ASSESSING THE STATE OF COMPETITION IN INDIAN MANUFACTURING SECTOR: PESTICIDES AND CEMENT INDUSTRIES

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International Scenario

Industry Structure:

- Pesticide: Pesticide industry is characterized by monopoly behavior particularly in the case of high tech seeds. The share of sales of the top international firms account for 45 %. (Chart 1)

- Cement: The cement industry operates in about 150 countries of the world. The industry is consolidating globally, but the ten largest international firms only account for about one-third of the worldwide market. (Chart 2)

Chart 1: World Structure of Pesticides (%) Sales in 1997

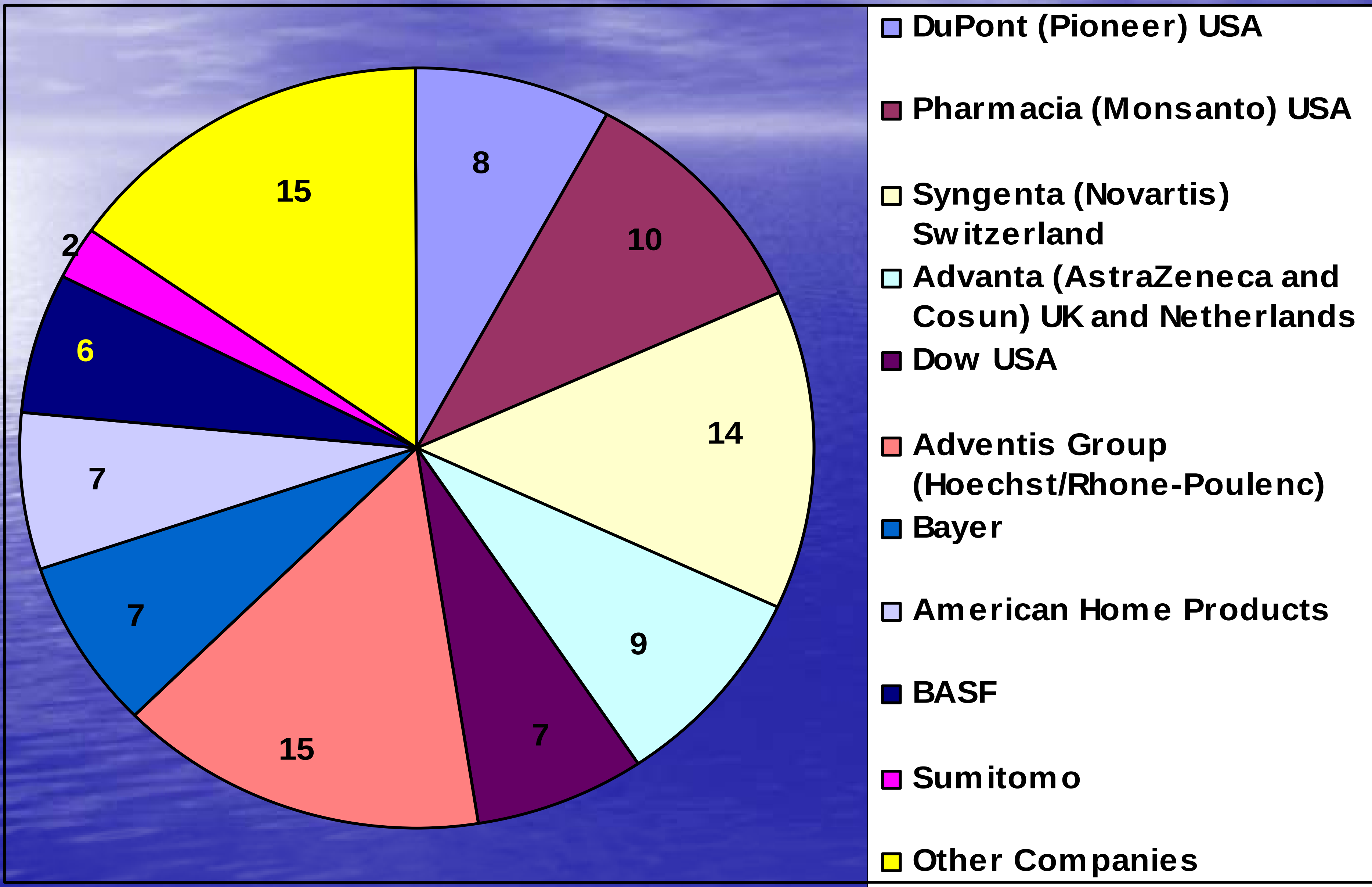
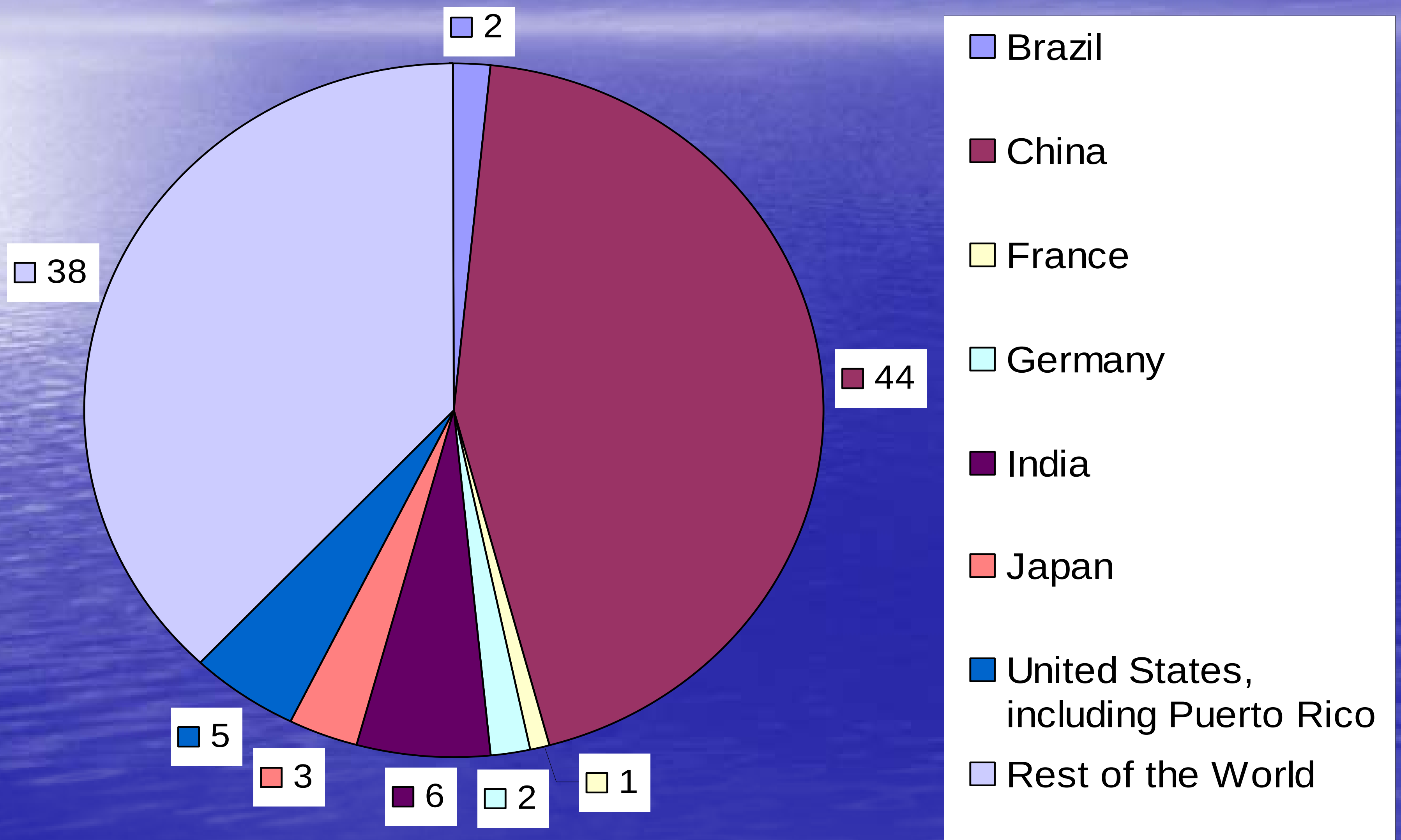


Chart 2:Share in the world total cement production (%) for the selected countries

(Source: USGS 2004)



Countries Selected

- On the bases of industry structure discussed above following countries have been selected for the study - Brazil, China, France, Germany, India, Japan, Switzerland & USA.
- The countries chosen above represent the major producers and traders of the sectors studied. They also represents both developed and developing countries.

Action taken against the anti competitive practices by the Regulatory Authorities of different countries

- Pesticide Industry: Three Cases
- Cement Industry: Three Cases

Anti Competitive Cases

Pesticide:

1. Manager's Liability in Cartel Case: Israel (2004) – The company was convicted for price fixing and market allocation under 'Managers Liability' provision of Antitrust Law.

2. Aventis Pharmaceuticals Inc., and Andrx Corporation: Anti-Trust Case (Mexico, 1998-03) – The company was fined $190 million for market allocation.

3. Republic of South Africa: Bayer-Aventis merger (1999) – The merger conditionally approved. Post merger the new company will become the second largest in the world.

Anti Competitive Cases

Cement:

1. German Cartel Office imposed fines totaling € 660 million in cartel proceeding against six companies and fines of € 41 million were imposed on six medium-sized companies who were found guilty of market allocation and quota agreements, evidence for which was seized during a nation-wide search of 30 cement companies in July, 2002 and during further searches of several small and medium-sized cement manufacturers in 2003.

2. The European Commission imposed 478.32 million Euro fine on four companies involved in plasterboard cartel (2002) after detailed investigation. The amount of fine has been determined on the bases of the market turnover. The cartel started in 1992 at a meeting in London in which it was decided to end the *price war* (in the previous years price of Plasterboard has fallen sharply due to fiercely competition) and after this meeting, a secret information-exchange system was set up to monitor market trends and avoid over-aggressive competition. Such conduct constitutes a very serious infringement of the competition rules laid down in Article 81 of the EC Treaty.

3. Taiwan’s Fair Trade Commission fined 6.3 million US $ on 21 cement companies involved in cement cartel after more than 1000 hours assembling evidence and formal hearings using a new article of law.

Summary of Anti-Competitive Behaviour

- Price fixing and market allocation are most common anti-competitive practices for which pesticide and cement companies were fined by the competition authorities based on detailed investigations.

National Scenario

Industry Structure:

- **Pesticide**:

- India is the biggest manufacturer of basic pesticide chemicals among the South Asian and African countries, next only to Japan. It is also the second largest producer of agrochemicals in Asia.

- Currently, 145 pesticides are registered in India, of which 85 technical grade pesticides are manufactured in India.

- More than 65 companies are producing pesticides in India.

Industry Structure:

- **Cement:**

- Today India is the second largest producer of cement in the world, next only to China, having around 55 cement companies with 128 large cement plants situated across the country.

- The top 15 companies accounts for almost 84% of the total cement sale, with top 3 companies having a share of more than 44 % of the total sale. [Chart 3]

- **Capacity and Production**

- 128 large cement plants --- installed capacity of 151.69 Mt pa.

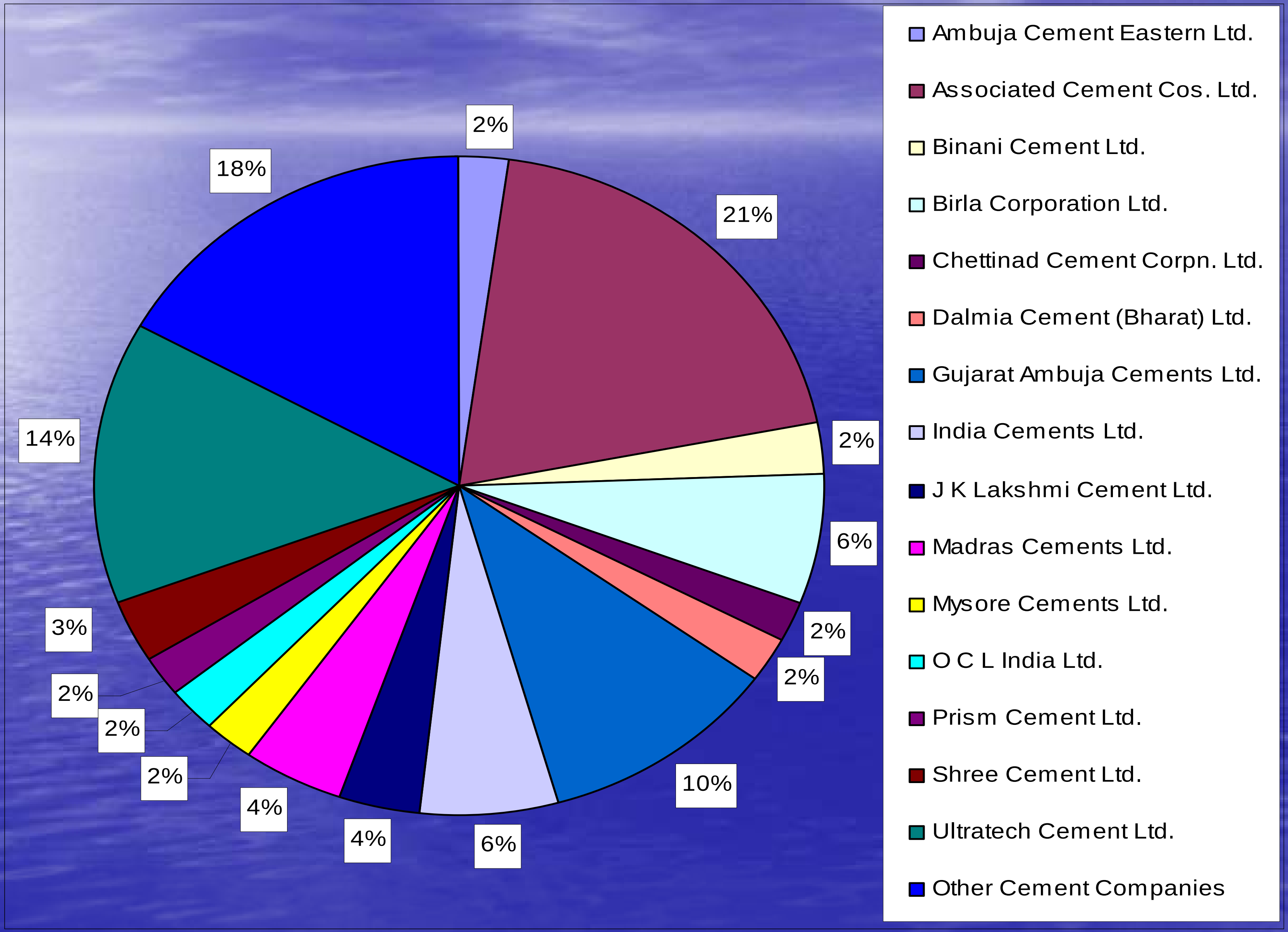
- More than 300 mini cement plants --- estimated capacity of 11.10 Mt pa.

- Total installed capacity of 163 Mt pa.

- Actual cement production in 2003-04 was 123.50 Mt, an increase of 6.15% on 2002-03 production of 116.35 Mt.

Chart 3:Share in the India's total cement sale for the major companies

(Source: CMIE/PROWEES database)



State of Competition in India

Methodology:

- Entry – Exit Behavior
- Simple Analysis of Mergers & Acquisitions
- The Missing Middle Problem
- Concentration Indices
- Regression Study of Profitability
- Cost – Audit Data for Select Units

We study these issues under 3 benchmark years i.e., 1989, 1995 and 2004. We define 1995 as the break year and see pre and post 1995 scenarios.

Entry – Exit Behavior

Definition:
Entry – Year of Incorporation
Exit – We have taken 2005 as the last year. If a firm does not produce for consecutive 2 years, then the firm is said to have exited from the industry in the first consecutive year.

Table 1: Entry Exit in Pesticide and Cement Industries

	Entry		Cumulative Entry	Exit	Cumulative Exit	Firms Operating
pesticides	till 1989	50	50	2	2	48
	1989-95	16	66	1	3	63
	1995-04	3	69	19	22	47
cement	till 1989	62	62	0	0	62
	1989-95	16	78	0	0	78
	1995-04	6	84	29	29	55

Table 3: Mergers and Acquisitions in Pesticide Industries (Source: CMIE/PROWEES database)

S. No.	Company Name	Year of Merger	Sale (Rs.Cr.)		Total Asset (Rs.Cr.)		Average cost		Profitability ratio (PAT/Sale)		Market Share (%)	
			Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger
1	Alchemie Organics Ltd. [Merged]	February, 2002	37.25 (Mar 01)	(Mar 03)	37.16		**1.03**		**-2.95**		**0.62**	
	Aarti Industries Ltd.		284.9	473.37	267.86	372.49	**0.94**	**0.94**	**5.56**	**6.11**	**na**	
2	Aryan Pesticides Ltd. [Merged]	June, 2004	54.86 (Mar 03)	(Mar 05)	53.06		**1.04**		**-3.65**		**0.88**	
	Deepak Nitrite Ltd.		279.88	367.12	236.09	300.67	**0.97**	**0.98**	**3.92**	**2.54**	**na**	
3	Aventis Cropscience Ltd. [Amalgamated]	January, 2001	24.09 (Mar 91)		10.97 (Mar 91)		0.95 (Mar 91)					
	Bayer Cropscience India Ltd.		257.1 (Mar 00)	467.72 (Mar 02)	198.23 (Mar 00)	305.08 (Mar 02)	0.94 (Mar 00)	0.97 (Mar 02)	**0.7**	**1.78**	**4.06**	**7.21**
4	Bayer Cropscience India Ltd. [Merged]	April, 2003	467.72 (Mar 02)	(Mar 04)	305.08		**0.97**		**3.32**		**7.21**	
	Bayer Cropscience Ltd.		707.84	976.84	382.07	719.32	**0.99**	**0.96**	**1.78**	**4.9**	**10.91**	**13.39**

Table 3: Mergers and Acquisitions in Pesticide Industries cont…

S. No.	Company Name	Year of Merger	Sale (Rs.Cr.)		Total Asset (Rs.Cr.)		Average cost		Profitability ratio (PAT/Sale)		Market Share (%)	
			Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger
5	Cyanamid Agro Ltd. [Merged]	July, 2001	98.15 (Mar 00)	(Mar 02)	146.94		**1.05**		**-4.22**		**1.55**	
	B A S F India Ltd.		380.19	584.86	353.67	437.99	**0.96**	**0.96**	**5.41**	**4.78**	**na**	
6	Paushak Ltd. [Merged]	September, 2005	16.31 (Mar 04)	N.A.	17.96		**0.98**		**4.54**		**0.22**	
	Paushak Ltd. (Darshak Ltd)		6.14		22.4		**1.28**		**-5.7**		**na**	
7	Raychem Ltd. [Merged]	April, 2002	182.85 (Mar 01)	(Mar 03)	153.54		**1.01**		**-0.74**	**-24.52**	**3.04**	
	Rallis India Ltd.		1105.3	1006.9	804.1	845.39	**1.03**	**1.18**	**-2.5**	**-8.43**	**18.38**	**16.11**
8	Rallis Industrial Chemicals Ltd. [Merged]		19.74 (Mar 99)	(Mar 01)	20.64		**0.96**		**4.15**		**0.37**	
	Rallis India Ltd.		1266.2	1105.3	742.07	804.1	**0.99**	**1.03**	**2.21**	**-2.5**	**23.63**	**18.38**
9	Saris India Ltd. [Merged]	April, 2002	31.98 (Mar 01)	(Mar 03)	34.06		**1.23**		**-21.98**	**-973.1**	**0.53**	
	Rallis India Ltd.		1105.3	910	804.1	764.14	**1.03**	**1.1**	**-2.5**	**-8.43**	**18.38**	**16.11**

Table 4: Mergers and Acquisitions in Cement Industries (Source: CMIE/PROWEES database)

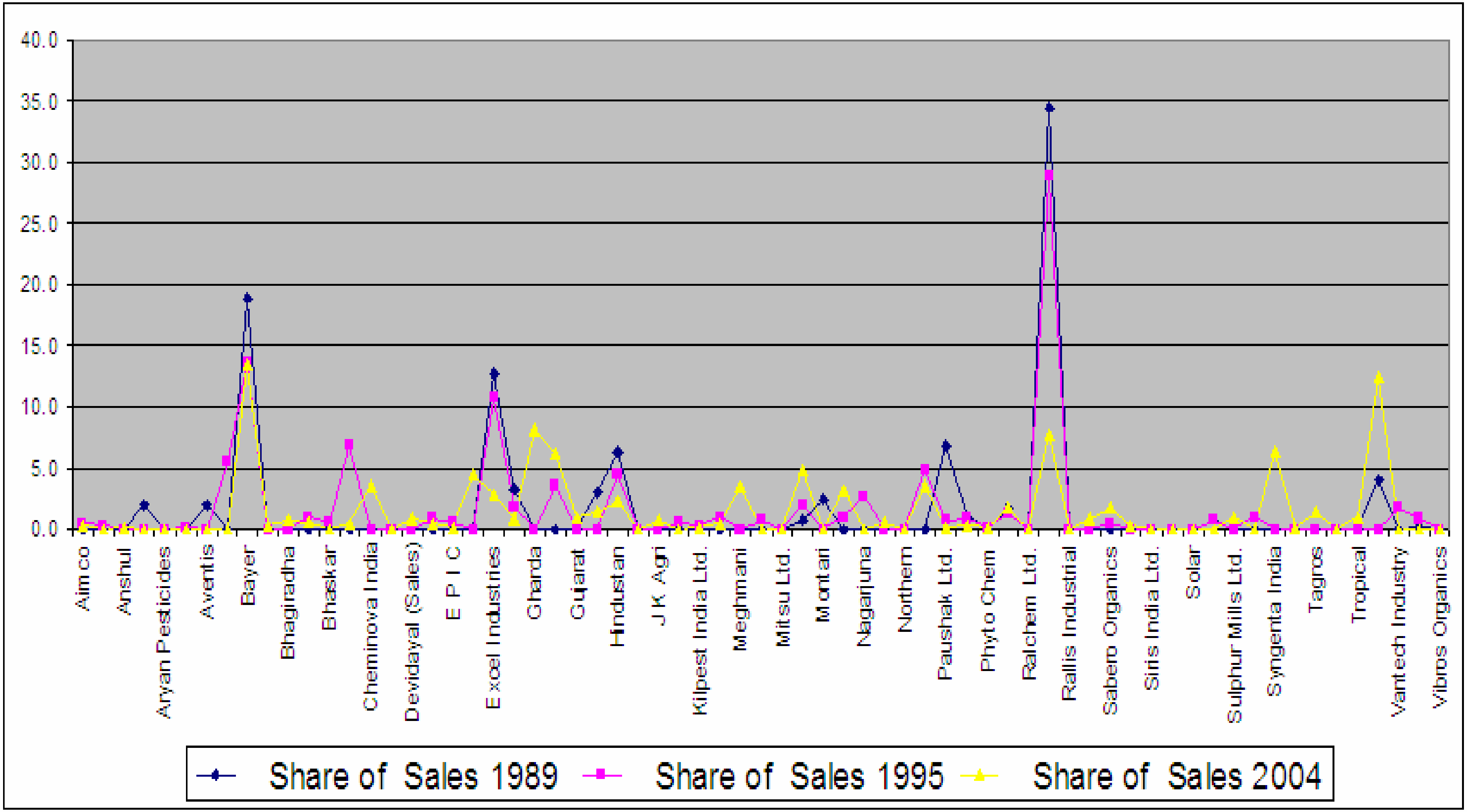
S. No.	Company Name	Year of Merger	Sale (Rs.Cr.)		Total Asset (Rs.Cr.)		Average total cost		Profitability ratio (PAT/Sale)		Market Share (%)	
			Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger	Before merger	After merger
1	Ambuja Cement Rajasthan Ltd. [Merged]	June, 2004	284.67 (Mar 03)	(Mar 05)	320.64		**1.13**		**-11.62**		**1.9**	
	Gujarat Ambuja Cements Ltd.		1584.1	2306.7	1486.6	4057	**0.94**	**0.91**	**11.68**	**12.37**	**10.55**	**10.06**
2	Damodhar Cement & Slag Ltd. [Merged]	April, 2005	125.46 (Mar 04)	(Mar 06)	51.28		**0.97**		**4.03**		**0.63**	
	A C C Ltd.		3901.6	3723.2	3917.9	4934	**0.98**	**0.94**	**4.91**	**7.09**	**19.51**	**15.26**
3	Dharani Cements Ltd. [Merged]	November, 2000	16.64 (Mar 99)	(Mar 01)	33.63		**1.14**		-14		**0.14**	
	Grasim Industries		4346.5	5203.9	5711.6	5912	**0.98**	**0.94**	3.4	7.02	**na**	

Comments on M&As

- ➢ Only M&As under Cement come under Sec. 5 (Combinations) of Comp. Act. – ACC and Grasim
- ➢ Very similar AC before merger
- ➢ However, for Grasim loss making co. acquired.
- ➢ No Pesticides M&A comes under merger provisions.
- ➢ However, merged firms have very similar AC before merger.

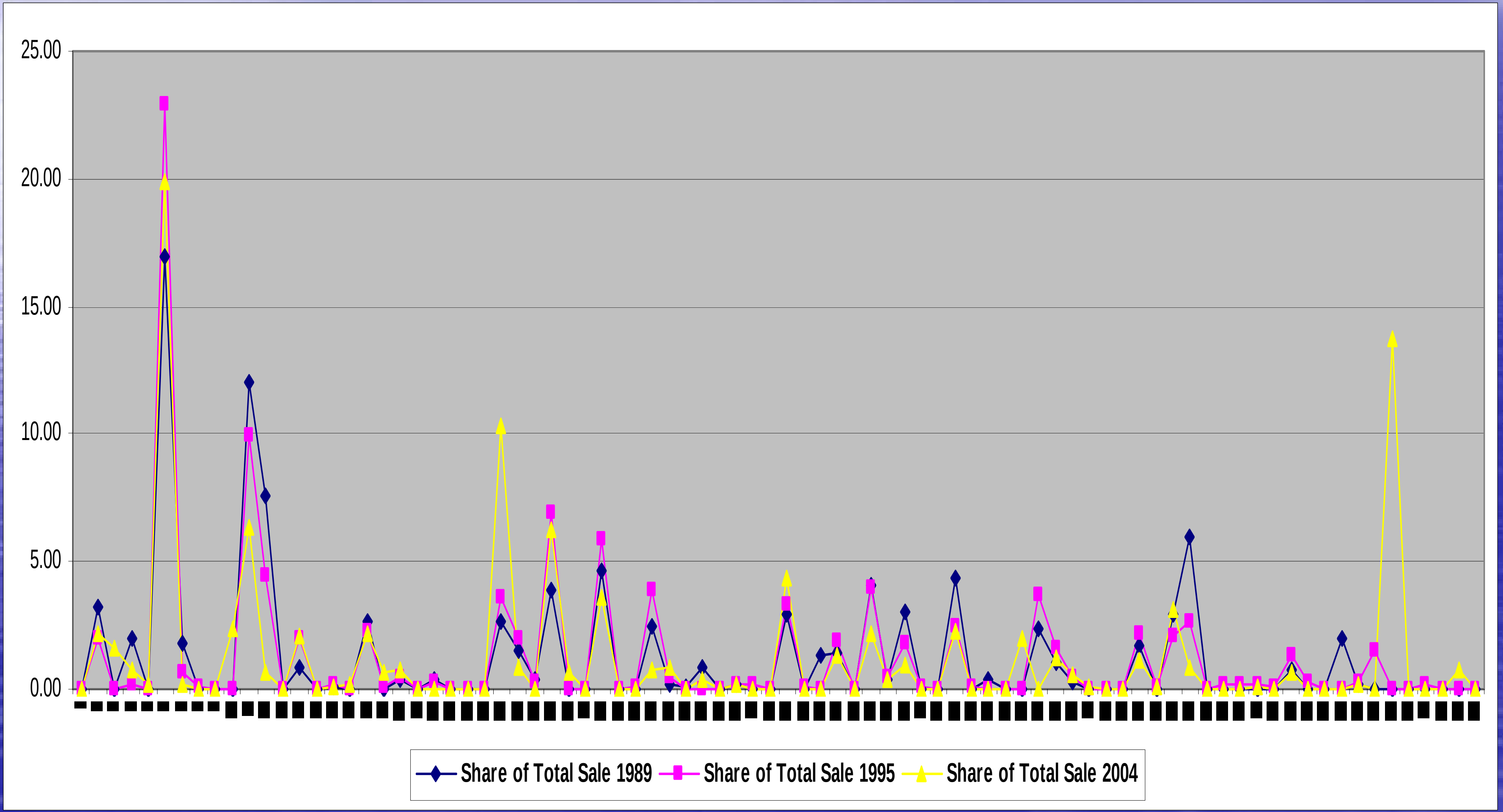
The Missing Middle Problem

Pesticide: Chart 4



The Missing Middle Problem

Cement: Chart 5



Comment on Missing Middle

- NO clear trend in case of Pesticides.
- Peaks disappearing in 2004 as the old dominant companies of 1989 give way to new peaks.
- In cement, all peaks increasing in 'nineties. Emergence of "missing middle" especially after 1995. Reflects M&A activity of Gujarat Ambujas, ACC and Ultra Tech.

Concentration Indices

Table 5: Concentration Ratio				
	Pesticides		Cement	
	HHI	CR4	HHI	CR4
1989	0.18	0.18	0.07	0.05
1995	0.13	0.12	0.08	0.07
2004	0.07	0.05	0.09	0.07

Comment of Concentration

- **Decreasing concentration in Pesticides but increasing in Cement.**

Regression Study of Profitability

Table 6: Pesticides				
Dependant Variable - PAT				
	Data for 15 firms		Data for 28 firms	
	1	2	3	4
OPEN	-0.76*	-0.41**	-0.23	0.96*
WAGE	-2.3*	-2.52*	0.69	-0.91
CON	-1.12	-2.8*	-2.4	-3.34
DUM 1	0.79*		0.38	
DUM 2		1.04*		0.32
Wald	36	45.2	3.6	10.6
R^2 (Between)	0.99	1	0.05	0.99
R^2 (Within)	0.13	0.38	0.22	0.002
Overall R^2	0.58	0.73	0.0002	0.49
n	150	150	140	140
Type	re	re	re	re
* 1% level				
** 5% level				

Regression Study of Profitability

Table 7: Cement

Dependant Variable - PAT

	Data for 21 firms		Data for 36 firms	
	1	2	3	4
OPEN	4.15*	0.72	4.07*	-0.14
WAGE	11.7*	-25.8*	-10.8	-35.9**
CON	-5.5	-11.5	-15.7	3.21
DUM 1	-0.06		1.92	
DUM 2		2.9**		1.31
Wald	25	30.8	12.6	10.4
R^2 (Between)	0.31	1	0.34	1
R^2 (Within)	0.37	0.18	0.38	0.09
Overall R^2	0.23	0.66	0.31	0.63
n	210	210	180	180
Type	re	re	re	re

* 1% level

** 5% level

Comments on Regression Analysis

- Trade as disciplining factor seems to be working in Pesticides but not in Cement.
- Changing concentration seems to have little impact on competition: regression shows opposite conclusion.
- Limitation of balanced panel data.

Cost – Audit Data for Select Units

- We have obtained extensive plant level data on rate per unit (price) and sales margin for both pesticides and cement industries from Cost – Audit branch, Ministry of Company Affairs.

Table 8: Pesticides—Average Margin per Unit Cost

Company Code	State (Plant Location)	2004-05	2003-04	2002-03
1	Gujarat	0.11	0.12	0.12
2	Gujarat	0.01	-0.01	0.03
3	Gujarat		0.42	0.09
4	Gujarat	0.18	0.08	0.14
5	Gujarat	-0.04	-0.03	-0.02
6	Maharashtra	0.22	0.13	0.18
7	Maharashtra	0.02	-0.04	-0.02
8	Maharashtra	0.04	-0.07	0.03
9	Maharashtra	0.01	-0.01	-0.02
10	Maharashtra	0.18	0.11	0.07
11	Punjab	0.07	0.12	0.1
12	Tamil Nadu	0.22	0.31	-0.23

Source: Calculated from MCA data

Table 9: Cement —Average Margin per Unit Cost

S. No.	Company Code	State (Plant Location)	Sales Realisation	Average Margin per unit cost		
			2005-06	2005-06	2004-05	2003-04
	Ordinary Portland Cement					
1	6	Andhra Pradesh	1589	-0.02	-0.03	-0.05
2	7	Andhra Pradesh	1827	-0.09	-0.14	-0.2
3	11	Andhra Pradesh	1625	-0.01	-0.06	-0.17
4	13	Andhra Pradesh	1793	0.04	-0.05	
5	14	Andhra Pradesh	1916	0.05	-0.08	-0.1
6	3	Chattisgarh	2199	0.14	0.2	0.09
7	6	Karnataka	2060	0.14	0.14	0.08
8	9	Karnataka	2185		-0.3	
9	7	Karnataka	2073	-0.21	-0.37	-0.38
10	3	Madhya Pradesh	2073	0.13	0.06	0.01
11	2	Madhya Pradesh			0	-0.16
12	2	Madhya Pradesh			-0.17	-0.19
13	9	Madhya Pradesh	1790	-0.12		
14	3	Maharashtra	2126	0.1	-0.07	0.02
15	2	Maharashtra	1698	-0.01	-0.1	-0.13
16	11	Maharashtra	2193	0.18	0.11	-0.01
17	10	Orissa	2026	0.12	0.11	0.17
18	3	Punjab	2646	0.36	0.27	0.24
19	1	Rajasthan	2077	0.24	0.17	0.19
20	3	Rajasthan	1882	0.31	0.12	0.11

21	4	Rajasthan	2567	0.08	0.03	
22	8	Rajasthan	2144	-0.01	-0.05	-0.03
23	12	Rajasthan	2713	-0.01		
24	3	Tamil Nadu	2324	0.36	-0.01	0.14
25	3	Tamil Nadu	1801	0.31	0.04	0.22
26	7	Tamil Nadu	1911	0.1	0.02	0.1
27	7	Tamil Nadu	2208	0.14	0.08	-0.06
28	9	Uttar Pradesh			-0.24	
	White Cement					
1	5	Rajasthan	5431	0.37		
2	3	Rajasthan	4521	-0.14	-0.22	-0.22
	Pozzalona Portland Cement					
1	6	Andhra Pradesh	1643	0.11	0.05	0.02
2	7	Andhra Pradesh	1827	0.04	0.01	-0.07
3	13	Andhra Pradesh	1836	0.17	0.04	
4	14	Andhra Pradesh	1939	0.15	-0.05	-0.07
5	6	Karnataka	2046	0.18	0.14	0.07
6	7	Karnataka	2185	-0.14	-0.29	-0.31
7	2	Madhya Pradesh	2248	0	-0.01	-0.1
8	2	Madhya Pradesh	1811	0.02	0.03	-0.14
9	9	Madhya Pradesh	1661	1.01	-0.07	
10	3	Maharashtra	2065	0.19	-0.18	0.04
11	2	Maharashtra	1792	0.07	-0.02	-0.06
12	1	Rajasthan	2098	0.24	0.15	0.17
13	8	Rajasthan	2228	0.13	0.04	0.04
14	12	Rajasthan	2578	0.0002		
15	3	Tamil Nadu	2276	0.36	0.24	0.26
16	7	Tamil Nadu	1912	0.22	0.14	
17	7	Tamil Nadu	2208	0.29	0.26	-0.05
18	9	Uttar Pradesh	1923	0.01	-0.03	

Source: Calculated from MCA data

Comments on MCA data:

- It is not possible to use the pesticide industry data in the current form to get product-wise information. However, a look at the data on the profit margins per unit cost indicates that the variation in any region and between regions is far too large and does not indicate a market functioning in a competitive way. However, the level of aggregation does not allow any firm conclusion.

- In cement industry, one finds some evidence of both price fixation and market sharing activities which can be construed to be anticompetitive as per the Competition Act. Further investigation seems warranted.

Conclusion

- The main problem is defining measures to measure “abuse” of dominance or ‘appreciable adverse effect on competition’. Some exploratory suggestions given here.
- Seems to be some evidence of cartel like behaviour in Cement but it also possible to infer “non-competitive” behaviour in Pesticides.