

The Role of Cost Structure in Working Capital Management in the Indian Sugar Industry

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Abstract: This study examines the role of cost structure in working capital management for sugar manufacturing companies in India. The study uses fixed-effects panel regression models and the sample for the study included fifteen listed sugar manufacturing companies for the period 2008-18. The key results of the study were that employee expenditure has significant positive impact on the current ratio, the payables cycle, and the cash conversion cycle, and significant negative impact on the total assets turnover ratio and the fixed assets turnover ratio and that sales/administrative expenditure has significant positive impact on the total assets turnover ratio, the fixed assets turnover ratio, and the inventory turnover ratio, and significant negative impact on the inventory cycle and the cash conversion cycle. The results suggest that the cost structure variables of employee expenditure and selling/administrative expenditure may play a mediating role between firm-level variables and working capital variables, with direct and indirect effects; whereas the cost structure variables of raw materials expenditure and power/fuel expenditure may not play such a mediating role. These direct and indirect effects may be tested using structural equation methods in subsequent studies.

Keywords: working capital management, sugar manufacturing companies, working capital cycle, profitability.

Introduction

Working capital management is an important corporate financial decision involving the trade-off between the dual objectives of liquidity and profitability (Dash and Hanuman, 2015). Excess working capital/liquidity increases short-term financing costs, resulting in reduced profitability. On the other hand, insufficient working capital/liquidity increases the risk of insolvency, again resulting in reduced profitability. Working capital cycles

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in the sugar industry tend to be quite long. The average net working capital cycle for the sugar manufacturing industry was about 57 days, of which the inventory cycle was about 124 days, receivables about 17 days, and payables about 84 days (in 2010-11)¹. Thus, inventory is the major contributor to working capital management in the sugar manufacturing industry. The Indian sugar manufacturing industry has also, in recent years, become increasingly cost-inefficient. A report by the Indian Sugar Mills Association² shows that the cost of sugar production has been more than one and a half times the global cost of sugar production, mainly due to high input prices (i.e. the FRP of sugar cane), growing at a CAGR of 8.6% p.a. There has also been in recent years exceptionally high levels of arrears to sugar cane producers, exceeding Rs. 30,000 crore in 2019 Q4, with stock levels of sugar reaching 125 lakh tons and growing at a CAGR of 8.6%³. This suggests that cost structure may have a link with working capital management for sugar manufacturing companies. Working capital management is one of the core areas of financial management research. Several studies have found that working capital management has significant impact on firm profitability (Shin and Sonen, 1998; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Rehman, 2006; Rehman and Nasr, 2007; Afza and Nazir, 2009; Azhar and Noriza, 2010; Chatterjee, 2012; Baños-Caballero *et al.*, 2014). Thus, understanding the determinants of working capital would help firms to increase their profitability. Some of the general determinants of working capital include internal factors, such as firm size, leverage, asset tangibility, sales growth, profitability, operational efficiency, operating cash flows, and increase in capital expenditure, the nature of the business/industry, and external/macro-economic factors, such as GDP and inflation (Chiou *et al.*, 2006; Appuhami, 2008; Afza and Nazir, 2009; Gill, 2011; Mansoori and Muhammad, 2012; Palombini and Nakamura, 2012; Abbadi and Abbadi, 2013; Mongrut *et al.*, 2014; Zariyawatt *et al.*, 2016; Cuong and Nhung, 2017; Dash, 2020a). The current study examines the role of cost structure in working capital management in the Indian sugar industry, controlling for firm-level factors, extending the earlier study of Dash (2020a).

Methodology

The objective of the study is to analyse the role of cost structure in working capital management in the Indian sugar industry, controlling for firm-level factors. The data for the study pertained to the study period 2008-18 and was collected from the Capitaline database. The sample for the study included fifteen listed sugar manufacturing companies given below:

- Balarampur Chini
- Bannari Amman

- Dalmia Bharat
- DCM Shriram
- Dhampur Mills
- Dharani
- Eid Parry
- Kesar
- Kothari
- Ponni
- Rajshree
- Sakthi
- Sir Shadi Lal
- Triveni
- Ugar

Fixed-effects panel regression was used for the analysis in order to control for firm-specific differences in working capital management as well as for year-to-year differences in working capital management for the industry (Driscoll and Kraay, 1998). The independent variables considered were the cost structure variables of raw materials expenditure, power/fuel expenditure, employee expenditure, other manufacturing expenditure, and sales/administrative expenditure. Further, the model included firm-level control variables of size, leverage, asset tangibility, growth rate of sales, and profitability, based on the literature (refer Dash, 2020a). The dependent variables considered include the current ratio, inventory cycle, receivables cycle, payables cycle, cash conversion cycle, total assets turnover ratio, fixed assets turnover ratio, inventory turnover ratio, receivables turnover ratio, and payables turnover ratio. The descriptive statistics of the variables are presented in Table 1 in the Annexures, while the results of the fixed-effects panel regression models are presented in Tables 2 and 3 in the Annexures.

Findings

The current ratio was found to be significantly positively related with employee expenditure and not significantly related with any of the other cost structure variables. Further, the current ratio was found to be significantly positively related with company size, significantly negatively related with asset tangibility, and not significantly related with the other control variables. The inventory cycle was found to be significantly negatively related with sales/administrative expenditure, and not significantly related with any of the other cost structure variables. Further, the inventory cycle was found to be significantly positively related with

company size and leverage, significantly negatively related with asset tangibility, and not significantly related with the other control variables. The receivables cycle was found to be not significantly related with any of the cost structure variables. However, the receivables cycle was found to be significantly positively related with company size, and not significantly related with other control variables. The payables cycle was found to be not significantly related with any of the cost structure variables. However, the payables cycle was found to be significantly negatively related with company size, and not significantly related with other control variables. The cash conversion cycle was found to be significantly positively related with employee expenditure, significantly negatively related with sales/administrative expenditure, and not significantly related with any of the other cost structure variables. Further, the cash conversion cycle was found to be significantly positively related with company size, significantly negatively related with asset tangibility, and not significantly related with the other control variables. The total assets turnover ratio was found to be significantly negatively related with employee expenditure, significantly positively related with sales/administrative expenditure, and not significantly related with any of the other cost structure variables. Further, the total assets turnover ratio was found to be significantly negatively related with company size, leverage, and asset tangibility, significantly positively related with sales growth, and not significantly related with profitability. The fixed assets turnover ratio was found to be significantly negatively related with employee expenditure, significantly positively related with sales/administrative expenditure, and not significantly related with any of the other cost structure variables. Further, the fixed assets turnover ratio was found to be significantly negatively related with company size and asset tangibility, significantly positively related with sales growth and profitability, and not significantly related with leverage. The inventory turnover ratio was found to be significantly positively related with sales/administrative expenditure, and not significantly related with any of the other cost structure variables. Further, the inventory turnover ratio was found to be significantly positively related with asset tangibility, and not significantly related with the other control variables. The receivables turnover ratio was found to be not significantly related with any of the cost structure variables. However, the receivables turnover ratio was found to be significantly negatively related with company size, significantly positively related with profitability, and not significantly related with the other control variables. The payables turnover ratio was found to be significantly positively related with employee expenditure, significantly positively related with sales/administrative expenditure, and not

significantly related with any of the other cost structure variables. Further, the payables turnover ratio was found to be significantly positively related with company size, and not significantly related with the other control variables.

Discussion

The results of the study indicate that employee expenditure has significant positive impact on the current ratio, the payables cycle, and the cash conversion cycle, and significant negative impact on the total assets turnover ratio and the fixed assets turnover ratio. Thus, firms with lower percentage of employee expenditure have higher asset turnover and higher cash conversion cycles as compared with firms with a higher percentage of employee expenditure. This could be due to efficiency gains from the adoption of modernised sugar manufacturing machines and equipment.

The results of the study also indicate that sales/administrative expenditure has significant positive impact on the total assets turnover ratio, the fixed assets turnover ratio, and the inventory turnover ratio, and significant negative impact on the inventory cycle and the cash conversion cycle. Thus, firms with higher percentage of sales/administrative expenditure have higher asset turnover and higher inventory and cash conversion cycles as compared with firms with a lower percentage of sales/administrative expenditure.

The results of the study also indicate significant size effect, asset-tangibility effect, leverage effect, and profitability effect on working capital in the Indian sugar industry, similar to the results presented in Dash (2020a).

It is perhaps a perplexing finding of the study at first glance that the cost structure variables of raw materials expenditure and power/fuel expenditure were not found to have a significant impact on working capital in the Indian sugar industry. However, the results of Dash (2020b) indicate a significant negative size effect on raw materials expenditure and a significant positive size effect on power/fuel expenditure; a significant positive sales growth effect on raw materials expenditure and a significant negative sales growth effect on power/fuel expenditure; and a significant negative profitability effect on power/fuel expenditure. These opposing effects may have annulled the impact of raw materials expenditure and power/fuel expenditure on working capital.

The results of Dash (2020b) also indicate a significant positive size effect on selling/administrative expenditure, a significant positive sales growth effect on employee expenditure, and a significant negative sales growth effect on selling/administrative expenditure. Thus, the cost structure variables of employee expenditure and selling/administrative

expenditure may play a mediating role between firm-level variables and working capital variables, with direct and indirect effects; whereas the cost structure variables of raw materials expenditure and power/fuel expenditure may not play such a mediating role. These direct and indirect effects may be tested using structural equation methods in subsequent studies.

There are some limitations inherent in the present study. The sample size considered for the study was relatively small, only fifteen, selected from among the large/medium-sized sugar manufacturing companies, and the study period is limited to ten years, so that the results of the study may not be generalisable. Also, only some determinants of working capital have been considered in the study; other determinants such as capital expenditure and operating cash flow should also be considered for further studies.

Notes

1. <https://www.equitymaster.com/detail.asp?date=11/30/2011&story=10&title=Working-capital-management-across-industries>
2. https://www.indiansugar.com/uploads/Niti_Aayog.pdf
3. http://content.icidirect.com/mailimages/IDirect_SugarSector_IC.pdf
4. [ctor_IC.pdf](#)

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Annexures

Table 1: Descriptive Statistics of Variables

	$\log(TA)$	D/E	Asset Tnghty	Sales Groth	ROA	CR	Invntry Cycle	Rcobles Cycle	Paybils Cycle	CCC	ATR	FATR	ITR	RTR	PTR
Balarampur Chini	Mean	7.95	0.56	0.21	0.06	3.52	193.21	15.02	62.62	145.61	1.02	1.41	2.14	32.27	10.32
	Std. Dev.	0.15	0.31	0.14	0.06	1.68	61.80	6.89	37.64	47.94	0.26	0.65	0.92	21.77	11.45
Bannari Amman	Mean	7.33	0.81	0.53	0.08	5.44	239.78	25.53	34.57	230.74	0.76	0.96	1.82	15.81	11.48
	Std. Dev.	0.38	0.43	0.13	0.25	2.29	113.72	7.82	12.10	115.77	0.21	0.18	0.74	5.66	3.04
Dalmia Bharat	Mean	7.51	1.63	0.54	0.09	2.86	193.48	22.92	73.95	142.45	0.76	0.89	2.09	22.21	5.48
	Std. Dev.	0.49	0.52	0.05	0.32	0.88	56.93	11.49	22.52	62.95	0.15	0.13	0.79	16.38	2.12
DCM Shriram	Mean	6.43	1.47	0.49	0.08	2.25	131.71	30.34	67.75	94.30	1.90	2.34	2.80	12.19	5.56
	Std. Dev.	0.17	0.32	0.05	0.07	0.40	14.08	3.61	11.60	13.14	0.22	1.14	0.32	1.49	1.16
Dhampur Mills	Mean	7.52	2.29	0.64	0.30	2.22	185.20	33.12	95.89	122.43	1.03	1.11	2.19	13.15	4.87
	Std. Dev.	0.28	0.74	0.08	0.79	0.83	56.51	11.70	47.26	53.05	0.38	0.40	0.86	7.54	2.70
Dharani	Mean	6.44	7.51	0.68	0.14	-0.02	2.28	158.83	30.48	106.52	0.84	0.99	2.90	16.35	8.24
	Std. Dev.	0.19	8.92	0.17	0.58	0.06	1.01	66.40	15.80	30.32	0.28	0.44	1.74	10.02	7.72
Eid Parry	Mean	7.77	0.89	0.48	0.07	0.05	105.51	34.87	47.12	93.26	0.85	1.24	4.83	11.11	9.17
	Std. Dev.	0.28	0.39	0.08	0.24	0.05	56.92	8.21	20.59	47.80	0.13	0.22	3.07	3.16	3.84
Kesar	Mean	5.91	4.07	0.66	0.06	-0.05	165.36	26.94	94.24	98.06	0.85	1.00	3.52	17.59	5.65
	Std. Dev.	0.42	2.23	0.36	0.15	1.82	85.21	16.25	45.40	110.40	0.24	0.57	3.51	8.12	5.13
Kothari	Mean	5.67	1.32	0.68	0.02	2.49	107.02	15.41	47.77	74.66	1.14	1.06	3.83	27.15	9.30
	Std. Dev.	0.06	0.29	0.05	0.02	0.82	38.25	5.38	22.06	30.59	0.15	0.29	1.38	11.80	4.86
Ponni	Mean	5.16	0.46	0.50	0.08	2.05	108.56	25.79	50.71	83.65	1.34	2.00	3.70	27.33	8.01
	Std. Dev.	0.43	0.25	0.14	0.37	0.13	33.40	16.87	15.31	35.08	0.69	1.24	1.24	29.01	3.27
Rajshree	Mean	6.50	6.69	0.72	0.07	-0.01	110.40	24.17	65.21	69.36	0.94	0.94	3.47	17.50	6.40
	Std. Dev.	0.13	5.39	0.08	0.33	0.05	24.64	9.51	24.69	18.57	0.19	0.26	0.83	7.20	2.51
Sakthi	Mean	7.43	2.45	0.75	0.00	-0.04	42.08	25.56	100.44	-32.80	0.62	0.69	10.40	23.10	4.35
	Std. Dev.	0.19	0.59	0.14	0.37	0.05	17.45	17.20	39.95	34.88	0.18	0.27	5.32	17.00	2.34
Sir Shadi Lal	Mean	5.18	0.78	0.30	0.05	-0.13	194.88	4.22	107.72	91.37	2.43	2.87	1.96	113.87	6.41
	Std. Dev.	0.51	5.66	0.09	0.14	2.02	42.20	2.23	67.87	100.41	1.19	1.07	0.46	63.43	6.15
Triveni	Mean	7.63	1.57	0.51	0.16	0.02	144.14	38.72	59.59	123.28	1.17	1.83	3.00	10.01	8.50
	Std. Dev.	0.11	0.75	0.13	0.46	0.07	64.03	8.73	33.85	50.34	0.37	0.91	1.24	3.04	5.29
Ugar	Mean	5.99	3.61	0.43	0.11	-0.01	212.64	20.87	78.20	155.31	1.68	1.51	1.74	25.98	10.40
	Std. Dev.	0.16	1.74	0.09	0.25	0.07	25.94	16.10	33.78	44.47	0.46	0.25	0.22	16.67	18.32
Overall	Mean	6.69	2.45	0.56	0.10	0.01	152.85	24.93	71.24	106.55	1.15	1.39	3.36	25.71	7.61
	Std. Dev.	0.97	3.67	0.18	0.38	0.09	74.10	13.88	40.42	79.78	0.63	0.86	2.84	31.66	6.86

Table 2: Fixed-Effects Panel Regression Results

	Current Ratio		Inventory Cycle		Receivables Cycle		Payables Cycle		Cash Conversion Cycle	
	F Stat	p-value	F Stat	p-value	F Stat	p-value	F Stat	p-value	F Stat	p-value
Corrected Model	9.6259	0.0000	9.1666	0.0000	4.6655	0.0000	6.5120	0.0000	14.4744	0.0000
Intercept	0.0471	0.8286	0.8458	0.3599	3.0048	0.0860	7.1417	0.0088	1.6736	0.1987
company	11.3916	0.0000	9.5467	0.0000	3.8525	0.0000	4.5698	0.0000	15.1205	0.0000
year	4.8130	0.0000	2.9037	0.0059	3.5576	0.0011	6.4329	0.0000	1.9438	0.0613
log(TA)	23.3625	0.0000	5.4403	0.0216	6.3529	0.0133	23.1944	0.0000	43.7367	0.0000
D/E Ratio	0.1448	0.7044	3.8908	0.0499	0.1716	0.6796	0.4826	0.4888	2.4826	0.1182
Asset Tangibility	40.9804	0.0000	34.2005	0.0000	2.1426	0.1463	6.3992	0.0129	62.3527	0.0000
Sales Growth	1.0774	0.3017	1.9443	0.1662	1.1388	0.2884	0.0489	0.8255	2.7942	0.0977
ROA	0.2780	0.5991	0.6368	0.4267	0.0293	0.8645	2.9081	0.0912	0.1221	0.7275
RM Exp	1.2404	0.2680	1.0998	0.2968	0.9002	0.3450	0.2395	0.6256	0.3356	0.5637
P/F Exp	3.5048	0.0641	1.0886	0.2992	0.6922	0.4074	0.1602	0.6898	1.5026	0.2231
Empl Exp	4.7104	0.0323	0.5584	0.4566	1.0868	0.2996	1.6315	0.2044	3.9745	0.0489
OM Exp	1.2096	0.2740	0.0972	0.7558	1.6386	0.2034	0.1148	0.7354	0.0486	0.8260
S/A Exp	0.7439	0.3904	8.1985	0.0051	1.0939	0.2981	0.8378	0.3622	5.1737	0.0250
R ²	0.7510		0.7410		0.5940		0.6710		0.8200	
adj R ²	0.6730		0.6610		0.4670		0.5680		0.7630	

	coeff		p-value		coeff		p-value		coeff		p-value	
	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value
Intercept	-2.3186	0.6952	291.7354	0.3296	-118.1875	0.0901	498.4826	0.0090	-324.9348	0.2277		
[Balarampur Chini]	-0.9861	0.2598	-61.0229	0.1677	-21.0957	0.0409	82.4015	0.0036	-164.5201	0.0001		
[Bannari Amman]	2.7490	0.0001	57.0144	0.0954	-13.8998	0.0799	23.2285	0.2780	19.8861	0.5152		
[Dalmia Bharat]	-0.1759	0.7926	-9.1351	0.7868	-14.2315	0.0715	53.1523	0.0137	-76.5189	0.0131		
[DCM Shriram]	0.0677	0.8943	-75.7463	0.0039	4.4201	0.4595	6.1507	0.7039	-77.4769	0.0011		
[Dhampur Mills]	-0.8373	0.2873	-9.9237	0.8021	-1.9821	0.8292	87.4347	0.0006	-99.3404	0.0062		
[Dharani]	2.0339	0.0015	29.7947	0.3446	5.8190	0.4259	-0.3981	0.9839	36.0118	0.2047		
[Eid Parry]	-1.5736	0.0858	-83.6409	0.0706	-4.8518	0.6487	69.4312	0.0177	-157.9240	0.0002		
[Kesar]	1.5044	0.0044	12.1935	0.6412	5.3733	0.3767	1.0936	0.9470	16.4731	0.4841		
[Kothari]	3.0438	0.0000	-3.6006	0.9048	-3.4748	0.6191	-67.0102	0.0006	59.9348	0.0287		
[Ponni]	2.7513	0.0003	-28.2674	0.4489	15.0217	0.0846	-85.1105	0.0004	71.8648	0.0340		

[Rajshree]	0.9961	0.1126	-55.9505	0.0778	-0.4186	0.9543	-14.0782	0.4777	-42.2909	0.1373
[Sakthi]	-1.4247	0.0610	-150.8844	0.0001	-12.5028	0.1585	69.9632	0.0042	-233.3505	0.0000
[Sir Shadi Lal]	0.6794	0.2162	-11.0100	0.6903	-5.3718	0.4026	-6.3851	0.7132	-9.9967	0.6874
[Triveni]	-1.4598	0.0553	-89.6887	0.0202	0.4684	0.9577	69.9073	0.0042	-159.1276	0.0000
[Ugar]	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)
[year 2010]	0.8020	0.0525	27.6388	0.1833	-1.8942	0.6931	-18.3341	0.1607	44.0788	0.0193
[year 2011]	1.8892	0.0000	-6.9873	0.6987	-1.3551	0.7462	-60.2857	0.0000	51.9433	0.0018
[year 2012]	0.7476	0.0416	-13.4808	0.4625	7.0531	0.0993	-37.0179	0.0017	30.5902	0.0656
[year 2013]	0.5613	0.1146	3.7836	0.8320	-0.8693	0.8336	-26.2834	0.0208	29.1977	0.0709
[year 2014]	0.2680	0.4293	44.6653	0.0101	-2.6281	0.5077	-3.8447	0.7206	45.8818	0.0035
[year 2015]	0.3660	0.3023	31.4492	0.0805	3.3386	0.4210	-0.4497	0.9681	35.2374	0.0301
[year 2016]	0.0544	0.8686	32.5072	0.0521	12.8234	0.0012	1.2338	0.9058	44.0968	0.0038
[year 2017]	0.2579	0.4544	2.0223	0.9073	-0.0561	0.9889	-20.9590	0.0573	22.9251	0.1443
[year 2018]	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)
log(TA)	1.6633	0.0000	40.5015	0.0216	10.1529	0.0133	-52.5929	0.0000	103.2472	0.0000
D/E Ratio	-0.0097	0.7044	2.5202	0.0499	-0.1242	0.6796	0.5648	0.4888	1.8313	0.1182
Asset Tangibility	-4.3542	0.0000	-200.7240	0.0000	11.6546	0.1463	54.6040	0.0129	-243.6734	0.0000
Sales Growth	0.2607	0.3017	-17.6760	0.1662	-3.1381	0.2884	-1.7625	0.8255	-19.0515	0.0977
ROA	-0.6864	0.5991	-52.4148	0.4267	2.6076	0.8645	-70.4443	0.0912	20.6371	0.7275
RM Exp	-6.3673	0.2680	-302.5421	0.2968	63.4974	0.3450	-88.7906	0.6256	-150.2541	0.5637
P/F Exp	-14.7027	0.0641	-413.4870	0.2992	76.4856	0.4074	99.7593	0.6898	-436.7607	0.2231
Empl Exp	20.6858	0.0323	359.4102	0.4566	116.3127	0.2996	-386.3374	0.2044	862.0604	0.0489
OM Exp	-7.6049	0.2740	-108.8058	0.7558	103.6136	0.2034	-74.3478	0.7354	69.1555	0.8260
S/A Exp	-8.8464	0.3904	-1481.9611	0.0051	125.5773	0.2981	-297.9357	0.3622	-1058.4481	0.0250

a. This parameter is redundant.

Table 3: Fixed-Effects Panel Regression Results

	Total Assets			Fixed Assets			Inventory			Receivables			Payables		
	Turnover Ratio		F Stat	Turnover Ratio		F Stat	Turnover Ratio		F Stat	Turnover Ratio		F Stat	Turnover Ratio		F Stat
	coeff	p-value		coeff	p-value		coeff	p-value		coeff	p-value		coeff	p-value	
Corrected Model	41.0545	0.0000	15.9052	0.0000	8.1613	0.0000	8.3042	0.0000	2.1845	0.0017	0.0000	8.3042	0.0000	2.1845	0.0017
Intercept	37.3446	0.0000	12.0698	0.0008	0.2711	0.6037	1.2006	0.2758	1.2841	0.2598	0.0000	1.2006	0.2758	1.2841	0.2598
company	28.4921	0.0000	8.6185	0.0000	10.7921	0.0000	8.1172	0.0000	1.6504	0.0783	0.0000	8.1172	0.0000	1.6504	0.0783
year	11.4342	0.0000	5.8616	0.0000	2.3832	0.0214	1.5407	0.1524	3.6256	0.0009	0.0000	1.5407	0.1524	3.6256	0.0009
log(TA)	198.0056	0.0000	32.4070	0.0000	0.0034	0.9538	8.9705	0.0034	4.4483	0.0374	0.0000	8.9705	0.0034	4.4483	0.0374
D/E Ratio	9.2808	0.0029	0.2259	0.6356	2.2172	0.1396	0.0807	0.7769	0.9988	0.3200	0.0000	0.0807	0.7769	0.9988	0.3200
Asset Tangibility	7.9133	0.0059	43.1382	0.0000	7.6894	0.0066	0.2836	0.5955	3.4298	0.0669	0.0000	0.2836	0.5955	3.4298	0.0669
Sales Growth	28.0387	0.0000	5.8594	0.0173	0.2569	0.6134	0.5425	0.4631	1.7667	0.1868	0.0000	0.5425	0.4631	1.7667	0.1868
ROA	0.1646	0.6858	5.6888	0.0189	0.1051	0.7464	5.0779	0.0264	0.0125	0.9111	0.0000	5.0779	0.0264	0.0125	0.9111
RM Exp	1.0531	0.3072	0.0012	0.9721	0.9542	0.3310	0.0341	0.8538	0.1386	0.7105	0.0000	0.0341	0.8538	0.1386	0.7105
P/F Exp	0.1693	0.6816	0.6329	0.4282	0.1579	0.6919	0.1153	0.7348	0.2112	0.6468	0.0000	0.1153	0.7348	0.2112	0.6468
Empl Exp	29.8115	0.0000	11.5804	0.0010	2.1874	0.1422	0.8533	0.3578	5.0606	0.0266	0.0000	0.1422	0.8533	0.3578	5.0606
OM Exp	0.0135	0.9078	0.9328	0.3364	0.0552	0.8148	0.1990	0.6565	0.2817	0.5967	0.0000	0.1990	0.6565	0.2817	0.5967
S/A Exp	21.2680	0.0000	4.8152	0.0305	5.3523	0.0227	0.0103	0.9194	1.4293	0.2346	0.0000	0.0227	0.0103	1.4293	0.2346
R ²	0.9280		0.8330		0.7190		0.7230		0.4070		0.0000	0.7230		0.4070	
adj R ²	0.9040		0.7810		0.6310		0.6360		0.2210		0.0000	0.6360		0.2210	

	coeff		p-value		coeff		p-value		coeff		p-value	
	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value		
	Intercept	8.8005	0.0000	10.1026	0.0006	-5.4137	0.5786	127.4996	0.3452	-48.4404	0.2648	
[Balarampur Chini]	1.1908	0.0000	1.4253	0.0010	-0.8092	0.5735	49.5133	0.0141	-5.7119	0.3721		
[Bannari Amman]	0.0563	0.7185	0.3854	0.2368	-1.6924	0.1288	19.9517	0.1949	-3.6862	0.4549		
[Dalmia Bharat]	0.2273	0.1452	0.4386	0.1763	-1.2341	0.2642	30.1034	0.0504	-7.7846	0.1142		
[DCM Shriram]	0.5846	0.0000	1.3495	0.0000	0.9543	0.2571	-5.4775	0.6374	-5.2703	0.1599		
[Dhampur Mills]	0.4804	0.0094	0.6408	0.0928	-1.7507	0.1774	25.0773	0.1627	-8.0072	0.1653		
[Dharani]	-0.9676	0.0000	-0.3919	0.1945	-1.6115	0.1186	-0.0618	0.9965	4.1058	0.3692		
[Eid Parry]	0.2829	0.1818	0.4702	0.2853	-0.0085	0.9955	27.0866	0.1929	-11.0829	0.0982		
[Kesar]	-1.0592	0.0000	-0.2554	0.3083	0.6977	0.4144	-7.5152	0.5248	-2.3706	0.5325		
[Kothari]	-1.4115	0.0000	-0.8682	0.0032	-0.1478	0.8804	-6.7099	0.6218	6.3948	0.1454		
[Ponni]	-1.5925	0.0000	-0.3789	0.2891	1.1460	0.3472	-30.5913	0.0714	8.1530	0.1338		

[Rajshree]	-0.4395	0.0030	0.0188	0.9503	0.1609	0.8756	4.6872	0.7417	0.5764	0.8996
[Sakthi]	0.3959	0.0253	1.0792	0.0037	5.9766	0.0000	34.6240	0.0459	-8.3803	0.1310
[Sir Shadi Lal]	-0.3496	0.0068	0.3712	0.1618	0.1189	0.8951	82.2097	0.0000	-1.5067	0.7070
[Triveni]	0.9420	0.0000	1.5900	0.0000	0.1573	0.8993	21.7954	0.2068	-10.7746	0.0534
[Ugar]	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)
[year 2010]	-0.7008	0.0000	-0.9707	0.0000	0.2983	0.6586	-5.8450	0.5317	1.2448	0.6783
[year 2011]	-0.5880	0.0000	-0.8351	0.0000	1.2115	0.0417	3.4307	0.6738	9.6122	0.0004
[year 2012]	-0.5666	0.0000	-0.9179	0.0000	0.7675	0.2011	-1.8457	0.8235	5.0682	0.0588
[year 2013]	-0.4138	0.0000	-0.8759	0.0000	0.1589	0.7849	11.4953	0.1555	3.9645	0.1277
[year 2014]	-0.2610	0.0012	-0.7126	0.0000	-0.8281	0.1396	14.1791	0.0683	0.3593	0.8848
[year 2015]	-0.1685	0.0422	-0.5709	0.0011	-0.0439	0.9400	4.0215	0.6181	-0.4622	0.8584
[year 2016]	-0.2576	0.0010	-0.5432	0.0009	-0.2852	0.5984	-4.5564	0.5431	-0.8461	0.7251
[year 2017]	-0.1322	0.1001	-0.1850	0.2670	0.8382	0.1414	7.6644	0.3297	4.6108	0.0696
[year 2018]	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)	0(a)
log(TA)	-1.1232	0.0000	-0.9452	0.0000	-0.0329	0.9538	-23.4798	0.0034	5.3131	0.0374
D/E Ratio	-0.0181	0.0029	-0.0059	0.6356	-0.0628	0.1396	0.1658	0.7769	-0.1874	0.3200
Asset Tangibility	-0.4438	0.0059	-2.1556	0.0000	3.1056	0.0066	8.2524	0.5955	-9.2217	0.0669
Sales Growth	0.3086	0.0000	0.2934	0.0173	-0.2096	0.6134	4.2155	0.4631	2.4444	0.1868
ROA	0.1225	0.6858	1.4981	0.0189	0.6950	0.7464	66.8244	0.0264	1.0661	0.9111
RM Exp	1.3609	0.3072	0.0967	0.9721	9.1957	0.3310	24.0685	0.8538	15.5797	0.7105
P/F Exp	0.7497	0.6816	-3.0147	0.4282	5.1383	0.6919	60.7654	0.7348	-26.4217	0.6468
Empl Exp	-12.0712	0.0000	-15.6502	0.0010	-23.2106	0.1422	200.5770	0.3578	156.9629	0.0266
OM Exp	-0.1863	0.9078	-3.2224	0.3364	-2.6744	0.8148	-70.2659	0.6565	26.8675	0.5967
S/A Exp	10.9722	0.0000	10.8602	0.0305	39.0714	0.0227	23.6896	0.9194	89.7706	0.2346

a. This parameter is redundant.