IMPACT OF OPERATING LEVERAGE ON CAPITAL STRUCTURE PRACTICES: AN EMPIRICAL EVIDENCE

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This research paper examines the capital structure practices of developing countries through a case study of Indian corporate sector by classifying the capital structure of sample companies by operating leverage. The present study, although, an exploratory effort is limited to 298 out of top 500 private sector manufacturing firms selected for ten years on the basis of sales turnover for the year 2004-2005, published in Business Today. The study reveals that with the rise in operating leverage ranges, the number of companies starts shifting to 0-100 percent broader capital structure range by 83.33 percent up to 4-5 operating leverage range thereafter declines and reaches to 22.22 percent in more than 10 operating leverage range during 1996-97. However, rising trend has been observed in this broader capital structure range during 2005-06 under study. It is observed that around 93 percent and 7 percent companies are lying in 0-200 percent and more than 200 percent capital structure ranges during 1996-97 while around 89 percent and 11 percent companies are also lying in same capital structure ranges for the variable under study during 2005-06, respectively under study. In brief, it has been observed that with the rise in operating leverage ranges, the number of companies is not moving from higher capital structure ranges towards lower capital structure ranges under the four broader categories of capital structure ranges during the period under study. Overall, rise in operating leverage results in no shrinkage of number of capital structure ranges during the period under study. So, it emerges that at all operating leverage ranges, there exists almost same capital structure ranges, which represents no relationship between capital structure and operating leverage during the study period.

Key Words: Capital Structure, Operating Leverage, Shrinkage.

<u>Section I – Introduction</u>

There has been an inconclusive debate on the issue of the relationship between financing decision and the valuation of firm. Both theoretical and empirical researches yield contradictory results. Theories suggest that firms select capital structures depending on characteristics that determine various costs and benefits associated with debt equity financing. The empirical work in this area has lagged behind the theoretical work, perhaps because the relevant firm attributes are expressed in terms of fairly abstract concepts that are not directly observable. Capital structure decisions are significant managerial decisions which affect the shareholders

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consequently the value of a firm also. The company will have to plan its capital structure initially at the time of its promotion. Subsequently, whenever funds have to be raised to finance investments, a capital structure decision is involved. Thus, the question of the optimal capital structure of the business firm has attracted considerable attention by the economists in recent years. The primary aim of corporate management is to maximize shareholders' value and the value of a firm in a legal and ethical manner. So, a financial manager would consider a number of factors to set an optimal capital structure for a firm giving considerable weight to earning rate, collateral value of assets, age, cash flow coverage ratio, non debt tax shield, size (net sales), dividend payout ratio, debt service ratio, cost of borrowing, corporate tax rate, current ratio, growth rate, operating leverage and uniqueness (selling cost/sales) etc.

However, the choice between debt and equity from the point of view of shareholders and lenders is an important one and it will be useful to list the special advantages of either form of capital relative to the other.

- The greater use of debt, where the interest rate is lower than the average rate of return on the investment, increases the net return to equity shareholders.
- Higher debt does not impair the control of shareholders over the enlarged operations of the company/firm.
- Debt is cheaper source of finance, cost of debt is lower than cost of preference share capital as well as equity share capital because debt holders' first claim on the firm's assets at time of its liquidation, payment of interest before any dividend is paid to preference and equity shareholders, and interest is an item chargeable to profits of a company/firm.
- Deductibility of the interest on debt before computing profits charge to tax, as against payment of dividends out of profits after tax, implies an effective lowering of the tax rate on a company/firm more or less in proportion to the extent to which debt is substituted for equity in the company's financing pattern.

But it is not desirable to resort to excessive debt financing because the excessive proportion of debt in the capital structure increases the financial risks of the firm. This is because debt being a contractual obligation. The same along with interest must be paid out ultimately. Any failure in doing so shall result in technical insolvency if not a real one. Further, the use of debt capital will not automatically improve the overall return of the firm. It will increase the return if the firm's rate of return on assets is higher than the cost of debt capital. Therefore, in order to increase the advantage of debt capital and at the same time to save the firm from the financial and other risks, it is desirable to have a reasonable debt equity mix in the total capital structure. Thus, the decision regarding debt equity mix in the capital structure of a firm is of critical one and has to be approached with a great care. The paper is organized into five sections. Section I provides the introduction about the capital structure. Section II deals with selected variables, their definition and expected relationship with capital structure. Section III presents reports and analyses the empirical results of the study. Section IV summarizes and concludes the study.

Section II--Variable, Definition and Expected Relationship with Capital Structure: The following

table exhibits the impact of operating leverage on capital structure practices in the Indian Corporate Sector, its definition and expected relationship with capital structure.

Sr. No.	Variable	Definition	Expected Relationship
1.	Operating Leverage	$\frac{(EBIT t - EBIT t-1) / (EBIT t-1)}{(SALES t - SALES t-1) / (SALES t-1)}$	Negative

Section III – Empirical Results

It is evident from Table 3.1 & 3.2 that around three fifth of the companies are in three ranges of operating leverage of less than 0, .50-1 and 1-1.50 during 1996-97 (58.28 percent) and in the four ranges of operating leverage of less than 0, .50-1, 1-1.50 and 1.50-2 during 2005-06 (58.40) only. Operating leverage wise, the highest number of companies is in less than 0 (negative) operating leverage ranges during 1996-97 (27.07 percent) and also in the same range during 2005-06 (21.68 percent), respectively. The lowest number of companies is in 5-6 operating leverage range during 1996-97 (1.50 percent) and in 4-5 operating leverage range during 2005-06 (2.45 percent), respectively. Under less than 0 (negative) operating leverage ranges, where highest number of companies is lying, it has been observed that 70.86 percent and 53.23 percent companies are in only ten and six out of thirty one capital structure ranges during 1996-97 and 2005-06, respectively. It has been observed that, in 1996-97, when the operating leverage is considered in relation to capital structure ranges, initially the spread of number of companies starts expanding over the entire capital structure ranges up to .50-1 ranges of operating leverage. Thereafter, this spread contracts from higher capital structure ranges to lower capital structure ranges with the rise in operating leverage of companies with a few exceptions here and there. But, in 2005-06, the spread of number of companies is expanding over the entire capital structure ranges with a few exceptions here and there. Capital structure range wise, it has been observed that the highest number of companies (9.02 percent) is in 110-120 percent capital structure range, followed by 6.39 percent companies in 90-100 percent and 100-110 percent capital structure ranges, each, while no company is lying in 230-240 percent, 240-250 percent, 260-270 percent, 270-280 percent, 280-290 percent and 290-300 percent capital structure ranges during 1996-97. However, during 2005-06, the highest number of companies (19.58 percent) is in 0-10 percent capital structure range, followed by 6.29 percent companies in 110-120 percent capital structure range. No company is lying in 270-280 percent and 280-290 percent capital structure ranges in this year also. It has been observed that largest number of companies is in 0-100 percent capital structure range during 1996-97 (minimum = 22.22 percent, maximum = 83.33 percent, industry average = 53.38 percent) and 2005-06 (minimum = 35.71 percent, maximum = 81.82 percent, industry average = 63.29 percent). With the rise in operating leverage ranges, the number of companies starts shifting to this broader capital structure range by 83.33 percent up to 4-5 operating leverage range thereafter declines 22.22 10 and reaches to percent in more than

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Capital				Ope	rating	Levera	age (Tir	nes)					
St. (%)	<0	050	.50-1	1-1.50	1.50-2	2-2.50	2.50-3	3-4	4-5	5-6	6-10	>10	Avg.
00-10	4.17	4.55	4.65	5	4.35	0	20	0	0	0	0	0	4.14
10-20	4.17	0	11.63	2.5	0	7.69	0	16.67	0	0	0	0	4.89
20-30	6.94	4.55	2.33	7.5	13.04	15.38	0	5.56	0	0	16.67	0	6.39
30-40	5.56	9.09	4.65	5	4.35	7.69	0	5.56	0	0	0	11.11	5.26
40-50	5.56	0	4.65	10	8.70	7.69	0	0	0	0	0	0	4.89
50-60	1.39	4.55	4.65	2.5	8.70	23.08	0	16.67	0	25	0	11.11	5.64
60-70	4.17	9.09	2.33	5	4.35	0	0	5.56	16.67	0	0	0	4.14
70-80	9.72	4.55	6.98	0	4.35	0	0	5.56	0	25	16.67	0	5.64
80-90	5.56	9.09	9.30	5	8.70	0	10	0	16.67	0	0	0	6.02
90-100	5.56	4.55	2.33	12.5	0	0	20	5.56	50	0	0	0	6.39
100-110	1.39	13.64	9.30	5	4.35	0	10	5.56	16.67	25	16.67	11.11	6.39
110-120	15.28	13.64	4.65	5	4.35	7.69	20	0	0	0	16.67	11.11	9.02
120-130	5.56	0	6.98	7.5	8.70	0	0	5.56	0	0	0	0	4.89
130-140	1.39	4.55	4.65	2.5	8.70	7.69	0	0	0	0	0	22.22	3.76
140-150	2.78	0	4.65	5	4.35	0	0	0	0	0	16.67	0	3.01
150-160	5.56	4.55	2.33	2.5	0	15.38	0	0	0	0	0	0	3.38
160-170	1.39	0	0	5	0	0	10	<u>16.67</u>	0	25	0	22.22	3.76
170-180	1.39	4.55	0	2.5	4.35	0	0	0	0	0	16.67	0	1.88
180-190	1.39	0	2.33	0	0	0	0	11.11	0	0	0	0	1.50
190-200	1.39	0	2.33	2.5	0	7.69	10	0	0	0	0	11.11	2.26
200-210	0	0	2.33	0	0	0	0	0	0	0	0	0	0.38
210-220	4.17	0	0	2.5	0	0	0	0	0	0	0	0	1.50
220-230	0	0	0	0	4.35	0	0	0	0	0	0	0	0.38
230-240	0	0	0	0	0	0	0	0	0	0	0	0	0
240-250	0	0	0	0	0	0	0	0	0	0	0	0	0
250-260	0	0	0	0	4.35	0	0	0	0	0	0	0	0.38
260-270	0	0	0	0	0	0	0	0	0	0	0	0	0
270-280	0	0	0	0	0	0	0	0	0	0	0	0	0
280-290	0	0	0	0	0	0	0	0	0	0	0	0	0
290-300	0	0	0	0	0	0	0	0	0	0	0	0	0
>300	5.56	9.09	6.98	5	0	0	0	0	0	0	0	0	4.14
Total%	100	100	100	100	100	100	100	100	100	100	100	100	100
Average	27.07	8.27	16.17	15.04	8.65	4.89	3.76	6.77	2.26	1.50	2.26	3.38	100
0-100		50.00	53.49	55.00	56.52	61.54	50	61.11	83.33	50	33.33	22.22	53.38
	37.50		37.21	37.50		38.46	50	38.89	16.67	50		77.78	39.85
200-300	4.17	0	2.33	2.5	8.70		0	0	0	0	0	0	2.63
>300	5.56	9.09	6.98	5	0	0	0	0	0	0	0	0	4.14

 Table 3.1–Cap. Str. of Sample Companies by Operating Leverage in 1996-97

Table 3.2–Cap. Str. of Sample Companies by Operating Leverage in 2005-06													
Capital	Operating Leverage (Times)												
St. (%)	<0	050	.50-1	1-1.50	1.50-2	2-2.50	2.50-3	3-4	4-5	5-6	6-10	>10	Avg.
00-10	16.13	25	13.33	23.81	18.18	16	8.33	20	57.14	27.27	21.43	18.18	19.58
10-20	4.84	4.17	6.67	7.14	9.09	0	0	0	0	0	0	9.09	4.55
20-30	6.45	0	6.67	4.76	3.03	8	8.33	0	14.29	0	0	9.09	4.90
30-40	9.68	0	3.33	4.76	6.06	4	16.67	13.33	0	9.09	0	0	5.94
40-50	3.23	4.17	3.33	4.76	6.06	4	25	20	0	0	7.14	9.09	5.94
50-60	8.06	4.17	6.67	9.52	0	4	0	0	0	9.09	0	9.09	5.24
60-70	3.23	12.50	6.67	4.76	0	8	0	6.67	0	9.09	0	0	4.55
70-80	4.84	4.17	3.33	2.38	9.09	8	8.33	0	0	9.09	7.14	0	4.90
80-90	3.23	8.33	3.33	4.76	9.09	0	0	13.33	0	9.09	0	9.09	4.90
90-100	3.23	4.17	6.67	0	3.03	0	0	0	0	9.09	0	9.09	2.80
100-110	3.23	4.17	3.33	7.14	0	4	0	6.67	0	0	0	0	3.15
110-120	4.84	0	0	2.38	15.15	12	8.33	13.33	0	0	14.29	9.09	6.29
120-130	0	0	3.33	2.38	0	8	8.33	0	0	0	0	0	1.75
130-140	1.61	0	6.67	4.76	3.03	8	0	6.67	14.29	0	7.14	0	3.85
140-150	6.45	4.17	10	0	3.03	0	8.33	0	0	0	0	0	3.50
150-160	4.84	4.17	3.33	4.76	3.03	0	0	0	0	0	0	0	2.80
160-170	0	4.17	0	0	0	0	0	0	0	0	0	0	0.35
170-180	6.45	0	0	4.76	0	4	0	0	0	9.09	0	0	2.80
180-190	0	0	0	0	0	4	0	0	0	0	0	0	0.35
190-200	0	0	3.33	4.76	0	0	0	0	0	0	7.14	0	1.40
200-210	0	4.17	3.33	0	0	0	0	0	0	0	0	0	0.70
210-220	0	0	0	0	0	0	0	0	0	0	0	9.09	0.35
220-230	3.23	4.17	0	0	0	0	8.33	0	0	0	0	0	1.40
230-240	0	0	0	0	3.03	4	0	0	0	0	0	0	0.70
240-250	0	4.17	0	2.38	0	0	0	0	0	0	7.14	0	1.05
250-260	1.61	0	6.67	0	0	0	0	0	14.29	0	7.14	0	1.75
260-270	0	0	0	0	0	0	0	0	0	9.09	0	0	0.35
270-280	0	0	0	0	0	0	0	0	0	0	0	0	0
280-290	0	0	0	0	0	0	0	0	0	0	0	0	0
290-300	0	0	0	0	3.03	0	0	0	0	0	7.14	0	0.70
>300	4.84	4.17	0	0	6.06	4	0	0	0	0	14.29	9.09	3.50
Total%	100	100	100	100	100	100	100	100	100	100	100	100	100
Average	21.68	8.39	10.49	14.69	11.54	8.74	4.20	5.24	2.45	3.85	4.90	3.85	100
0-100	62.90	66.67	60	66.67	63.64	52	66.67	73.33	71.43	81.82	35.71	72.73	63.29
100-200	27.42	16.67	30	30.95	24.24	40	25	26.67	14.29	9.09	28.57	9.09	26.22
200-300	4.84	12.50	10	2.38	6.06	4	8.33	0	14.29	9.09	21.43	9.09	6.99
>300	4.84	4.17	0	0	6.06	4	0	0	0	0	14.29	9.09	3.50

Table 3.2–Can. Str. of Sample Companies by Operating Leverage in 2005-06

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operating leverage range during 1996-97. However, rising trend has been observed in this broader percent). With the rise in operating leverage ranges, the number of companies starts shifting to this broader capital structure range by 83.33 percent up to 4-5 operating leverage range thereafter declines and reaches to 22.22 percent in more than 10 operating leverage range during 1996-97. However, rising trend has been observed in this broader capital structure range during 2005-06. In 100-200 percent capital structure range, rising trend during 1996-97 and declining trend during 2005-06 been observed, respectively. The lowest number of companies is in 200-300 percent and more than 300 percent capital structure ranges during 1996-97 (2.63) percent and 4.14 percent) and 2005-06 (6.99 percent and 3.50 percent), respectively. With the rise in operating leverage ranges, the number of companies is showing no trend in these two broader capital structure ranges and reaches to nil in two third ranges of operating leverage during 1996-97. However, during 2005-06, with the rise in operating leverage ranges, the number of companies is showing rising trend in 200-300 percent broader capital structure range while no trend is appearing in more than 300 percent capital structure range, respectively. In brief, it has been observed that with the rise in operating leverage ranges, the number of companies is not moving from higher capital structure ranges towards lower capital structure ranges under the four broader categories of capital structure ranges during the period under study. Overall, rise in operating leverage results in no shrinkage of number of capital structure ranges during the period under study. So, it emerges that at all operating leverage ranges, there exists almost same capital structure ranges, which represents no relationship between capital structure and operating leverage during the study period.

<u>Section IV – Summary and Conclusions</u>

This research paper examines the capital structure practices of developing countries through a case study of Indian corporate sector by classifying the capital structure of sample companies by operating leverage. The present study, although an exploratory effort, is limited to 298 out of top 500 private sector manufacturing firms selected on the basis of sales turnover for the year 2004-2005, published in Business Today, which covers time span of ten years commencing from 1996-97 to 2005-06. The following are the conclusion and findings of capital structure practices of Indian corporate sector.

- 1. It is observed that operating leverage wise, the highest number of companies is in less than 0 (negative) operating leverage ranges during 1996-97 (27.07 percent) and also in the same range during 2005-06 (21.68 percent), respectively under study. The lowest number of companies is in 5-6 operating leverage range during 1996-97 (1.50 percent) and in 4-5 operating leverage range during 2005-06 (2.45 percent), respectively, under study.
- 2. It is observed that capital structure range wise, it has been observed that the highest number of companies (9.02 percent) is in 110-120 percent capital structure range, followed by 6.39 percent companies in 90-100 percent and 100-110 percent capital structure ranges, each, during 1996-97. However, during 2005-06, the highest number of companies (19.58 percent) is in 0-10 percent capital structure range, followed by 6.29 percent companies in 110-120 percent capital structure range, respectively, under study.

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- 3. It has been observed that largest number of companies is in 0-100 percent capital structure range during 1996-97 (minimum = 22.22 percent, maximum =83.33 percent, industry average = 53.38 percent) and 2005-06 (minimum = 35.71 percent, maximum = 81.82 percent, industry average = 63.29 percent), respectively, under study.
- 4. With the rise in operating leverage ranges, the number of companies starts shifting to 0-100 percent broader capital structure range by 83.33 percent up to 4-5 operating leverage range thereafter declines and reaches to 22.22 percent in more than 10 operating leverage range during 1996-97. However, rising trend has been observed in this broader capital structure range during 2005-06 under study.
- It is observed that the lowest number of companies is in 200-300 percent and more than 300 percent capital structure ranges during 1996-97 (2.63 percent and 4.14 percent) and 2005-06 (6.99 percent and 3.50 percent), respectively, under study.
- 6. It is revealed that in 100-200 percent capital structure range, rising trend during 1996-97 and declining trend during 2005-06 been observed, respectively, under study.
- 7. It is observed that around 93 percent and 7 percent companies are lying in 0-200 percent and more than 200 percent capital structure ranges during 1996-97 while around 89 percent and 11 percent companies are also lying in same capital structure ranges for the variable under study during 2005-06, respectively.
- 8. It is observed that under capital structure range wise, no company is lying, for the variable under study, in 230-240 percent, 240-250 percent, 260-270 percent, 270-280 percent, 280-290 percent and 290-300 percent capital structure ranges during the year 1996-97 and in 270-280 percent and 280-290 percent capital structure ranges during the year 2005-06, respectively, under study.

In brief, it has been observed that with the rise in operating leverage ranges, the number of companies is not moving from higher capital structure ranges towards lower capital structure ranges under the four broader categories of capital structure ranges during the period under study. Overall, rise in operating leverage results in no shrinkage of number of capital structure ranges during the period under study. So, it emerges that at all operating leverage ranges, there exists almost same capital structure ranges, which represents no relationship between capital structure and operating leverage during the study period.

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Capital	Years											
-	1995-	1996-	1997-	1998-	1999-	2000	2001	2002-	2003-	2004-	2005	
Str.(%)	96	97	98	99	00	-01	-02	03	04	05	-06	Avg.
00-10	4	4	8.60	10.10	11.00	11.72	14.58	18.62	17.59	19.18	19.51	12.72
10-20	4.73	5.09	5.38	3.83	5.15	3.79	4.51	2.76	6.90	6.16	4.53	4.80
20-30	4	6.18	2.15	4.53	3.44	5.17	6.60	6.90	4.48	5.82	4.88	4.93
30-40	6.55	5.09	4.66	3.48	4.12	4.48	3.82	5.17	5.52	4.45	5.92	4.83
40-50	4	5.09	5.73	4.18	6.53	5.17		3.45	4.48	5.14	5.92	4.93
50-60	5.82	5.45	4.66	4.18	5.84		6.25	4.14	4.14	3.77	5.23	5.12
60-70	7.27	4	4.30	5.57	5.84		5.21	6.21	6.21	5.82	4.53	5.47
70-80	7.27	5.82	5.38	5.23	3.78		4.86	4.48	5.52	5.82	4.88	5.28
80-90	5.82	5.82	5.38	5.23	6.53		2.43	4.48	4.48	3.42	4.88	5.06
90-100	6.18	6.18	4.66	5.92	4.12		5.56	1.03	4.14	4.11	2.79	4.36
100-110	8	6.18	3.94		5.50		3.82	2.76	3.10	5.48	3.14	4.48
110-120	5.09	9.09	4.66	4.18	1.03	- F	2.78	4.48	4.48	2.40	6.27	4.26
120-130	4.36	4.73	4.30	3.14	4.81	2.41	3.47	4.48	2.41	2.05	1.74	3.44
130-140	4.73	3.64	4.66	3.83	3.44	2.76	3.47	2.76	3.10	0.68	3.83	3.34
140-150	4.73	3.27	2.87	3.14	2.06	4.83	1.39	2.76	3.10	2.74	3.48	3.12
150-160	1.82	3.27	4.66	3.48	1.37		2.78	2.41	1.03	4.11	2.79	2.67
160-170	2.55	3.64	1.79	3.83	3.44	1.38	1.74	0.69	1.38	3.42	0.35	2.19
170-180	1.82	1.82	4.66	2.09	2.06	2.41	1.04	2.41	1.72	1.37	2.79	2.19
180-190	1.45	1.82	2.15	1.74	2.41	2.07	2.08	0.69	1.03	2.74	0.35	1.69
190-200	1.82	2.18	2.51	1.39	1.72	2.41	0.69	0.69	0.69	1.03	1.39	1.49
200-210	0.36	0.36	1.08	2.44	1.72	<u>1.38</u>	2.78	2.07	2.07	1.37	0.70	1.49
210-220	0.73	1.45	1.79	1.74	1.37	1.03	1.04	1.72	2.41	0.68	0.70	1.34
220-230	1.09	0.73	1.79	1.74	0	1.38	1.04	1.38	1.03	1.03	1.39	1.15
230-240	0.36	0	0.72	0.70	1.03	1.03	1.74	1.38	1.72	0.68	0.70	0.92
240-250	0.36	0	1.08	1.05	1.03	0	0.35	0.69	0.69	1.03	1.05	0.67
250-260	0.36	0.36	0.72	1.74	1.03	1.03	0	1.38	0.34	0.34	1.74	0.83
260-270	0	0	0	0.35	0.34	0	1.04	0.34	0.69	0.34	0.35	0.32
270-280	0.73	0.36	0.72	0.35	0.34	0.34	1.04	0.34	0.34	0.34	0	0.45
280-290	0	0	0.36	0	0.34	0.69	1.04	1.38	0	0.34	0	0.38
290-300	0	0	0.36	0	1.03	0.34	0.35	0.34	0.69	0	0.70	0.35
>300	4	4.36	4.30	7.32	7.56	7.59	7.99	7.59	4.48	4.11	3.48	5.73
Total %	100	100	100	100	100	100	100	100	100	100	100	100
0-100	55.64	52.73	50.90	52.26	56.36	58.28	58.33	57.24	63.45	63.70	63.07	57.51
100-200	36.36	39.64	36.20	30.31	27.84	26.90	23.26	24.14	22.07	26.03	26.13	28.88
200-300	4	3.27	8.60	10.10	8.25	7.24	10.42	11.03	10	6.16	7.32	7.89
>300	4	4.36	4.30	7.32	7.56	7.59	7.99	7.59	4.48	4.11	3.48	5.73

Annexure–%age Distribution of Sample Companies during 1995-96 to 2005-06 (Year wise)