Panel regression approach to study the impact of management of receivables on the profitability of the indian steel industry

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ABSTRACT:

The receivable being the major component of the working capital, every organization tries to make maximum unitization of these receivables. The cost of funding the receivable is also very high. In this context the management of every company is proactive to choose a best possible receivable management practice. Some practices are successful some are not. This paper concentrates around the receivable management practice adopted by the steel industries in India. 29 companies across the steel industry of India are selected for the study and the sty period is 10 years ending 31.03.2021. Panel regression approach has been adopted to study the impact of the receivable management on the profitability of the companies.

KEY WORDS: Panel regression, receivable management, steel industry.

INTRODUCTION:

The word receivable stands for the amount of payment not received. This means the company has extended credit facility to its customers. Accounts receivable is the money that a business has a right to receive after a certain period of time when the business has sold goods or services on credit.

According to Haris (2005), in many organizations the growth in access to credit has led to a rising level of consumer indebtedness which is having a significant impact on business profitability. Accounts receivables management is an issue for every institution offering credit to its customers and the challenge for organizations is to protect profit margins by reducing write-offs, cutting the cost to collect and maximizing the cash collected. According to Bellie et al (2000) the view of Accounts receivables management should not be limited to customers who are unable to pay; the key is for organizations to use early identification of accounts at risk to enable proactive management of a customer before they become bankrupt.

Management of accounts receivables which aims at maintaining an optimal balance between each of the accounts receivables components, that is, cash, receivables, inventory and payables is a fundamental part of the overall corporate strategy to create value and is an important source of competitive advantage in businesses (Deloof, 2003).In practice, it has become one of the most important issues in organizations with many financial executives struggling to identify the basic accounts receivables drivers and the appropriate level of accounts receivables to hold so as to

minimize risk, effectively prepare for uncertainty and improve the overall performance of their businesses (Lamberson, 1995).

The term debtors are defined as 'debt' owned to the firm by customers arising from saleof goods or services in the ordinary course of business" (Pike and Cheng, 2001). The three characteristics of receivables the element of risk, economic value and futurity explain the basis and the need for efficient management of receivables (Jackling et al.,2004). The element of risk should be carefully analyzed. Cash sales are totally riskless but not the credit sales, as the same has yet to be received.

LITERATURE REVIEW:

Michalski (Michalski, 2008) in a theoretical analysis he tried to establish the theory of portfolio management in the field of receivable management. He proposed to create various portfolios of receivables on the basis of their risk associated. Separate treatments to separate risk portfolios will yield higher profit. This fact has been explained with the help of suitable examples.

Nijam(Nijam, 2016) studied the cash conversion cycle and its relationship with profitability for the Hotel industry in Srilanka. He selected 26 companies of Sri Lanka hotel industry and took the data for the period of 2011 to 2013 by using regression model. The study revealed that the cash conversion cycle has positive and significant impact on the profitability of these selected firms. He also suggested some management techniques to improve the profitability.

Ndebugri and Senzu(Ndebugri & Senzu, 2016) made a study on effectiveness and efficiency of receivable management in the industrial sector of Ghana. This study was completely exploratory in nature and concluded that the firms lack of robust credit collection policy, the receivable management practices are week along with the poor credit monitoring system in all the firms.

Agha (Agha, 2014) studied the impact of working capital management on profitability on selected companies listed in the Karachi Stock exchange for the period of 1996 to 2011. She used the regression analysis to study the impact of the variables of working capital measure on the profitability. The results of the regression yield that there exists a significant relation between the dependent and independent variable.

John (John, 2017) studied the effect of the various components of working capital on the financial performance of selected companies listed in Gulf Cooperation Council (GCC). He took 23 companies for a study period of 6 years from 2009-2014. He used the multiple regression model to assess the impact on the financial performance. The study showed that there are no significant relations between the size of the firm to Gross Profit Ratio, Operating profit margin for average collection period and CA, TA to ROA. In other words, management can increase the profitability by focusing on Capital Gearing Ratios.

Prajapati and Patel (KALPESH & RITESH, 2012) made a comparative study on the working capital by taking 5 companies of the Indian steel industry. They compared the various components of the working capital such as gross working capital, net working capital, cash conversion cycle, receivable turnover, creditor receivable, and inventory turnover. This study was an exploratory which revealed that SAIL and the Jindal Steel comes to be better managed companies.

Durbarry, Padachi, Howorth, and Narasimhan (Durbarry et al., 2010) studied the relationship between the working capital pattern and the source of financing by taking 101 small to medium sized Mauritian manufacturing firms. They used both the primary and secondary data and applied the multivariate regression model to find out the significant factor influencing the working capital pattern. They revealed two major facts that there exists a disproportionate relationship between level of current asset and sales level leading to inefficient working capital turnover. Second think is that the firms depend on the short-term financing pattern to finance their working capital need.

Aravind (Aravind, 2016) conducted a study on the influence of working capital Metrix on the profitability of Indian manufacturing sector, he took 100 manufacturing firms for a period of 10 years. He used the panel data approach along with the inferential statistics. The study revealed that CCC is positively correlated to Net profit Ratio (NPR) but negatively related to the Return on Equity (ROE). Another major fact identified that the Indian manufacturing firms are having a high DPO (Days Payable Outstanding) while maintaining a moderate DSO (Days Sales Outstanding) and DIO (Days Inventory Outstanding).

Kannadhasan (M. KANNADHASAN, 2007) in his study on the practice of receivable management in the selected public sector companies in India. The study period was for five years from 1999 to 2003 and used various statistical tools to get the desired results. The study revealed that all the companies under study showed an efficient receivable management practice.

Mahmoud and Nobanee(Al-mahmoud & Haitham, 2010) studied the sustainability aspects of the receivable management. This is a literature review-based article where they reviewed seven research article and analysed them. The summary of all these articles revealed that organisations are lack of sustainability practices. Very negligible efforts are there in the field of receivable management from the sustainability point of view.

RESEARCH GAP:

The literature studied so far has the revealed that many studies has been done by statistical techniques other than panel regression model. This study will adopt the panel regression model of regression and a holistic impact study will be carried out. This study also covers the overall steel industry of India. This study will adopt the panel regression model of regression and a holistic impact study will be carried out. This study also covers the

OBJECTIVE OF THE STUDY:

The objective of the study is to analyze the impact of the receivable management on the profitability on the basis of performance.

RESEARCH METHODS

To carry out this research data has been collected from 29 steel companies of Indian Steel industry. The data collected are from the profit and loss account and balance sheet of those companies for a period of 2010 to 2020. From that data balance sheet has been used to calculate the Current Asset to Total Asset, Net Working Capital, and Receivable to current Asset ratio, Receivable Turnover, and Working Capital Turnover. These turnovers act as independent variable for the panel regression in which the net profit is the dependent variable.

The sample companies have been divided into two categories. Table 1 represents the companies being segregated on the basis of receivable turnover. Out of the total 29 companies 10 companies have receivable turnover higher than the average receivable turnover (marked as 1) and 19 companies have receivable turnover less than the average receivable turnover of all the companies. It represents that 19 companies have performed poorly (marked as 0) and have not able to utilize the receivable in a efficient manner.

Table- 1

Sl. No.	Company	Receivable turnover
1	Bekeey Steel	0
2	Hindalco Industry	0
3	IMST	0
4	Jai Balaji Steel	0
5	Jindal Saw	0
6	Jindal Stainless	0
7	Jindal Steel Hisar	0
8	Mukund Steel	0
9	Narayani steel	0
10	National Steel Agro	0
11	NMDC	0
12	Orissa Steel	0
13	Panchamahal Steel	0
14	Rohit Ferrotech	0
15	SAIL	0
16	Tata Metallics	0
17	Tata Steel Ltd	0
18	USHA Martin	0
19	Zenith Steel and Pipes	0
20	APL Apolo Tubes	1
21	India Steel Works Limited	1
22	JSPL	1
23	JSW Ispat	1
24	JSW Steel	1
25	NOVA Steel	1
26	OCL Iron and Steel	1
27	Sarada Energy	1
28	Tata Steel Long	1
29	Visa Steel Limited	1

Source: Compiled from own calculations

Separate panel regression has been run to test the impact of these independent variables on the dependent variables.

DATA ANALYSIS:

Panel regression of the companies with receivable turnover ratio less than the total average receivable turnover.

This panel regression has been done by taking the data companies having the average value of receivable turnover ratio less than average value of receivable turnover of all companies. At the first stage the hausman test has been carried out and the result has been presented in the table-2 below.

Table-2: result of the Hausmann test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.556482	5	0.4724

Source: Calculated from Primary data

The Hausman test has a p-value of 0.47 more than the 0.05 value hence the null hypothesis has been accepted and concluded that for this set of data the random effect model of panel regression is more suitable or appropriate. The result of the random effect model has been presented below in table 3

Table-3: Panel regression result with random effect

| Dependent Variable: NETPROFIT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-377.8184	378.8671	-0.997232	0.0198
Current Asset to Total Asset	11.46086	512.5387	0.022361	0.0022
Net Working Capital	0.234695	0.021973	10.68116	0.0000
Receivable to current Asset ratio	-395.1359	844.9642	-0.467636	0.0005
Receivable Turnover	57.02226	28.06218	2.031997	0.0035
Working Capital Turnover	-0.630824	2.624463	-0.240363	0.0103
R-squared	0.419515	Mean dependent var		617.7799
Adjusted R-squared	0.405218	S.D. dependent var		2156.826
S.E. of regression	1663.390	Sum squared resid		5.62E+08
F-statistic	29.34154	Durbin-Watson stat		1.936869
Prob(F-statistic)	0.000000			

Source: Calculated from Primary data

All the information provided in the table 38 was thoroughly observed and it is concluded that the model is very effective and significant with the F-statistics p-value of 0.0000. The degree of influence of the independent variables on the dependent variables are moderate as reflected from the r-square value of 0.41. That means that the independent variables are collectively able to influence the dependent variable to the extent of 41..9%. it is also observed that the independent variables are also individually significant enough to influence the dependent variable as all of them have p-values

less than the 0.05. Again, the co=efficient values of the independent variables reveal that the current asset to total asset ratio has highest influence on the net profit followed by receivable turnover. However, the receivable to current asset ratio has a negative impact

on the net profit.

Figure- 1: Histogram of normality of residual
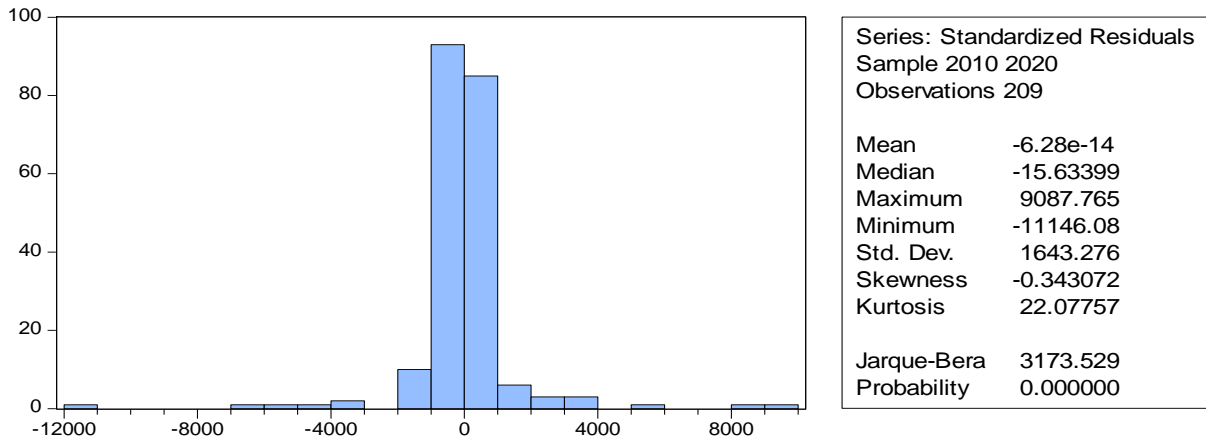
Source: Calculated from Primary data

The histogram of the residuals of the panel regression equation reveals that the residuals are very close to the normal distribution the skewness of the residuals is very negligible with -0.34 value. This indicates that the model that has been presented in table 38 is reliable and significant.

Panel regression of the companies with receivable turnover ratio more than the total average receivable turnover.

In this case the panel regression has been estimated by taking the data of the companies with receivable turnover more than the average receivable of all the companies. As per the requirement Hausman test has been performed to decide the among the random effect model and the fixed effect model. The result of the test has been presented in table-4 below.

Table- 4: result of the Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.390843	5	0.1932

Source: Calculated from Primary data

The p-value of the Hausman test statistics is 0.1932 and it is less than 0.05. This led to the acceptance of the null hypothesis. Thus, it is concluded that for the given set of panel data random effect model is best suite. Thus, a panel regression with random effect has been drawn and presented in the table-5.

Table- 5: Panel regression results of the group two of the receivable turnover.

| Dependent Variable: NETPROFIT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.

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C	-268.8084	420.4637	-0.639314	0.0240
Current Asset to Total Asset	304.6808	665.3264	0.457942	0.0479
Net Working Capital	0.356578	0.059564	5.986473	0.0000
Receivable to current Asset ratio	2853.977	1945.920	1.466647	0.0455
Receivable Turnover	0.292738	5.633779	0.051961	0.0087
Working Capital Turnover	7.092661	3.805010	1.864032	0.0151
R-squared	0.330647	Mean dependent var		78.11322
Adjusted R-squared	0.298466	S.D. dependent var		1220.460
S.E. of regression	1022.228	Sum squared resid		1.09E+08
F-statistic	10.27476	Durbin-Watson stat		0.914503
Prob(F-statistic)	0.000000			

Source: Calculated from Primary data

The panel regression equation that has been displayed in table-40 represents that the model is significant enough with a p-value of F-statistics to be 0.000. The r-square value of 0.33 indicates that the independent variables influence the dependent variable to the extent of only 33%. The independent variables are also significant enough to influence the dependent variables as reflected from their p-values which are all less than 0.05. Again, the coefficient values of the independent variables indicate that the receivable to current asset ratio has highest impact on the net profit followed by the current asset to total asset ratio. It is also revealed that there is no independent variable with negative impact on the profitability of the organisation.

Figure-2: the histogram of the residual of the panel regression.
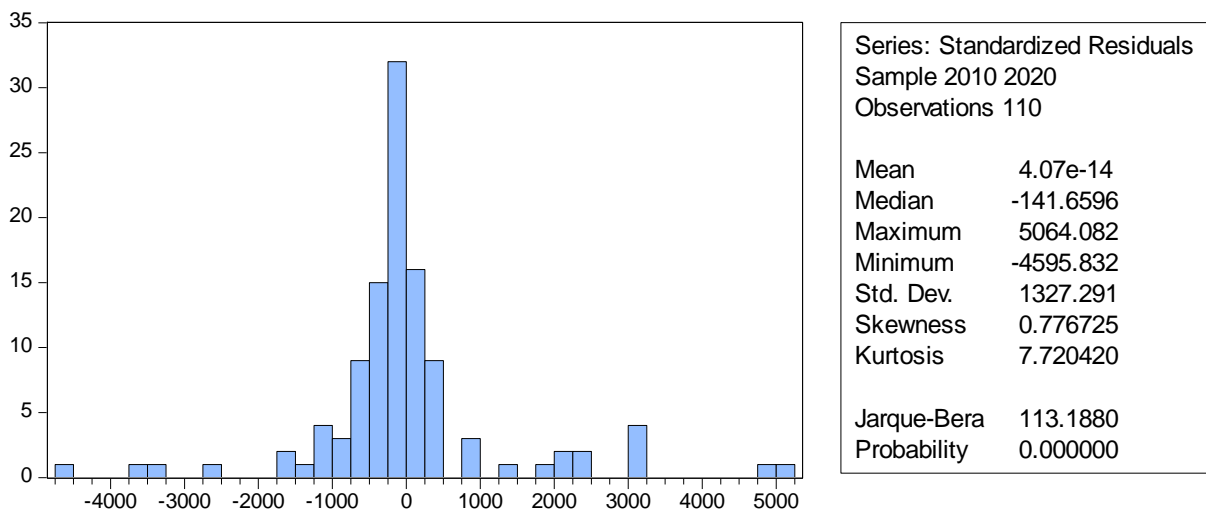
Source: Calculated from Primary data

The histogram of the residuals of the panel regression equation reveals that the residuals are very close to the normal distribution the skewness of the residuals is very negligible with 0..77 value. This indicates that the model that has been presented in table 40 is reliable and significant.

CONCLUSION:

Panel regression of the companies with receivable turnover ratio less than the total average receivable turnover.

All the information provided in the table 38 was thoroughly observed and it is concluded that the model is very effective and significant with the F-statistics p-value of 0.0000. The degree of influence of the independent variables on the dependent variables are moderate as reflected from the r-square value of 0.41. That means that the independent variables are collectively able to influence the dependent variable to the extent of 41..9%. it is also observed that the independent variables are also individually significant enough to influence the dependent variable as all of them have p-values less than the 0.05. Again, the co=efficient values of the independent variables reveal that the current asset to total asset ratio has highest influence on the net profit followed by receivable turnover. However, the receivable to current asset ratio has a negative impact on the net profit.

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