

# Equity Research Analysis of Cement Industry

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## ABSTRACT

<https://doi.org/10.34047/MMR.2020.8206>

**The cement industry plays a crucial role in the construction sector and is a major contributor to the global economy. In this study, we conduct an equity research analysis of the cement industry to provide a comprehensive overview of the key drivers of industry performance and the competitive landscape. Our analysis begins with a review of industry trends, including the impact of global economic conditions on demand for cement and the evolution of production technologies. We also examine the supply side of the industry, including the distribution of global cement production and the impact of raw material costs on the profitability of cement companies.**

**Next, we delve into the financial performance of leading cement companies, analyzing key metrics such as revenue growth, profitability, and return on investment. We also assess the risks and opportunities facing the industry, including the potential impact of environmental regulations and the emergence of alternative construction materials. Finally, we provide an outlook for the future of the cement industry, including potential trends and challenges.**

**Keywords: Cement industry, equity research, industry analysis, demand and supply.**

### Introduction:

The Indian cement industry is one of the highly energy intensive industry which has a robust growth trajectory over the past decade. India's cement industry is the second largest in the world, in terms of production, with over 8% (545 million tonnes per annum in 2021) of the global installed capacity and generating employment for over 1 million people. Cement is a binding substance that is used in the construction industry to harden, set, and adhere to the other materials for binding them together. Cement is usually mixed with other substances, such as fine aggregates and sand & gravel to manufacture mortar and concrete respectively. The raw materials used in the production of cement include limestone, chalk, shells, shale, clay, and silica sand. The mixture of these raw materials is then heated at high temperatures to form a solid rock like substance, which is then powdered to obtain cement. India entered the Cement Era in 1914, when the Indian Cement Company Ltd. started manufacturing Cement in Porbunder in Gujarat. However, even before that a small cement factory was established in Madras in 1904 by a company named South India Industrial Ltd. Indian Cement Company Ltd produced only one type of cement which was designed by the British standard committee as "Artificial Portland Cement". This

company marketed its product in Mumbai, Karachi, Madras and other parts and became a financial success. To develop the country's infrastructure, the Indian government has undertaken several projects related to the construction of roads and highways, both in the rural and urban areas, along with the development of industrial hubs in different parts of the country. These schemes and initiatives are major contributors to drive the growth of the Indian cement industry since, it is one of the primary materials for the successful execution of such projects. Currently, China is the dominant producer and consumer of cement across the world, hence, the growth in the construction activities in this country will boost the market size, after that India plays an important role. As China has a dominant market it plays a vital role in Indian market.

### Literature Review:

The Fundamental analysis for the share price valuation and statistical tool are used. The fundamental and statistical analyses form to forecasts future movements. Research work envisages on Financial Statement analysis and identifies that this analysis has traditionally been seen as part of the Fundamental analysis required for equity valuation. This paper outlines a financial statement analysis for use in equity

valuation. Fundamental analysis and statistical analysis can co-exist in peace and complement each other. Since all the investors in the stock market want to make the maximum profits possible, they just cannot afford to ignore either fundamental or statistical analysis. This investigation mainly aims to evaluate the association of volatility and stock returns stock markets. The intention to analyze the stock markets provides an efficient intelligence to stock investors. This study has used daily data of identified markets, which is considered as more reliable than weekly and monthly data among the circle of stock researchers because of the high frequency data, whereas, previous studies comprises of low frequency data (weekly or monthly). Therefore, the use of daily data is making study unique of its kind among stock market-related research. Their investigation emerged with statistically significant findings confirming the existence of spillover effect of volatility and its influence on stock returns. The current study will be a significant addition in existing literature regarding the volatility, and equity relationship, and mean.

### Objectives of the Study:

1. To analyze the evolution of the cement industry.
2. To compare the financial ratios of the leading and lagging companies in the industry.
3. To find the reasons for the growth of the industry

### Methodology of the study:

The whole study can be termed as desk research. Hence there is no field work and collection of primary data for this research except for secondary information obtained by the medium of internet, journal and magazines. The top 5 performers of the industry have been chosen on the basis of their sales in the previous year.

### Sources of Data:

Only secondary data was collected from the internet, company websites, magazines and various articles. Annual reports of the companies have been the main source of information for the company analysis.

### Limitations of the study:

The study is limited to selected Top 5 cement companies in India  
The number of years used for comparing the performance of these companies is 5.

### Hypothesis:

H1: There will be significant difference between high

or low financial efficiency of the company.

H0: There will be no significant difference between high or low financial efficiency of the company.

H1: There will be significant difference between liquidity position of company. HO: There will be no significant difference between liquidity of company.3.

H1: There will be significant difference between high or low profitability position of company.

H0: There will be no significant difference between high or low profitability position of company

### Conceptual Framework

Fundamental analysis involves three types of analysis:

Economic Analysis

Industry Analysis

Company Analysis

Economic Analysis:

It is the world's sixth-largest economy by nominal GDP and the third largest by purchasing power parity (PPP). According to the International Monetary Fund (IMF), on a per capita income basis, India ranked 145th by GDP (nominal) and 122nd by GDP (PPP). India's economy grew at 1.6 per cent in the fourth quarter of 2021-21, recording a slight pickup in GDP growth amid the Covid-19 second wave hitting the economy hard. In the full fiscal year, the economy shrunk by -7.3 per cent as the Covid-19 pandemic ravaged the economy.

The contraction in FY21 GDP is worse in more than 40 years, the government data shows. GDP at Constant Prices in Q4 of 2020-21 is at Rs 38.96 lakh crore, as against Rs 38.33 lakh crore in Q4 of 2019-20, showing a growth of 1.6 percent. India's 2020-2021 fiscal deficit at 9.3% of GDP. In absolute terms, the fiscal deficit works out to be Rs. 18,21,461 crores. For this financial year, the government had initially pegged the fiscal deficit at Rs. 7.96 lakh crores or 3.5% of the GDP in the budget presented in February 2020. Annual inflation rate in India eased to 4.29 percent in April of 2021, the lowest reading in three months from 5.52 percent in March.

The rise in inflation was driven by an increase in fuel and transportation costs along with an increase in some components of the food basket. Moreover, the record Covid-19 surge across the country now, especially at a time when advanced economies have already started recovering, could put serious upward pressure on inflation. Higher global inflation, rising

commodity prices, local lockdown and a weaker rupee could bring in higher prices in India. This year 2021, Finance Minister Nirmala Sitharaman announced big-ticket expenditure but the budget, as in previous years, did not cross the constitutional barrier of financial year ending March 31, 2022, without providing for adequate budgeted expenditure subsequently. Some examples are Rs 2.76 lakh crore (Rs 2.76 trillion) for the PM Garib Kalyan Yojana, Rs 2.87 lakh crore for the Jal Jeevan Mission, Rs 2.23 lakh crore for healthcare, Rs 3.05 lakh crore for power distribution scheme, Rs 1.97 lakh crore for the manufacturing sector, and Rs 1.41 lakh crore for the Urban Swachh Bharat Mission. These figures add up to tens of trillions of rupees. Against these announcements, only Rs 4.41 lakh crore of additional expenditure has been budgeted for in 2021-22, as mandated under Article 112 of the Constitution.

**Industry Analysis:**

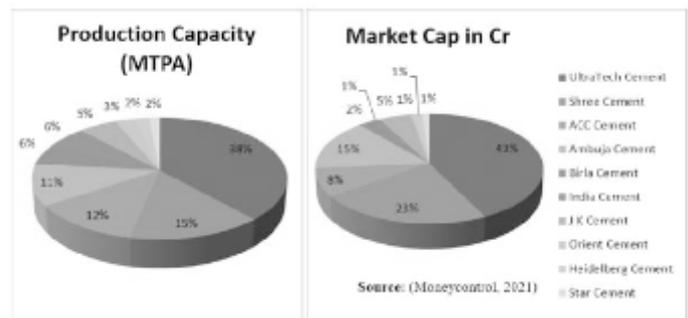
India is the second largest producer of cement in the world. Thus, India's cement industry is a vital part of its economy, providing employment to more than a million people, directly or indirectly. Ever since it was deregulated in 1982, the Indian cement industry has attracted huge investments, both from Indian as well as foreign investors. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent major government initiatives such as development of 100 smart cities are expected to provide major boost to the sector. Expecting such developments in the country and aided by suitable government foreign policies, several foreign players such as Lafarge-Holcim, Heidelberg Cement and Vicat have invested in the country in the recent past. A significant factor which aids the growth of this sector is the ready availability of the raw materials for making cement, such as limestone and coal. Cement production reached 329 million tonnes (MT) in FY20 and is projected to reach 381 MT by FY22.

However, the consumption stood at 327 MT in FY20 and will reach 379 MT by FY22. As India has a high quantity and quality of limestone deposits throughout the country, the cement industry promises huge growth potential. The production of cement in India is expected to reach 410.21 Mn tons by FY 2024, expanding at a compound annual growth rate (CAGR) of ~3.83% during the FY 2019-FY 2024 period, owing to rising demand from the government and

housing contractors. A total of 210 large cement plants account for a combined installed capacity of 545 MT in the country, whereas 350 mini cement plants make up for the rest. Of the total 210 large cement plants in India, 77 are in the states of Andhra Pradesh, Rajasthan, and Tamil Nadu. Sale of cement in India stood at Rs 63,771 Crore in FY20. India's export of cement, clinker and asbestos increased at a CAGR of 6.44% between FY16-FY19. In FY20 (till January 2020), it reached US\$ 1.66 billion. At a CAGR of 9%, India has added almost 40% of its existing cement manufacturing capacity over the past decade. This is above the average GDP growth rate of India at 7% over the same period. Moving forward, amidst the news of global economic slowdown, monetary agencies have revised India's growth forecast. It should be expected to be back on track over the medium term given the priority being accorded for the infrastructure development by the government in its various plans and policies. The Indian cement industry, with a sufficient buffer of capacity, is well placed to support even an aggressive growth rate.

**Company Analysis:**

The cement companies have been selected based upon the market share and production capacity.



The companies are as follows:

- UltraTech Cement
- Shree Cement
- ACC Cement
- Ambuja Cement
- Birla Cement
- Jk Cement.
- Heidelberg Cement

**UltraTech Cement:**

UltraTech Cement Limited is the cement flagship company of the Aditya Birla Group. A USD 5.9 billion building solutions powerhouse, UltraTech is the largest manufacturer of grey cement, ready mix concrete (RMC) and white cement in India. It is the

third largest cement producer in the world, excluding China. UltraTech is the only cement company globally (outside of China) to have 100+ MTPA of cement manufacturing capacity in a single country. The Company's business operations span UAE, Bahrain, Sri Lanka and India. UltraTech has a consolidated capacity of 116.8 million tonnes per annum (MTPA) of grey cement. UltraTech has 22 integrated manufacturing units, 27 grinding units, one clinkerisation unit and 7 bulk packaging terminals. UltraTech has a network of over one lakh channel partners across the country and has a market reach of more than 80% across India. In the white cement segment, UltraTech goes to market under the brand name of Birla White. It has one white cement unit and one wall care putty unit, with a current capacity of 1.5

MTPA. UltraTech has over 130 ready mix concrete (RMC) plants in 50 cities across India. UltraTech pioneered the UltraTech Building Solutions (UBS) concept to provide individual home builders with a one-stop-shop solution for building their homes. Today, UBS (UltraTech Building Solution) is the largest single brand retail chain with over 2500 stores across India.

UltraTech is the first company in India and the second company in Asia to issue dollar-based sustainability linked bonds. As part of its CSR, UltraTech reaches out to nearly 2.1 million beneficiaries in over 500 villages across India covering areas of education, healthcare, sustainable livelihoods, community infrastructure and social causes.

Ratio Analysis for Ultratech Cement:

Ratio	Formula	2021	2020	2019	2018	2017
Operating profit Margin	EBITDA / Net sales	27%	23%	19%	21%	24%
Return on capital employed	EBIT / (Shareholders Funds+ LT Loans)	15.05	12.03	10.42	10.36	13.92
Interest Coverage Ratio	EBIT / INTEREST	7.27	4.06	3.12	3.78	7.61
Debt Equity Ratio	LT Debt / equity	0.25	0.37	0.57	0.54	0.18
Inventory turnover ratio	COGS / inventory	8.66	8.35	8.69	7.71	8.50
Working capital turnover ratio	Sales / (current assets- current liabilities)	12.69	83.26	-21.07	-64.30	5.35
<b>Valuation Ratio</b>						
Earnings per share ratio	Net profit - preferred dividend / (no. of outstanding shares)	185.13	189.1	84.31	81.25	95.7
Dividend Yield ratio	Dividend per share / market value per share	0.59%	0.31%	0.30%	0.25%	0.28%
Dividend payout ratio	(total dividend / net profit ) * 100	19.99	6.88	13.09	12.92	10.45
P/E Ratio	Market price/Earnings per share	33.92	22.11	45.60	50.75	37.84
PEG Ratio	PE/EPS growth	(16.16)	0.18	12.11	(3.36)	
<b>DuPont Analysis</b>						
Return on Equity		12%	14%	9%	9%	11%
Net Profit Margin		0.12	0.13	0.06	0.08	0.11
Asset turnover Ratio		0.54	0.57	0.57	0.54	0.60
Leverage (Gearing)	Assets/ Equity	1.85	1.88	2.48	2.10	1.64

Altman Z-Score	Zone	Distress	Grey	Grey	Grey	Safe
Z score	Altman Z-Score = $1.2A + 1.4B + 3.3C + 0.6D + 1.0E$	0.91	2.87	2.70	2.75	3.32
	A = working capital / total assets	0.04	0.01	(0.03)	(0.01)	0.11
	B = retained earnings / total assets		0.07	0.08	0.09	0.12
	C = earnings before interest and tax / total assets	0.10	0.07	0.05	0.06	0.10
	D = market value of equity / total liabilities		3.26	3.15	3.15	3.49
	E = sales / total assets	0.54	0.57	0.57	0.54	0.60

### Shree Cement:

Shree Cement is an Indian cement manufacturer, founded in Beawar, Rajasthan, in 1979. Now headquartered in Kolkata, it is one of the biggest cement makers in Northern India. It also produces and sells power under the name Shree Power (Captive Power Plant) and Shree Mega Power (Independent Power Plant). Shree Cement markets its products under three Shree Ultra Jung Rodhak Cement, Bangur Cement and Tuff Cemento. Shree cement registered 12588.39 Cr net sales for the year 2020-21 and net profit of 2311.93 Cr. Shree cement company is among the top 3 cement groups in India. Shree cement company is among top 50 listed companies in India in terms of market capitalisation as on 31<sup>st</sup> March,2021. Company operations are span across India and UAE

with 4 integrated plants in India, 1 in UAE and 8 grinding units. The company's manufacturing operations are spread over North and East India with presence across approximately six states. It has a cement production capacity of approximately 37.9 MTPA. The company has operations in Rajasthan, Uttarakhand, Bihar, Haryana, Chhattisgarh, and Uttar Pradesh. It produces synthetic gypsum to replace use of natural gypsum in cement manufacturing. The company plans to increase its capacity at 12% compound annual growth rate (CAGR) to 80 million tonnes by FY26. Shree cement was also among the industry pioneers for the use of alternate fuel resources in the production of cement.

### Ratio Analysis for Shree Cement:

Ratio	Formula	2021	2020	2019	2018	2017
Operating profit Margin	EBITDA / Net sales	0.35	0.33	0.25	0.28	0.30
Return on capital employed	EBIT / (Shareholders Funds + non-current liabilities)	0.17	0.11	0.08	0.15	0.15
Interest Coverage Ratio	EBIT / INTEREST	13.24	7.84	6.10	14.51	12.83
Debt Equity Ratio	LT Debt / equity	0.09	0.13	0.24	0.25	0.07
inventory turnover ratio	COGS/ inventories	5.84	5.76	5.71	4.90	5.42
Working capital turnover ratio	Sales / (current assets- current liabilities)	3.42	3.28	5.85	3.72	7.34
<b>Valuation Ratio</b>						
Yield ratio	Dividend per share/market value per share		0.01	0.00	0.00	0.01
Earnings per share	(Net profit-Preferred dividend) / No. of outstanding share	640.77	445.08	273.00	397.33	384.39
Dividend payout ratio	Total dividend / net profit		0.25	0.13	0.13	0.32
PE ratio	Market value/EPS	43.75	44.86	65.04	41.63	43.13
PEG ratio	PE/EPS growth	1.00	0.71	-2.10	13.88	

DuPont Analysis						
Return on Equity		0.15	0.12	0.10	0.16	0.17
Net Profit Margin		0.18	0.13	0.08	0.14	0.14
Asset turnover Ratio		0.60	0.62	0.77	0.67	0.85
Leverage (Gearing)	Assets/ Equity	1.38	1.49	1.58	1.70	1.45

Altman's Z score						
	Coefficient		2020	2019	2018	2017
working capital/total assets	1.2		0.19	0.13	0.18	0.12
Retained earnings/ total assets	1.4		0.23	0.25	0.22	0.24
earning before interest and tax / total asset	3.3		0.12	0.10	0.13	0.15
market value of equity / total liabilities	0.6		11.23	11.04	9.22	16.63
sales/ total assets	0.999		0.62	0.77	0.67	0.85
Z score			8.29	8.24	7.15	11.79
Zone			safe	safe	safe	safe

#### ACC Cement:

ACC Limited is India's foremost manufacturer of cement and is also the ready-mixed concrete supplier with a countrywide network of factories and sales offices. The organization was established in the year 1936. ACC is acknowledged as the pioneer and trendsetter in most of the cement and concrete technology in India. The organization is among the first companies in India to have included environmental protection as a corporate commitment. ACC has won regularly accolades for best practices in environment management at its plants and mines, and for demonstrating good corporate citizenship. The quality of its products and customer services makes ACC the most preferred brand in the Indian cement industry.

existing cement companies came together under one umbrella in a historic merger - the country's first notable merger at a time when the term mergers and acquisitions was not even heard of. The history of ACC spans a wide canvas beginning with the lonely struggle of its pioneer F. E. Dinshaw and couple of other Indian entrepreneurs who founded the Indian cement industry. Their efforts to face competition for survival in a small but aggressive market mingled with the stirring of a country's nationalist pride that touched all walks of life - including trade, commerce, and business. ACC Limited is part of the worldwide Holcim Group. It was formally established on August 1, 1936. Sadly, F E Dinshaw, the man recognized as the founder of ACC, died in January 1936 which was just months before his dream could be realized.

ACC was formed in the year 1936 where all the ten

Ratio Analysis for ACC Cement:

Ratio	formula	2020	2019	2018	2017	2016
operating profit Margin	EBITDA / Net sales	0.18	0.16	0.14	0.15	0.14
Return on capital employed	EBIT / (Shareholders Funds + non-current liabilities)	0.15	0.16	0.14	0.14	0.06
Interest Coverage Ratio	EBIT / INTEREST	32.40	21.00	16.20	12.40	12.00
Debt Equity Ratio	LT Debt / equity	0	0	0	0	0

Inventory Turnover Ratio	sales / Inventories	15.00	13.40	8.60	9.20	8.90
Working Capital Turnover Ratio	sales / (current assets- current liabilities)	3.81	5.60	7.67	16.62	-203.61
PE Ratio	market price of share /earning per share	21.56	24.11	20.32	36.92	41.77
PEG Ratio	PE/EPS GROWTH	5.22	-2.40	0.31	0.71	

DuPont Analysis						
Return on Equity		0.11	0.12	0.14	0.10	0.07
Net Profit Margin		0.11	0.09	0.10	0.07	0.05
Asset turnover Ratio		0.74	0.89	0.90	0.86	0.81
Leverage (Gearing)	Assets/ Equity	1.43	1.48	1.52	1.58	1.55
Altman Z-Score	zone					
	Altman Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E	4.38	5.00	5.10	5.40	4.20
	A = working capital / total assets	0.19	0.16	0.12	0.05	-
	B = retained earnings / total assets	0.49	0.45	0.42	0.38	0.37
	C = earnings before interest and tax / total assets	0.10	0.10	0.09	0.09	0.06
	D = market value of equity / total liabilities	4.00	5.07	5.38	6.10	4.42
	E = sales / total assets	0.74	0.90	0.90	0.87	0.81

### Ambuja Cement

Ambuja Cements Limited, formerly known as Gujarat Ambuja Cement Limited, is an Indian major cement producing company. The Group markets cement and clinker for both domestic and export markets. The company has entered into a strategic partnership with Holcim, the second-largest cement manufacturer in the world from 2006. Holcim had, in January, bought a 14.8 percent promoters' stake in the GACL for INR 21.4 billion. Currently Holcim holds 61.62% of the shares in Ambuja Cements. Currently, Ambuja Cement has a cement capacity of 29.65 million tonnes with five integrated cement manufacturing plants and eight cement grinding units across the country. The company has many firsts to its credit – a captive port with four terminals that has facilitated timely, cost-effective, cleaner shipments of bulk cement to its customers. To further add value to our customers, the company has launched innovative products like Ambuja Roof Special, Ambuja Cool

Walls, Ambuja Kawach and Ambuja Cement Compecem. The new products not only fulfil important customer needs but also help in significantly reducing carbon footprints. Ambuja Cement is the industry leader in responsible use of resources, both natural and man-made. The company has been certified over eight times water positive, a feat achieved through conservation efforts and increasing water efficiency in its plants. It is also plastic negative, by burning as much as over 75,000 tonnes of plastic waste in its kilns, equivalent to 2.5 times of total plastic used. The company also generated 7.1% of its power needs from renewable resources. Ambuja Knowledge Centres (AKCs), a unique initiative by the company, serves as a knowledge sharing platform for construction professionals that includes practical workshops on mix design and quality supervision. Currently, over 30 AKCs are functional across India.

Ratio Analysis of Ambuja Cement:

Ratio	Formula	2021	2020	2019	2018	2017
operating profit Margin	EBITDA / Net sales	0.27	0.22	0.20	0.21	0.24
Return on capital employed	EBIT / (Shareholders Funds+ Non-current liabilities)	0.12	0.09	0.08	0.08	0.07
Interest Coverage Ratio	EBIT / INTEREST	30.07	24.32	20.87	16.11	19.71

Debt Equity Ratio	LT Debt / equity	0.00	0.00	0.00	0.00	0.00
inventory turnover ratio	COGS/ inventories	11.69	9.98	7.41	8.81	8.09
Working capital turnover ratio	sales / (current assets- current liabilities)	100.89	4.86	5.61	8.11	18.61
<b>Valuation Ratio</b>						
Yield ratio	Dividend per share/market value per share	0.07	0.01	0.01	0.01	0.01
Earnings per share	(Net profit-Preferred dividend)/No. of outstanding s	9.02	7.7	7.49	6.29	4.89
Dividend payout ratio	Total dividend / net profit	2.05	0.19	0.27	0.25	0.57
PE ratio	Market value/EPS	27.47	26.05	28.77	42.05	42.35
PEG ratio	PE/EPS growth	1.60	-9.30	1.51	1.47	
<b>DuPont Analysis</b>						
Return on Equity		0.09	0.07	0.07	0.06	0.05
Net Profit Margin		0.16	0.13	0.13	0.11	0.10
Asset turnover Ratio		0.45	0.43	0.45	0.46	0.40
Leverage (Gearing)	Assets/ Equity	1.25	1.22	1.20	1.23	1.22
<b>Altman's Z score</b>						
	Coefficient	2021	2020	2019	2018	2017
working capital/total assets	1.2	0.00	0.09	0.08	0.06	0.02
Retained earnings/ total assets	1.4	0.06	0.13	0.09	0.05	0.03
earning before interest and tax / total assets	3.3	0.10	0.08	0.07	0.07	0.06
market value of equity / total liabilities	0.6	9.52	8.32	10.25	11.29	9.84
sales/ total assets	0.999	0.45	0.43	0.45	0.46	0.40
Z score		6.57	5.96	7.05	7.60	6.57
Zone		safe	safe	safe	safe	safe

## Birla Cement

Birla Corp. is a part of M.P.Birla group with a history of 6+ decades in cement industry. It has 4.2% of the market share in Indian cement industry. It is currently producing cement at seven locations through its ten manufacturing units with a combined capacity of nearly 15.5 million tons per annum. The Cement Division of 10 plants at seven locations are Satna & Maihar (Madhya Pradesh), Raebareli & Kundanganj (Uttar Pradesh), Chanderia (Rajasthan), Butibori (Maharashtra) and Durgapur (West Bengal). The production units have been renovated and modernized

to ensure that the cement is at par with the best. They manufacture varieties of cement like Ordinary Portland Cement (OPC), 43 & 53 grades, Portland Pozzolana Cement (PPC), fly ash based PPC, Low Alkali Portland Cement, Portland Slag Cement (PSC), Low Heat Cement and Sulphate Resistant Cement. The cement is marketed under the brand names of MP Birla Cement Perfect Plus, Samrat Advanced, Ultimate Ultra, Unique, Samrat, Ultimate, Chetak, Psc, Multicem & Concrecem, bringing the product under the common brand of MP Birla Cement. Ratio Analysis of Birla Cement:

Ratio	Formula	2021	2020	2019	2018	2017
Operating profit Margin	EBITDA / Net sales	0.16	0.16	0.11	0.11	0.13
Return on capital employed	EBIT / (Shareholders Funds + non-current liabilities)	0.08	0.09	0.05	0.04	0.07

Interest Coverage Ratio	EBIT / INTEREST	4.32	3.27	1.90	1.67	2.65
Debt Equity Ratio	LT Debt / equity	0.20	0.29	0.38	0.41	0.58
Inventory Turnover Ratio	COGS / inventory	6.48	6.98	6.83	6.66	7.08
Working Capital Turnover Ratio	Sales / (current assets- current liabilities)	6.50	7.48	6.44	5.01	4.72
<b>Valuation Ratio</b>						
Earnings per share ratio	Net profit - preferred dividend / (no. of outstanding shares)	55.65	41.02	17.89	14.95	27.79
Dividend Yield ratio	Dividend per share / market value per share	0.01	0.01	0.01	0.01	0.01
Dividend payout ratio	(total dividend / net profit ) * 100	0.18	0.18	0.42	0.43	0.23
P/E Ratio	Market Value/ EPS	15.38	13.75	29.26	53.51	25.41
PEG Ratio	PE/ EPS Growth	0.43	0.11	1.49	-1.16	
<b>DuPont Analysis</b>						
Return on Equity		0.09	0.07	0.03	0.03	0.07
Net Profit Margin		0.10	0.07	0.03	0.03	0.06
Asset turnover Ratio		0.56	0.60	0.57	0.50	0.60
Leverage (Gearing)	Assets/ Equity	1.65	1.81	1.85	1.86	2.02
<b>Altman Z-Score</b>						
Altman Z-Score	Zone	Grey	Distress	Distress	Distress	Grey
Z score	= 1.2A + 1.4B + 3.3C + 0.6D + 1.0E	2.11	1.72	1.48	1.77	1.95
	A = working capital / total assets	0.09	0.08	0.09	0.10	0.13
	B = Surplus and reserves / total assets	-	0.07	0.05	0.05	0.06
	C = earnings before interest and tax / total assets	0.05	0.05	0.02	0.01	0.03
	D = market value of equity / total liabilities	2.11	1.24	1.13	1.74	1.68
	E = sales / total assets	0.56	0.60	0.57	0.50	0.60

#### JK Cement:

A leading cement manufacturer in the country, JK Cement Ltd is an affiliate of the multi-disciplinary industrial conglomerate JK Organisation, which was founded by LalaKamlapat Singhania. For over four decades, JK Cement has partnered India's multi-sectoral infrastructure needs on the strength of its product excellence, customer orientation and technology leadership. The Company has over four decades of experience in cement manufacturing. Our operations commenced with commercial production at our first grey cement plant at Nimbahera, Rajasthan in May 1975. Subsequently, the company also set up 2 more units in Rajasthan at Mangrol and Gotan. In the year 2009, the company extended its footprint by setting up a green-field unit in Muddapur, Karnataka

giving it access to the markets of south-west India.

In the year 2014, the company further expanded its capacity in the north with brownfield expansion of 1.5 MTPA integrated unit at Mangrol and split grinding unit of 1.5 MTPA at Jhajjar. With the new grinding units in Aligarh and Balasinor further strengthening JK Cement's growing footprints, the Company now has an installed grey cement capacity of 7 MTPA, making it one of the top cement manufacturers in the country. JK White Cement, a division of JK Cement Ltd., enjoys a PAN India presence and the Company is the leading producer of Wall Putty in the Country. The Company is the second largest manufacturer of white cement in India, with an annual capacity of 600,000 tonnes. Having established a strong presence in India,

the Company made its first international foray with the setting up of a green-field dual process White Cement-cum-Grey Cement plant in the free trade zone at Fujairah, U.A.E to cater to the GCC and African markets. JK White Cement is sold across 43 countries around the globe. With the commissioning of this plant, JK Cement became one of largest producers of White Cement in the world, with a total white cement capacity wall putty capacity of 2.4 MTPA. JK Cement was the first company to install a captive power plant in the year 1987 at Bamania, Rajasthan and the first cement company to install a waste heat recovery power plant to take care of the need of green power. Today at its different locations, the Company has

captive power generation capacity of over 125.7 MWs which includes 23.2 MW of waste heat recovery power plants. We are steadily enhancing our capacity, diversifying our range of products, ushering in advanced technology and quality assurance, and above all, expanding our presence nationally and internationally. Our brands continue to enjoy the trust of millions of consumers for the high quality and innovation benchmarks that we have attained. Superior products and a strong Brand name, an extensive marketing and distribution network and the technical know-how represent JK Cement's abiding strengths.

#### Ratio Analysis of jk Cement:

Ratio	formula	Year				
		2021	2020	2019	2018	2017
profitability ratio						
operating profit Margin	EBITDA / Net sales	23.08	20.18	18.09	19.18	20.88
EBIT Margin	EBIT / Net Sales	19.21	16.21	14.14	15.08	16.13
Net Profit Margin	Net Profit / Net Sales	10%	7%	7%	8%	6%
Return Ratio						
Return on Equity (Net worth)	Net Profit / Shareholder Funds	16.15	12.80	11.23	15.92	11.26
Return on capital employed	EBIT / (Shareholders Funds+ LT Loans)	16.33	14.03	12.62	14.25	12.70
Coverage Ratio						
Interest Coverage Ratio	EBIT / INTEREST	5.45	3.93	3.13	2.79	2.19
stability ratio						
Debt Equity Ratio	LT Debt / equity	0.72	0.73	0.68	0.96	1.22
Debt Equity Ratio	Total Debt / Equity	0.99	0.99	0.91	1.24	1.51
Debt to Asset Ratio	debt / asset	0.59	0.60	0.58	0.64	0.68
liquidity ratio (solvency ratio)						
Current ratio	Current assets / Current liabilities	1.72	1.31	1.32	1.32	1.18
quick ratio	(cash + receivables)/ current liabilities	0.91	0.53	0.71	0.69	0.56
Turnover Ratio						
Total asset turnover ratio	Sales / total assets	0.69	0.69	0.71	0.76	0.63

Fixed Asset Turnover Ratio	sales / fixed assets	1.23	1.08	1.17	1.23	0.98
inventory turnover ratio	sales / inventory	9.22	8.61	8.82	8.54	7.44
Capital turnover ratio	sales / capital employed	1.70	1.72	1.70	2.12	1.98
Working capital turnover ratio	sales / (current assets- current liabilities)	5.06	10.88	10.72	11.93	17.84
<b>DuPont Analysis</b>						
Return on Equity		16.15	12.80	11.23	15.92	11.26
Net Profit Margin		10%	7%	7%	8%	6%
Asset turnover Ratio		0.69	0.69	0.71	0.76	0.63
Leverage (Gearing)	Assets/ Equity	3.50	2.51	2.40	2.79	3.12

#### Heidelberg Cement :

Heidelberg Cement India Limited formerly known as Mysore Cements Limited (MCL) is a subsidiary of Heidelberg Cement Group Germany. The company operates three plants located at Damoh (Madhya Pradesh) Jhansi (Uttar Pradesh) and Ammasandra (Karnataka) with an installed cement manufacturing capacity of 6.26 MTPA. Heidelberg Cement is one of the world's largest building materials companies.

The Company increased its capacity to 5.4 million tonnes p.a. through brown field expansion of its facilities in Central India in 2013. The new manufacturing capacity has enabled the Company to increase its market share in Central India i.e., Madhya Pradesh and Uttar Pradesh and in markets of Bihar, Haryana, and Uttarakhand.

With the help of committed sales efforts supported by quality products, the Company has carved a niche for

its brand "mycem" in new markets and has further improved its brand positioning in the existing ones. Madhya Pradesh and Uttar Pradesh and in markets of Bihar, Haryana, and Uttarakhand. With the help of committed sales efforts supported by quality products, the Company has carved a niche for its brand "mycem" in new markets and has further improved its brand positioning in the existing ones.

Mysore Cements Limited (MCL) a Heidelberg Cement Group Company was incorporated on May 13, 1958, as a public limited company by a Karnataka based industrialist in technical and financial collaboration with Kaisers of USA. Heidelberg Cement with its core products being cement ready mixed concrete aggregates and related activities is one of the leading producers of building materials worldwide.

#### Ratio Analysis of Heidelberg Cement :

RATIO ANALYSIS OF HEIDELBERG CEMENT						
Ratio	Formula	Year				
		FY 2020-21	FY 2019-20	FY 2018-19	FY 2017-18	FY 2016-17
<b>Profitability Ratio</b>						
Operating Profit Margin	EBITDA / Net sales	26%	27%	25%	21%	18%

<b>Coverage Ratio</b>						
Interest Coverage Ratio	EBIT / INTEREST	8.69	6.39	5.57	3.79	2.27
<b>Stability ratio</b>						
Debt Equity Ratio	LT Debt / equity	0.29	0.42	0.52	0.60	0.71
<b>Current Ratio</b>						
Current Ratio	Current assets / Current liabilities	1.09	1.10	0.97	0.77	0.62
<b>Quick Ratio</b>						
Quick Ratio	(Cash + Receivables)/ Current liabilities	0.51	0.53	0.40	0.27	0.04
<b>Turnover Ratio</b>						
Inventory Turnover Ratio	Sales/ inventories	13.02	14.80	12.60	14.66	12.09
Working Capital Turnover Ratio	sales / (current assets- current liabilities)	26.76	22.69	-81.41	-9.46	-5.90
<b>Valuation Ratio</b>						
Earning Per Share Ratio	(Net Profit-Preference Dividend)/ No. of Outstanding Shares	13.9	11.8	9.7	5.9	3.4
Dividend Per Share Ratio	Dividend/ No. of Outstanding Ratio	1.5	3	1	2.5	2
Dividend Payout Ratio	(Total Dividend/ Net Profit)*100	365.88%	0.00%	0.00%	0.00%	0.00%
Yield Ratio	(Dividend per share/ Market Value Per share)*100	0.67%	1.82%	0.59%	1.66%	1.70%
P/E Ratio	Market Price per share/ Earning per share	16.21	13.94	17.39	25.56	34.68
<b>Dupont Analysis</b>						
Return on Equity		0.21	0.20	0.19	0.13	0.08
Net Profit Margin		0.15	0.12	0.10	0.07	0.05
Asset turnover Ratio		0.74	0.77	0.78	0.73	0.70
Leverage (Gearing)	Assets/ Equity	1.90	2.12	2.30	2.42	2.49
<b>Altman's Z score</b>						
	Coefficient	2021	2020	2019	2018	2017
Working Capital/ Total Assets	1.2	0.03	0.03	-0.01	-0.08	-0.12
Retained Earnings/ Total Assets	1.4	0.45	0.39	0.35	0.32	0.31

EBIT / Total Assets	3.3	0.16	0.17	0.15	0.11	0.08
Market Value of Equity / Total Liabilities	0.6	0.00	0.00	0.00	0.00	0.00
Sales/ Total Assets	0.999	0.74	0.77	0.78	0.73	0.70
Z score		1.90	1.92	1.77	1.46	1.27
Zone		Safe	Safe	Safe	Grey	Grey

**Conclusion:**

This research conducted on cement companies in India. The ratio analysis is performed on all companies for the past 5 years. Descriptive statistics showed that the emerging markets have higher returns with the higher risk-return trade off. In contrast, developed markets have low annual returns with the low risk-return trade-off. Correlation analysis showed the significant positive correlation among the market and stock. The econometric analysis showed that the values of likelihood ratios are large and significant that suggested is the suitable choice to present the behavior of daily returns, which has effectively captured the time-based reliance of volatility. It is risky in trading in volatile market because any point of

time the stock can be drop down and can go up. Sometimes there will be difficult to decide when to enter and exit the share the ratio analysis gives the investors an idea of company's financial health in terms of liquidity.

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