finance with debt. The value 75% in year 2007 for ARL indicates that in 2005, debt and equity investors financed about 75% of assets or stockholders financed remaining 25%. Similarly, the given values in 2008 to 2013 are the percentages with which the firm’s assets are financed with debts. ARL percentages values show a stability sign but this ratio is above 60% for all year taken. i.e 2007 to 2011 and this ratio increases for PRL from 2007 to 2011 which clear gives the sign of bondholder and lenders risk, if it goes into a financial exigencies.

4.4.2 DEBT-EQUITY RATIO

TABLE 9

Debt-Equity Ratio of Attock Refinery Ltd and Pakistan Refinery Ltd

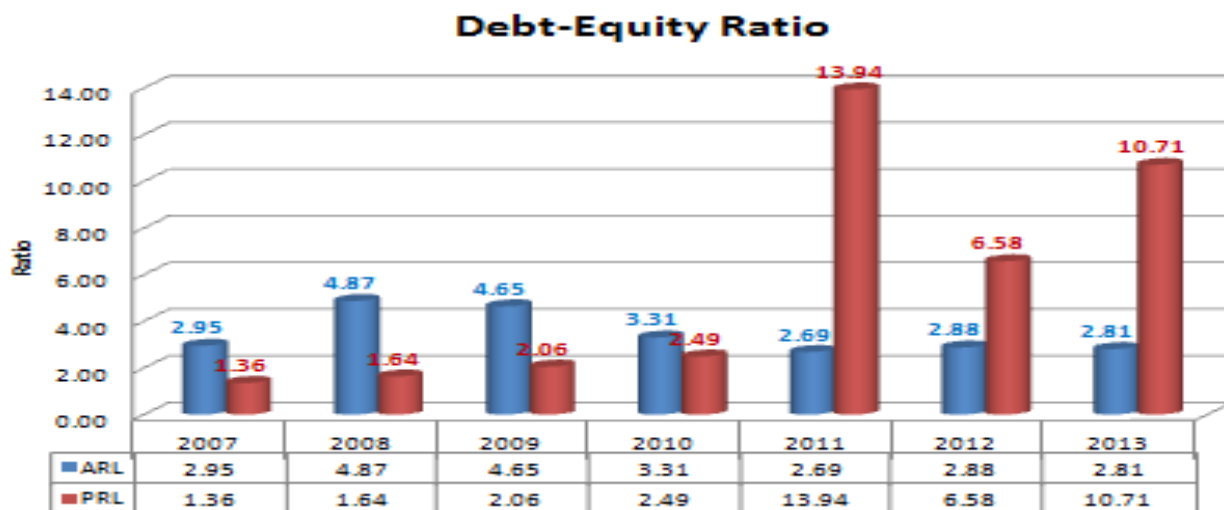


Table 9 shows that in 2007 the value of 2.95 for ARL means that it had 2.95 times as much debt as it had equity, indicating that ARL relied mainly on lenders supplied fund then owner supplied fund. On the other hand, it persistently increased for PRL from 1.4 to 10.7 in the year 2007 to 2013, respectively. The scenario of PRL as in 2007, it was having 1.36 times as much debt as it had equity and shows that in 2007 PRL depended little on lenders but gradually as the years passed the lenders interest increased. This was mainly due to reserves and special reserves of PRL. Overall PRL has performed well with respect to ARL in managing its debt and equity except for the year 2008.

4.4.3 EQUITY MULTIPLIER

TABLE 10

Equity Multiplier of Attock Refinery Ltd and Pakistan Refinery Ltd

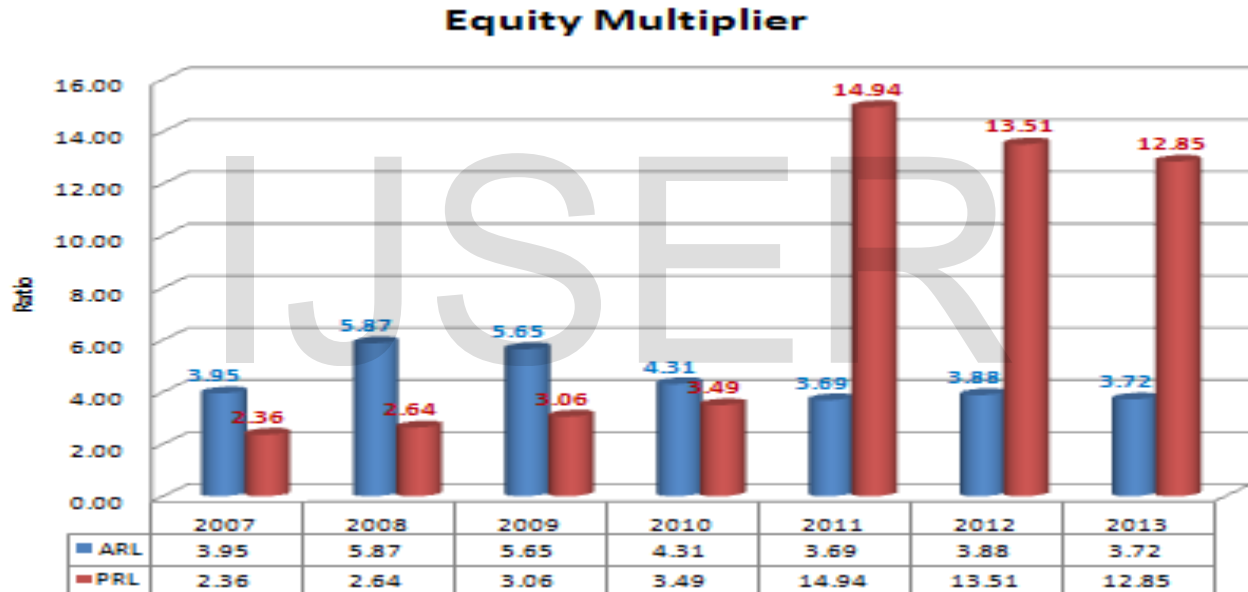


Table 10 shows and compares that how many times the total assets of a firm are that of owner’s equity. The value 3.9 in year 2007 for ARL shows that total assets are 3.9 times greater than the owner’s equity or putting in other way it states that claims of the business or firm are 3.9 times than that of owner’s claims. This claim’s of firm increased for ARL from 2008 to 2009 and then decreased in 2010 to 2013 in decreasing manner. The scenario for PRL is very different as we can see in the table this ratio value increased as we go through year 2007 to 2013. This portrays that in 2007 for PRL the total assets with respect to total owner’s equity were 2.36 times which gradually increased and got 14.9 times with respect to that of owner’s equity.

4.5 T-Statistical analysis

TABLE 11
T-Statistical analysis

s.no	Ratio	ARL Mean	PRL Mean	t-cal	Df	S.D	Mean diff	p-value	Result
1	CR	.8929	1.2336	3.260	12	.007	-.346	.107	Significant
2	QR	.7400	.7929	.573	12	.577	-.053	.093	Significant
3	PM	3.1100	3.2600	.125	12	.902	-.150	1.25	In Significant
4	ROA	5.7614	10.1000	1.456	12	.171	-4.34	2.99	In Significant
5	ROE	23.6814	64.7700	1.561	12	.145	-41.08	26.33	In Significant
6	FAT	18.9714	50.9643	2.538	12	.026	31.99	12.61	Significant
7	TAT	1.6257	3.7129	3.525	12	.004	2.088	.593	Significant
8	DR	77.8571	66.7143	1.974	12	.072	11.15	5.65	Significant
9	DER	3.4514	5.5400	1.079	12	.302	-2.15	1.94	Significant
10	EMR	4.4386	7.5500	1.388	12	.190	-3.12	2.25	Significant

Table 11 indicated an insignificant improvement in the Profit Ratio, Return on Assets Ratio, and Return on Equity Ratio with p-values is 1.25, .2.99, and 26.33 and (~-value) is 0.05 respectively. The mean differences are 0.150, 4.34 and 41.08 respectively. The average of Profit Ratio, Return on Assets Ratio, and Return on Equity Ratio are increase by 1.25 %, 1.458% and 1.561%, respectively APL. While Current Ratio, Quick Ratio, Fixed Assets Turnover Ratio and Total Assets Turnover Ratio showed significant improvement for with p-values are .107, .093, 12.61 and .593 and (~ -value) are 0.05 respectively. The standard deviation is 0.007, .577, 31.99 and 2.088 respectively for PRL. The average of Current Ratio, Quick Ratio, Fixed Assets Turn Over Ratio and Total Assets Turn Over Ratio are decreased by 3.260%, 0.573%, , 2.538%,and 3.525,2.72500% respectively in the PRL.

5 CONCLUSION

It has concluded that ARL has performed healthier than Pakistan Refinery Ltd during the cram phase. The major reasons are because Attock Refinery Ltd has longer historic history beyond independence of Pakistan and has the credit of first oil refinery of the region, vast experience of learning from the international markets mechanisms and owned by a foreign investment group of company named as "Attock Oil Company". However, Pakistan Refinery Ltd may perform expected better than ARL in the near future, because it is the largest oil refinery in Pakistan and it has enough assets as compared to ARL and has greater coverage of short-term obligations. Finally, having more accessibility of purposeful and detailed financial information's in future, a similar study may generate improved results and insight for making information supportive in intelligent decision-making.

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