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An empirical study on mergers and acquisitions on manufacturing sector in India using Wilcoxon signed rank test

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Abstract
During the financial Crisis in Greek the Government had advocated the banks to merge. The long dream of TATA Steel to penetrate the world market has come through when TATA acquired Corus. Merger and acquisitions happens for various reasons. One of the main reasons for companies to choose mergers and acquisitions is improved operating performance. This paper examines the pre and post acquisition financial performance of merged firms in Indian manufacturing sector. The sample comprises of 3 companies. Ratio analysis and Wilcoxon signed rank test is used. Result reveals that mergers and acquisitions had no high impact on the financial performance of the firms.

Keywords: empirical study, manufacturing sector, Wilcoxon signed rank test

Introduction
Today's business environment is subjected to fast changes because of the globalization. Business itself became very risky due to these rapid changes. Organizations have to adopt this changing business environment in order to survive. Change involves cost and time. Organizations mostly prefer mergers and acquisitions in order to compete in such dynamic business environment. "Merger occurs when two organizations agree to move forward as a single entity or joint entity for their mutual benefits" Abbas *et al*, (2014) [3].

Literature Review only those studies which are related to present study is taken in to account. Ramaswamy and Waegelein (2003) [1] found that firms which acquired relatively large sized firms have experienced negative post merger performance. Haong (2015) [2] found that Mergers and acquisition could increase the Return on Asset of the banks. The study also indicates that firm size and growth have positive relationship with firm profitability but debt capital decreases firm profitability.

Methodology A sample of 3 Indian companies is drawn from the manufacturing sector. Only those mergers which have taken place after 2005 are considered for the study. Data is collected for 3 years before the merger and 3 years after the merger. Ratio analysis and Wilcoxon Signed Rank test is employed in the present study.

Table 1: Descriptive of Transactions Selected in the Sample

S no	Bidder	Target	Date Transaction
1	JSW Steel	ISPAT Industries	2011
2	Hindalco US	Novelis	2007
3	TATA Steel	Corus Group UK	2007

Mergers could happen for dynamic reasons. Here JSW Steel had gone for merger to achieve tax benefits. At the time of acquisition ISPAT was having a huge debt and the motive behind the merger was debt restructuring. The story doesn't differ for Hindalco and Novelis. It was a perfect tie between a corporate giant from a developing economy and the Novelis from a developed economy. Novelis had a huge debt and Hindalco merger helped the Novelis for debt restructuring. On the other hand Hindalco was able to penetrate the global market and also could access better technology. Corus and Tata steel had merged for different reasons. For Corus the reason for merger was market share and low cost material. But for Tata steel it was technology benefit and better R&D facilities.

Table 2: Definition of the variables

Type	Ratio	Definitions
Profitability Ratio	Net Profit Margin	Net Profit/ Total Income
	Return on Net Worth	Net Profit/net worth
	Return On Asset	Net Profit/ Total Assets
Solvency ratio	Total Debt Ratio	Total Liabilities/ net worth

Data Analysis and Interpretation

Table 3: Changes in Net Profit Margin

	Ranks	JSW Steel	Hindalco	TATA Steel
NPM_post-NPM_pre	Negative Ranks	1a	2d	1g
	Positive Ranks	1b	1e	2h
	Ties	1c	0f	0i
	Total	3	3	3
Z		-.447b	-.816b	-1.069c
Asymp.Sig.2 tailed		.655	.414	.285

a. NPM_post<NPM_pre
b. NPM_post>NPM_pre
c. NPM_post=NPM_pre
Significance level was set at 0.05

Interpretation

Table 3 shows the result of Wilcoxon signed rank test. It was found that the significance level is more than 0.05 for all the three banks. For JSW Steel it was .665, for Hindalco it was .414 and for Tata Steel it was .285. Therefore the null hypothesis is accepted so there is no significance difference between the pre and post acquisition performance on the basis of "Net Profit Margin" of the companies.

Table 3 shows the result of Wilcoxon signed rank test. JSW steel result varies for all the three years after the merger. Post merger "Net Profit Margin" had increased only for one year. Hindalco industries result shows that post merger "Net Profit Margin" was negative for 2 years. Tata steel post merger "Net Profit Margin" had increased for 2 years out of the 3years. Overall Tata steel had a better post merger "Net Profit Margin".

"JSW Steel and Hindalco had merged with companies which had huge debt but Tata Steel had merged with Corus group which was financially sound at the time of merger."

Table 4: Changes in Return on Net Worth

	Ranks	JSW Steel	Hindalco	TATA Steel
RONW_post-RONW_pre	Negative Ranks	2a	2d	2g
	Positive Ranks	1b	1e	1h
	Ties	0c	0f	0i
	Total	3	3	3
Z		-1.089b	-.535b	-0.00c
Asymp Sig 2-tailed		.276	.539	1.000

a RONW_post<RONW_pre
b RONW_post>RONW_pre
c RONW_pre = RONW_ post
Significance level was set at 0.05

Interpretation

From the above table 4 it can be observed that for all the three companies the significance level is more than 0.05. For JSW Steel, Hindalco and Tata Steel it was .276, .539 and 1.000 respectively. So the null hypothesis is accepted, which indicates that there is no significance difference in the pre and post-merger and acquisition performance of the companies on the basis of "Return on Net on Worth".

Table 4 shows that JSW Steel had a dip in post-merger "RONW" for 2 years however it had increased for one year. For Hindalco and TATA Steel also the post-merger "RONW" was negative for 2 years and it had showed a positive movement for one year out of the 3 years.

Table 5: Changes in Return on Assets

	Ranks	JSW Steel	Hindalco	TATA Steel
ROA_post-ROA pre	Negative Ranks	2a	3d	2g
	Positive Ranks	1b	0e	1h
	Ties	0c	0f	0i
	Total	3	3	3
Z		-1.06b	-1.604b	.000c
Asymp Sig 2-tailed		.285	.109	1.000

a. ROA_ post<ROA_pre
b. ROA_post>ROA_pre
c. ROA_post=ROA_pre
Significance level was set at 0.05

Interpretation

Table 5 reveals that there is no significance difference in the pre and post performance of all the three companies on the basis of "Return on Assets". Null hypothesis is accepted.

JW Steel and Tata Steel's Post merger "Return on Asset" was comparatively less for two years and stumbled down for one year. For Hindalco "Return on Asset" has gone down for all the three years.

Table 6: Changes in Total Debt Ratio

	Ranks	JSW Steel	Hindalco	TATA Steel
Debt equity ratio post_Debt equity Ratio pre	Negative Ranks	3a	0d	0g
	Positive Ranks	0b	3e	3h
	Ties	0c	0f	0i
	Total	3	3	3
Z		-1.064b	-1.604c	-1.604c
Asymp sig 2-tailed		.109	.109	.109

a. Total debt ratio_post<Debt equity Ratio_pre
b. Total debt ratio_post>Debt equity Ratio_pre
c. Total debt ratio_post=Debt equity Ratio_pre

Interpretation

Table 6 shows that significance level is higher than 0.05 for all the three companies during the study period. Therefore the null hypothesis is accepted which depicts that there is no significance difference between the pre and post performance of the banks on the basis of "Total Debt Ratio".

The Post Merger "Total Debt Ratio" of TATA Steel and Hindalco had increased for all the 3 years. However the post-merger "Total Debt Ratio" of JSW Steel had decreased for all the 3 years.

Findings

1 For JSW Steel only Total Debt Ratio had decreased for all the three years. RONW and ROA had increased only for one year and other two years it had decreased.

2 For Hindalco Total Debt Ratio had increased for all the three years. Net Profit Margin and RONW had increased for 1 year out of the 3 years. Further it also revealed that ROA had decreased for all the three years.

3 For TATA Steel Net Profit Margin had increased for 2 years out of 3 years. RONW and ROA had increased for 1 year. Total Debt Ratio had increased for all the 3 years.

Conclusion

Mergers and acquisition is becoming increasingly popular in today's business world. But not all the mergers are successful. The present study result reveals that Merger could not bring a high impact on the financial performance of JSW Steel, Hindalco and Tata Steel. But compare to the other two companies Tata Steel performed well. One of the reasons for this improved performance is that Tata Steel had merged with company which is financially strong. The present study suggests that it is better for companies to merge with financially strong companies.

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