

Detecting Earnings Management in India: A sector-wise study

Raghuveer Kaur (corresponding author), Research scholar
Indian Institute of Technology, Roorkee, Uttarakhand, India – 247001
Email: Raghuveer.kaur@gmail.com, rkaurdpt@iitr.ac.in

Kartikay Sharma, 5th Year IDD Process Engineering with MBA
Email: kartikeyrinwa@gmail.com
Indian Institute of Technology, Roorkee, Uttarakhand, India – 247001

Dr. Ashu Khanna, Asst Professor
Indian Institute of Technology, Roorkee, Uttarakhand, India – 247001
Email: drashu.khanna@gmail.com

Abstract

Earnings management has been present from times immemorial. The recent downfall of giant enterprises like Enron, Satyam and Worldcom has brought a lot of focus on the study and detection of earnings management. The present study is an attempt to study earnings management in one of the fastest emerging economy- India. The study makes an attempt to understand earnings management in different sectors of the economy on the basis of availability of data for the year 2012 and 2013. The paper first tests a hypothesis to check whether different sectors of India are engaged in earnings management or not. In the later section the paper aims to study the level of earnings management in 6 popular sectors of India: IT&BPO, Retail, Telecom, Biotech, Hotels and coffee. To measure earnings management two popular techniques of detecting earnings management has been employed: Modified Jones Model and Beneish M Score. A total of 332 companies were studied. Publicly available data from Capitaline database has been used. The paper also classifies the top and bottom five performers on the basis of sales turnover in each sector and identifies whether they manage their earnings or not. The study tries to fill the earnings management literature gap caused by the lack of an empirical, sector wise study of earnings management in India. .

Keywords: Earnings Management in India, Modified Jones Model, Beneish Mscore.

1. Introduction

Earnings management is a broad area of study; therefore there are various definition and approaches to explain it. While the positive approach considers it beneficial for the firm, there are various definitions which consider earnings management as a deterrent in the survival of the organization. In general, earnings management is linked with deliberate act of manipulation of financial data to achieve some definite objectives. Healey & Whalen (1998) say, “Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers”. Schipper (1989) defines earnings management as the purposeful intervention in the external financial reporting process with the intent of private gains.

The study of earnings management in India has grown rapidly, especially since India has become a popular destination for foreign investors. The study particularly holds up specific importance in light of the fact that SEBI has become more vigilant in identifying earnings manipulators. {In the wake of Companies Act 2013, which will repeal Company’s Act of 1956, introduction of IFRS and greater importance attached to clause 49 of listing agreement of corporate governance, it will be further interesting to see the state of earnings management in India.

Various studies have been undertaken to study the state of earning management in India. One of the studies taken by SEBI DRG (2013) shows average earnings management in non-financial firms in India to be 2.9 per cent of the total assets of these firms. The study also reveals that companies in construction and mining are involved in high levels of Earnings management.

There are various methods of detecting earnings management. For the purpose of our study we take two widely accepted methods: Modified Jones Model and Beneish M Score Model. Most studies have used accrual methods for measuring earnings management. To check whether the methods have anything in common in detecting earnings management, we have employed both the methods. Though the study did not make any attempt in understanding the difference between the two techniques, the number of companies detected as manipulator were more in number in almost all the sector by M score model. Another reason for employing Beneish M score more is the simplicity with which it detects earnings manipulation.

We have taken six sectors under consideration. The following table details the sectors under study and number of

companies taken from each sector.

Table1: Sectors and number of companies

IT & BPO	95
Retail	93
Hotels	58
Biotech	47
Telecom	28
Coffee	11
Total	332

The IT & BPO sector is one of the fastest growing sectors of India. The industry has been the largest employment generator. The industry contributed export revenue of USD 43.9 bn in the year 2013 with a market size of USD 76 bn in the year 2013. It has been expected to grow at a rate of 13-14% for the year 2013-2014. The sector has stunning prospects. It ranks 4th in India's total FDI share and it is one the popular investment venue with almost 37 per cent of overall private equity and venture investments in the country.

According to the IBEF report India is amongst the top 12 biotech destination in the world and it ranks second in Asia. The future has lot of potential for this sector with the expected revenue of US\$ 11.6 billion by 2017. The market size of biotech industry is USD 4.3 bn fetching export revenue of 2.2 billion USD in the year 2013. The industry has witnessed a growth rate of 15.3% in the year 2013.

India is the world's second-largest telecommunications market, with 898 million subscribers. According to the data furnished by the Department of Industrial Policy and Promotion (DIPP), the Foreign Direct Investment (FDI) in the sector accounted for US\$ 12,937.85 million during April 2000 to June 2013, an increase of 6 per cent to the total FDI inflows.

The retail industry accounts for around 14-15 per cent of the gross domestic product (GDP). The Indian retail industry is estimated to be worth around US\$ 500 billion. It is one of the top five retail markets in the world and offers immense scope of growth and opportunities. The Indian retail industry has expanded by 10.6 per cent between 2010 and 2012 and is expected to increase to US\$ 750-850 billion by 2015. The FDI inflows in single-brand retail trading during April 2000 to June 2013 stood at US\$ 96.96 million

Coffee industry in India is slowly picking up pace. In the year 2012-13, the coffee exports revenue amounted to US\$ 959.47 million. The coffee exports stood at 310,612 metric tons. Currently, the domestic consumption is increasing at a rate of 5-6 per cent annually since.

Indian hotel industry is an important component of tourism industry. The growth rate in 2010-11 was 7.7 per cent. The hotel and tourism industry's contribution to the Indian economy by way of foreign direct investments (FDI) inflows were pegged at US\$ 2.1 billion from April 2000 to March 2010, according to the Department of Industrial Policy and Promotion (DIPP).

2. Research objectives:

- 1) The study makes an attempt to see the levels of earnings management in the various sectors of the economy. Before taking sectors for studying earnings management, we first test a hypothesis whether sectors indulge in earnings management or not.
- 2) This study classifies best 5 and bottom 5 performer of each sector on the basis of sales turnover of the year 2013 and see whether they lie as earnings manipulator. We have taken six sectors under consideration on the basis of availability of data from public sources. A total of 332 companies were studied which are as follows:

3. Research Methodology

We need to know whether the sectors under study indulge into earnings management or not. For this we test a hypothesis. In order to identify earnings management, we test the hypothesis that absolute discretionary accruals are greater than 0

Our null hypothesis is:

H_0 : Absolute discretionary accruals are equal to zero

H_1 : Absolute discretionary accruals are not equal to zero

We create a test statistic t

$$t = \frac{x - \mu}{s_z} s_z = \frac{s}{\sqrt{n}}$$

Where

$\mu = 0$ (Hypothesized mean)

s = Sample Statistic

x = Calculated mean absolute discretionary accruals

If the test statistic comes out to be more than 2, this implies we can reject the null hypothesis with significance of at least 0.05. The p values reflect the significance with which we can reject the null hypothesis.

From calculations over the 332 companies we get the following results for discretionary accruals

Figure: 1 Descriptive Analysis

Sector	Companies	Mean	Std Dev	sigma/sqrt(n)	t statistic	p-value
Retail	93	0.3835426	1.447193	0.150066923	2.5558104	0.012233674
Telecom	28	0.0833065	0.06322711	0.011948801	6.9719566	1.70971E-07
Biotech	47	0.0831345	0.08984363	0.01310504	6.343702	8.82553E-08
Coffee	11	0.0482198	0.02252682	0.006792092	7.099402	3.29773E-05
Hotels	58	0.0697885	0.06600869	0.008667366	8.0518745	5.63629E-11
IT/BPO	95	0.1252534	0.1412756	0.014494571	8.6414011	1.41712E-13
Overall	332	0.1758632	0.7793038	0.042769852	4.1118502	4.95597E-05

Source: Results of Analysis

The above table shows us that for the given data we reject the null hypothesis that the absolute discretionary accruals are equal to zero. This shows that companies in this sector have engaged in earnings management.

The companies in various sectors are then tested for earnings management on the basis of Modified Jones Model and Beneish M Score. Jones model uses a linear regression across a cross section of the industries firms to model the total accruals. Discretionary accruals are defined as the difference between the actual total accruals and the total accruals predicted by the regression. The Jones models points to the existence of extreme discretionary accruals as proof of Earnings Management. The criteria for what is extreme, depends on the data set. For our own observations we have considered companies with discretionary accruals more than 2 standard deviations on either side of the mean to be outliers and considered such companies to have engaged in earnings management.

The regression used is

$$\frac{TA_t}{A_{t-1}} = \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} \right) + \alpha_3 \frac{PPE_t}{A_{t-1}}$$

$$\frac{DA_t}{A_{t-1}} = \frac{TA_t}{A_{t-1}} - \alpha_1 \left(\frac{1}{A_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} \right) + \alpha_3 \frac{PPE_t}{A_{t-1}}$$

$$TA_t = CFO_t - IBX_t$$

Where:

- TA_t : Total Accruals in time period t
- A_t : Total Assets in time period t
- ΔREV_t : Revenues at time t – Revenues at time t-1
- ΔREC_t : Receivables at time t – Receivables at time t-1
- PPE_t : Plant, property and equipment at time t
- DA_t : Discretionary Accruals in time period t
- CFO_t : Cash flow from operations
- IBX_t : Income before extraordinary items

The various data as given above, for a cross section of companies were used. The total accruals as per formula are given above. Total accruals calculated were regressed against the explanatory variables as given. The residual were calculated by: Real TA less predicted TA. These are the discretionary accruals. To make it more precise, we then calculated the mean and standard deviation of the accruals.

Application of M-Score model

The M-Score model uses various ratios to estimate the probability that the firm has engaged in earnings management. Calculation of the various ratios is given in the appendix. We use M score model with 5 ratios. The 5 ratio equation is used as in the original paper and only 5 ratios were found to be significant. Then we calculate the M score for each company. All those companies with M Score greater than -2.21 have a high chance of having engaged in EM.

Beneish M Score 5 Variable Model:

$$M = -6.065 + 0.823*DSRI + 0.906*GMI + 0.593*AQI + 0.717*SGI + 0.107*DEP$$

1. DSRI - Days' sales in receivable index
2. GMI - Gross margin index

3. AQI - Asset quality index
4. SGI - Sales growth index
5. DEPI - Depreciation index

4. Data collection and result analysis

The data for the study was obtained from Capital line database. The period for which the data was taken for the study was March 2011-2012 to 31 March 2012-2013.

The number of companies engaged in earnings management when detected by Beneish M score were more than those detected by the Modified Jones Model. Except in the hotel and coffee industry both of the models could identify companies which were common in their findings. According to Beneish M-score maximum earnings management were in the telecom sector where 32.14% of the companies in the sample of 28 were engaged in earnings management, closely followed by retail sector where 31.18% in a total of 93 companies were found to be engaged in earnings management. According to Modified Jones Model maximum earnings management were in the Biotech Sector where 8.51% of the companies were engaged in earnings management in a sample of 47 companies closely followed by telecom sector where 7.14% of the companies in the sample of 28 were engaged in earnings management. The study has a major finding where it classifies top 5 and bottom 5 companies on the basis of sales turnover. The IT sector, one of the fastest growing sector in India, had 3 of its top performers engaged in earnings management and even bottom two were also found to be engaged in earnings management. Biotech results were further surprising where all the 5 bottom performers were engaged in earnings management practices. One consistent result throughout the study was bottom performers in almost all the sectors were engaged in earnings management irrespective of the sector which leaves scope of further research. Following figure summarizes the entire study:

Figure: 2 Sector wise classification and result by both models.

Sector	Total companies	M score	Jones	Common	Proportion		Top 5		Bottom 5	
					M-Score	Jones	M	M	J	J
IT & BPO	95	26	5	2	27.37%	5.26%	3	2	2	1
RETAIL	93	29	5	2	31.18%	5.38%	N	N	N	N
HOTELS	58	9	2	0	15.52%	3.45%	N	N	N	1
BIOTECH	47	11	4	1	23.40%	8.51%	1	4	N	1
TELECOM	28	9	2	2	32.14%	7.14%	1	2	N	1
COFFEE	11	2	0	0	18.18%	0.00%	N	2	N	N

Source: Results of Analysis

Table 2: Top 5 and bottom 5 performer sector wise classification and engagement in earnings management

Sector	Top 5	Bottom 5	Identified top five	in	Identified bottom five	in
IT & BPO	iGate Global Solutions Ltd	Ace Software Exports Ltd	3		2	
	Firstsource Solutions Ltd	BNR Udyog Ltd				
	TCS e-Serve Ltd	United Interactive Ltd				
	Mindtree Ltd	S Kumars Online Ltd				
	KPIT Technologies Ltd	GI Engineering Solutions Ltd				
Biotechnology	Dr Reddys Laboratories Ltd	Pharmasia Ltd	1		5	
	Cipla Ltd	Trimurthi Drugs & Pharmaceuticals Ltd				
	Aurobindo Pharma Ltd	Source Natural Foods & Herbal Supplements Ltd				
	Mylan Laboratories Ltd	Hindustan Bio Sciences Ltd				
	Cadila Healthcare Ltd	Saamya Biotech (India) Ltd				
Telecom	Bharti Airtel Ltd	OnMobile Global Ltd	1		3	
	Bharat Sanchar Nigam Ltd	Quadrant Televentures Ltd				
	Idea Cellular Ltd	Coral Telecom Ltd				
	Reliance Communications Ltd	Nettlinx Ltd				
	Tata Teleservices Ltd	Reliance Jio Infocomm Ltd				
Retail	Trident Ltd	Karan Woo-Sin Ltd	0		0	
	Bombay Rayon Fashions Ltd	Golden Carpets Ltd				
	Welspun India Ltd	High Street Filatex Ltd				
	Shoppers Stop Ltd	Amit International Ltd				
	Raymond Ltd	Addi Industries Ltd				
Hotels	Indian Hotels Co Ltd	Best Eastern Hotels Ltd	0		1	
	EIH Ltd	Cindrella Hotels Ltd				
	Mahindra Holidays & Resorts India Ltd	Gujarat Hotels Ltd				
	Hotel Leela Venture Ltd	U G Hotels and Resorts Ltd				
	India Tourism Development Corporation Ltd	Sagar Tourist Resorts Ltd				
Coffee	Tata Global Beverages Ltd	Harrissons Malayalam Ltd	0		2	
	Bombay Burmah Trading Corporation Ltd	Asian Tea & Exports Ltd				
	Tata Coffee Ltd	B & A Ltd				
	McLeod Russel India Ltd	Rossell India Ltd				
	Jay Shree Tea & Industries Ltd	Joonktole Tea & Industries Ltd				

Source: Results of Analysis

5. Limitation and Importance of the study:

The study highlights various major findings. One important finding is all the sectors under study were engaged in earnings management. It was only coffee industry which was considered safe and that was only according to Modified Jones Model, but even this may not be precise due to the small data sample. This raises serious questions on the effectiveness of corporate governance measures. India is a growing avenue for foreign investment where IT & Biotech are rising sectors. The incidence of earnings management prominently in these sectors with giant names falling in the criteria of manipulator is a matter of serious concern. The reason why these giant companies are falling in the criteria of earning manipulator is a matter which can be further studied. One of the major limitation of the study is we do not find out the motives of earnings management. Although the classification on the basis of sales turnover gives to an extent some idea that the market pressure plays a dominant role. But the study does not attempt to find out the reason. The limited availability of data for the year 2012-2013 was one of the major reasons for not taking the study to such a broad level. The paper does not study the effectiveness of the models used. Since both of the models are popular, we have applied both of them. The applicability of these models to the Indian scenario is another question. Further, as already mentioned, we have also not made attempts to differentiate the detection capabilities of both of the models.

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Appendix

List of companies studied:

Sector	Name of the company	Retail	Garware-Wall Ropes Ltd
IT& BPO	3i Infotech Ltd		Trent Ltd
	7Seas Entertainment Ltd		Raymond Ltd
	8K Miles Software Services Ltd		Shri Dinesh Mills Ltd
	Accel Frontline Ltd		Digjam Ltd
	Accentia Technologies Ltd		Nahar Spinning Mills Ltd
	Ace Software Exports Ltd		Addi Industries Ltd
	AcroPetal Technologies Ltd		Ashnoor Textile Mills Ltd
	Allied Digital Services Ltd		Modern Terry Towels Ltd
	Allsec Technologies Ltd		Eskay KnIT (India) Ltd
	Aptus Industries Ltd		Wires & Fabriks (S.A) Ltd
	ASM Technologies Ltd		T Ltd
	Aurionpro Solutions Ltd		Uniworth Ltd

	Aurum Soft Systems Ltd		Welspun India Ltd
	Axis IT&T Ltd		Poddar Developer Ltd
	Blue Star Infotech Ltd		Vanasthali Textile Industries Ltd
	BNR Udyog Ltd		K-Lifestyle & Industries Ltd
	California Software Company Ltd		Perfect-Octave Media Projects Ltd
	Cambridge Technology Enterprises Ltd		Trident Ltd
	Cat Technologies Ltd		Karan Woo-Sin Ltd
	CG-VAK Software & Exports Ltd		Spenta International Ltd
	Choice Infra Ventures Ltd		Pioneer Embroideries Ltd
	Cigniti Technologies Ltd		Suditi Industries Ltd
	Commex Technology Ltd		S R Industries Ltd
	Cranes Software International Ltd		SPL Industries Ltd
	Cybertech Systems & Software Ltd		Sky Industries Ltd
	Datamatics Global Services Ltd		Garware Synthetics Ltd
	Dion Global Solutions Ltd		Zodiac Clothing Company Ltd
	eClerx Services Ltd		Arora Fibres Ltd
	e-Infochips Ltd		Seasons Furnishings Ltd
	Excel Infoways Ltd		Samtex Fashions Ltd
	FCS Software Solutions Ltd		Haria Exports Ltd
	Financial Technologies (India) Ltd		Southern Latex Ltd
	Firstsource Solutions Ltd		Bhandari Hosiery Exports Ltd
	Geometric Ltd		RLF Ltd
	GI Engineering Solutions Ltd		Kitex Garments Ltd
	Goldstone Technologies Ltd		Mangalam Ventures Ltd
	GSS Infotech Ltd		Spice Islands Apparels Ltd
	Hinduja Global Solutions Ltd		Acknit Industries Ltd
	iGate Global Solutions Ltd		KSL and Industries Ltd
	IKF Technologies Ltd		Virat Industries Ltd
	Indo-Pacific Software & Entertainment Ltd		Alps Industries Ltd
	Infinite Computer Solutions India Ltd		Vogue Textiles Ltd
	Info-Drive Software Ltd		Bharat Textiles & Proofing Industries Ltd
	Infotech Enterprises Ltd		Ceenik Exports (India) Ltd
	Infronics Systems Ltd		High Street Filatex Ltd
	Intellvisions Software Ltd		Prakash Woollen Mills Ltd
	Intrasoft Technologies Ltd		Jindal Worldwide Ltd
	Jindal Intellicom Ltd		LWS Knitwear Ltd
	KPIT Technologies Ltd		Riba Textiles Ltd
	Mastek Ltd		Golden Carpets Ltd
	Melstar Information Technologies Ltd		Vandana Knitwear Ltd
	Mindteck (India) Ltd		New India Retailing & Investment Ltd
	Mindtree Ltd		Cotton Corporation Of India Ltd
	Moschip Semiconductor Technology Ltd		Page Industries Ltd
	Net 4 India Ltd		Gokaldas Exports Ltd
	NIIT Technologies Ltd		Amit International Ltd
	Nucleus Software Exports Ltd		Morarjee Textiles Ltd
	Objectone Information Systems Ltd		GIVO Ltd
	Omnitech Infosolutions Ltd		National Handloom Development Corporation Ltd
	Ontrack Systems Ltd		M K Exim (India) Ltd
	Onward Technologies Ltd		Lloyd Rock Fibres Ltd
	Palred Technologies Ltd		Rupa & Company Ltd
	Panoramic Universal Ltd		Lovable Lingerie Ltd
	Persistent Systems Ltd		Shoppers Stop Ltd
	Prism Informatics Ltd		Rainbow Denim Ltd
	Prithvi Information Solutions Ltd		MW Unitexx Ltd

	R S Software (India) Ltd		Raymond Apparel Ltd
	Ramco Systems Ltd		Hanung Toys and Textiles Ltd
	S Kumars Online Ltd		Colorplus Fashions Ltd
	Saksoft Ltd		Bombay Rayon Fashions Ltd
	Sankhya Infotech Ltd		Provogue (India) Ltd
	Sasken Communication Technologies Ltd		Nandan Denim Ltd
	Saven Technologies Ltd		Store One Retail India Ltd
	Softsol India Ltd		Celebrity Fashions Ltd
	Sonata Software Ltd		Silver Spark Apparel Ltd
	Spanco Ltd		Kewal Kiran Clothing Ltd
	Spectacle Ventures Ltd		Richa Industries Ltd
	Subex Ltd		Pearl Global Industries Ltd
	Take Solutions Ltd		Khoobsurat Ltd
	Tanla Solutions Ltd		K P R Mill Ltd
	Tata Elxsi Ltd		Bang Overseas Ltd
	Tata Technologies Ltd		First Winner Industries Ltd
	TCS e-Serve International Ltd		Mandhana Industries Ltd
	TCS e-Serve Ltd		Arrow Textiles Ltd
	TechNvision Ventures Ltd		Arvind Lifestyle Brands Ltd
	Thinksoft Global Services Ltd		Cantabil Retail India Ltd
	Tricom India Ltd		Indian Terrain Fashions Ltd
	Trigyn Technologies Ltd		Sudar Industries Ltd
	United Interactive Ltd		Thomas Scott India Ltd
	Virinchi Technologies Ltd		Mahindra Retail Pvt Ltd
	Visesh Infotecnics Ltd		Anshus Clothing Ltd
	Visu International Ltd		Ashapura Intimates Fashion Ltd
	Ybrant Digital Ltd		
	Zen Technologies Ltd	Coffee	Bombay Burmah Trading Corporation Ltd
	Zensar Technologies Ltd		Tata Coffee Ltd
Hotels	India Tourism Development Corporation Ltd		Harrisons Malayalam Ltd
	Dhanada Corporation Ltd		Jay Shree Tea & Industries Ltd
	Blue Coast Hotels Ltd		Tata Global Beverages Ltd
	Fortune Park Hotels Ltd		B & A Ltd
	Srinivasa Resorts Ltd		Asian Tea & Exports Ltd
	Mahindra Holidays & Resorts India Ltd		CCL Products (India) Ltd
	Piem Hotels Ltd		Joonktolle Tea & Industries Ltd
	TajGVK Hotels & Resorts Ltd		Rossell India Ltd
	Royal Orchid Hotels Ltd		McLeod Russel India Ltd
	Mashobra Resort Ltd	Biteoch	Cipla Ltd
	Bihar Hotels Ltd		J B Chemicals & Pharamaceuticals Ltd
	Mumtaz Hotels Ltd		Piramal Enterprises Ltd
	Apollo Sindoori Hotels Ltd		Unichem Laboratories Ltd
	TGB Banquets & Hotels Ltd		Alembic Ltd
	Cama Hotels Ltd		Lyka Labs Ltd
	Asian Hotels (East) Ltd		TTK Healthcare Ltd
	Brigade Hospitality Services Ltd		Dr Reddys Laboratories Ltd
	Speciality Restaurants Ltd		Jagsonpal Pharmaceuticals Ltd
	Asian Hotels (West) Ltd		Gufic BioSciences Ltd
	Bell Tower Resorts Pvt Ltd		Phaarmasia Ltd
	Lemon Tree Hotels Ltd		Morepen Laboratories Ltd
	Au Bon Pain Cafe India Ltd		Kopran Ltd
			Torrent Pharmaceuticals Ltd
			Ipca Laboratories Ltd

		Sun Pharmaceuticals Industries Ltd
		Brooks Laboratories Ltd
		Alembic Pharmaceuticals Ltd
		Dr.Datsons Labs Ltd
		Trimurthi Drugs & Pharmaceuticals Ltd
		RPG Life Sciences Ltd
		Saamya Biotech (India) Ltd
		Titan Biotech Ltd
		Wintac Ltd
		Celestial Biolabs Ltd
		Surya Pharmaceutical Ltd
		Cadila Healthcare Ltd
		Glenmark Pharmaceuticals Ltd
		Mangalam Drugs and Organics Ltd
		Deys Medical Stores Manufacturing Ltd
		Intas Pharmaceuticals Ltd
		Ortin Laboratories Ltd
		Hindustan Bio Sciences Ltd
		FDC Ltd
		Biocon Ltd
		Mylan Laboratories Ltd
		Herbal Supplements Ltd
		Source Natural Foods & Pharmaceutical Works Ltd
		Indoco Remedies Ltd East India
		Panacea Biotec Ltd
		Wockhardt Ltd
		Ind-Swift Laboratories Ltd
		Aurobindo Pharma Ltd
		Natco Pharma Ltd Themis Medicare Ltd
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