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THE FINANCIAL PLAN OF DEPARTMENT STORES



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It is the purpose of the Bureau of Business Research of the University of Illinois—

- (1) to study and as far as possible to explain economic and industrial conditions within the State;
- (2) to direct attention to experience-tested practices of good business management; and,
- (3) to investigate methods for securing the best executive control of business.

BUREAU OF BUSINESS RESEARCH

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BULLETIN No. 32

THE FINANCIAL PLAN OF
DEPARTMENT STORES

Studies in Financial Structure



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PREFACE

The present study is one of a series of related studies in the financial structure of various types of business enterprise. In Bulletins Numbers 27 and 29 the financial plans of gas companies and automobile and related automotive manufacturing companies were analyzed and set forth. The present bulletin continues this series of studies. It is devoted to the determination of the typical financial plan of department stores. Later bulletins of the series will have for their purpose the presentation of the balance sheet structure of other industries, and also the analysis of operating statement ratios, ratios of turnover for various aspects of capital structure, and earning power ratios, for all the industries covered by these studies.

The purpose of these analyses of financial structures is twofold: first, to bring out in a more or less uniform manner the underlying differences in the financing employed in the different industries studied, and, second, to establish acceptable standards of financial relationships through the determination of typical or representative ratios.

Business executives have found financial ratios a helpful tool in attempting to simplify or reduce the number of details in their problems. The reduction of the relationships of large and varied figures to an abstract base by means of ratios has enabled business men to grasp the significant factors with less effort than otherwise. The increasing use of financial ratios attests to a growing recognition of their serviceability; the establishment of typical or standard ratios will enable business men to carry their analyses a step further. In addition to making it possible to compare the performance of their enterprise from time to time with its own past performance, standard ratios based upon averages of large samples of ratios for similar companies will facilitate the comparison of their individual enterprise with standards for the industry.

The Bureau acknowledges its indebtedness to Ernst and Ernst, Certified Public Accountants, for the original data of this study, and to A. H. WINAKOR, C.P.A., of the Bureau staff for the preparation of the manuscript.

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APPENDIX

TABLE I.— $\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Current Assets to Current Liabilities ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
50-199.....	3	4.3	50-199.....	8	10.6
200-349.....	15	14.0	200-349.....	12	16.6
350-499.....	8	8.6	350-499.....	15	12.9
500-649.....	3	3.0	500-649.....	13	7.1
650-799.....	2	.8	650-799.....	2	3.2
			800-949.....	2	1.3
			950-1099.....	0	.5
			1100-1249.....	1	.2

Average Ratio: Mode = 2.91

Range of 50 per cent of frequencies centered about the mode, 1.91 to 3.78

Equation for computing the smooth curve:

$$y = 14.0e^{-2.2592x} \left(1 + \frac{x}{1.6779} \right)^{3.7907}$$

Average Ratio: Mode = 3.29

Range of 50 per cent of frequencies centered about the mode, 1.85 to 4.61

$$\text{Equation: } y = 16.6e^{-1.5699x} \left(1 + \frac{x}{2.4314} \right)^{3.8171}$$

TABLE II.— $\frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$ RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Current Assets to Current Liabilities ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
00-149.....	2	.5	00-149.....	7	9.9
150-299.....	10	6.9	150-299.....	19	13.2
300-449.....	13	14.0	300-449.....	9	11.3
450-599.....	5	8.2	450-599.....	7	7.8
600-749.....	2	2.1	600-749.....	4	4.8
			750-899.....	4	2.7
			900-1049.....	2	1.4
			1050-1199.....	1	.7
			1200-1349.....	1	.4

Average Ratio: Mode = 3.26

Range of 50 per cent of frequencies centered about the mode, 2.29 to 4.19

$$\text{Equation: } y = 14.0e^{-3.8992x} \left(1 + \frac{x}{4.9079} \right)^{28.9527}$$

Average Ratio: Mode = 2.55

Range of 50 per cent of frequencies centered about the mode, .77 to 4.20

$$\text{Equation: } y = 13.2e^{-.9602x} \left(1 + \frac{x}{2.3617} \right)^{2.1671}$$

TABLE III.— $\frac{\text{CURRENT ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Current Assets to Total Assets ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
26-339	1	1.0	34-419	2	1.2
34-419	3	3.5	42-499	2	2.4
42-499	11	6.4	50-579	4	4.4
50-579	7	7.6	58-659	6	7.3
58-659	1	6.6	66-739	8	10.4
66-739	5	4.4	74-819	6	12.0
74-819	4	2.5	82-899	16	9.9
82-899	2	1.2	90-979	10	4.7
Average Ratio: Mode = .531			Average Ratio: Mode = .818		
Range of 50 per cent of frequencies centered about the mode, .433 to .627			Range of 50 per cent of frequencies centered about the mode, .722 to .916		
Equation: $y = 7.6e^{-2.2966z} \left(1 + \frac{x}{7.3067}\right)^{16.7506}$			Equation: $y = 12.0e^{1.3750z} \left(1 - \frac{x}{4.3118}\right)^{5.9237}$		

TABLE IV.— $\frac{\text{CURRENT ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Current Assets to Total Assets ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
26-339	2	1.5	26-339	1	.4
34-419	5	3.7	34-419	1	.8
42-499	7	5.8	42-499	3	1.6
50-579	6	6.6	50-579	5	2.9
58-659	3	5.9	58-659	3	5.0
66-739	5	4.2	66-739	10	7.8
74-819	1	2.6	74-819	6	10.8
82-899	4	1.3	82-899	16	12.3
			90-979	12	10.2
Average Ratio: Mode = .529			Average Ratio: Mode = .832		
Range of 50 per cent of frequencies centered about the mode, .420 to .637			Range of 50 per cent of frequencies centered about the mode, .734 to .934		
Equation: $y = 6.6e^{-2.4476z} \left(1 + \frac{x}{9.6638}\right)^{23.6531}$			Equation: $y = 12.3e^{1.1175z} \left(1 - \frac{x}{3.6497}\right)^{4.0735}$		

TABLE V.— $\frac{\text{FIXED ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Fixed Assets to Total Assets ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
00-099	8	1.7	00-099	22	23.2
10-199	2	3.9	10-199	15	15.3
20-299	4	6.6	20-299	11	6.5
30-399	11	8.0	30-399	5	2.3
40-499	5	6.8	40-499	0	.7
50-599	3	4.1	50-599	1	.2
60-699	1	1.6			

Average Ratio: Mode = .305
 Range of 50 per cent of frequencies centered about the mode, .190 to .418

$$\text{Equation: } y = 8.0e^{12.7146x} \left(1 - \frac{x}{36.4326} \right)^{463.2259}$$

Average Ratio: Mode = .092
 Range of 50 per cent of frequencies centered about the mode, .007 to .153

$$\text{Equation: } y = 23.2e^{-1.3781x} \left(1 + \frac{x}{1.2461} \right)^{1.9665}$$

TABLE VI.— $\frac{\text{FIXED ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Fixed Assets to Total Assets ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve*
00-099	2	1.6	00-099	29	
10-199	4	4.0	10-199	15	
20-299	4	7.4	20-299	4	
30-399	10	9.3	30-399	2	
40-499	6	7.0	40-499	4	
50-599	7	2.7	50-599	2	
			60-699	1	

Average Ratio: Mode = .386
 Range of 50 per cent of frequencies centered about the mode, .289 to .486

$$\text{Equation: } y = 9.3e^{3.5851x} \left(1 - \frac{x}{6.7592} \right)^{22.1677}$$

*Because of the excessive skewness of the data, a satisfactory curve could not be calculated; consequently no mode is given.

TABLE VII.— $\frac{\text{OTHER ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Other Assets to Total Assets ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
00-019	2	2.0	00-019	11	6.7
02-039	5	2.9	02-039	13	7.3
04-059	7	3.5	04-059	6	6.9
06-079	3	3.6	06-079	3	5.9
08-099	3	3.5	08-099	6	4.9
10-119	1	3.1	10-119	2	3.8
12-139	0	2.6	12-139	0	2.9
14-159	1	2.1	14-159	3	2.2
16-179	3	1.6	16-179	1	1.6
18-199	1	1.2	18-199	3	1.1
20-219	2	.8	20-219	0	.8
22-239	1	.6	22-239	0	.6
24-259	1	.4	24-259	3	.4

Average Ratio: Mode = .068

Range of 50 per cent of frequencies centered about the mode, .026 to .109

$$\text{Equation: } y = 3.6e^{-.7351x} \left(1 + \frac{x}{7.7389} \right)^{5.6889}$$

Average Ratio: Mode = .030

Range of 50 per cent of frequencies centered about the mode, .00 to .075

$$\text{Equation: } y = 7.3e^{-.4676x} \left(1 + \frac{x}{3.2690} \right)^{1.5286}$$

TABLE VIII.— $\frac{\text{OTHER ASSETS}}{\text{TOTAL ASSETS}}$ RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Other Assets to Total Assets ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
00-019	6	5.5	00-019	11	9.1
02-039	7	6.9	02-039	15	11.1
04-059	5	5.8	04-059	7	9.6
06-079	5	3.8	06-079	3	6.7
08-099	1	2.0	08-099	6	4.0
10-119	3	.9	10-119	3	2.1
12-139	1	.4	12-139	4	1.0

Average Ratio: Mode = .039

Range of 50 per cent of frequencies centered about the mode, .016 to .061

$$\text{Equation: } y = 6.9e^{-1.7132x} \left(1 + \frac{x}{4.3498} \right)^{7.4523}$$

Average Ratio: Mode = .037

Range of 50 per cent of frequencies centered about the mode, .013 to .060

$$\text{Equation: } y = 11.1e^{-1.3884x} \left(1 + \frac{x}{4.0934} \right)^{5.6014}$$

TABLE IX.— $\frac{\text{CURRENT LIABILITIES}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Current Liabilities to Total Assets ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
05-099	1	.2	00-049	1	1.8
10-149	9	5.6	05-099	7	5.3
15-199	11	10.0	10-149	10	8.5
20-249	6	7.9	15-199	12	9.6
25-299	1	4.6	20-249	7	8.7
30-349	1	2.4	25-299	3	6.8
35-399	3	1.1	30-349	4	4.8
			35-399	4	3.1
			40-449	2	1.9
			45-499	2	1.1
			50-549	1	.6

Average Ratio: Mode = .149

Range of 50 per cent of frequencies centered about the mode, .097 to .194

$$\text{Equation: } y = 10.0e^{-1.1740x} \left(1 + \frac{x}{1.6748} \right)^{1.8853}$$

Average Ratio: Mode = .168

Range of 50 per cent of frequencies centered about the mode, .094 to .241

$$\text{Equation: } y = 9.6e^{-1.0271x} \left(1 + \frac{x}{4.9919} \right)^{5.2769}$$

TABLE X.— $\frac{\text{CURRENT LIABILITIES}}{\text{TOTAL ASSETS}}$ RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Current Liabilities to Total Assets ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
05-099	4	2.9	00-049	4	3.5
10-149	12	5.9	05-099	8	5.8
15-199	5	7.0	10-149	8	7.7
20-249	2	6.2	15-199	7	8.4
25-299	4	4.5	20-249	6	7.8
30-349	1	2.8	25-299	4	6.2
35-399	4	1.6	30-349	7	4.4
40-449	1	.9	35-399	2	2.8
			40-449	5	1.6
			45-499	1	.8

Average Ratio: Mode = .156

Range of 50 per cent of frequencies centered about the mode, .092 to .218

$$\text{Equation: } y = 7.0e^{-1.2380x} \left(1 + \frac{x}{4.2405} \right)^{5.2243}$$

Average Ratio: Mode = .190

Range of 50 per cent of frequencies centered about the mode, .108 to .270

$$\text{Equation: } y = 8.4e^{-2.2938x} \left(1 + \frac{x}{13.7626} \right)^{21.5687}$$

TABLE XI.— $\frac{\text{LONG TERM DEBT}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925 AND 1927

Distributions of the observed and graduated frequencies of the Long Term Debt to Total Assets ratio for department stores for 1925 and 1927

1925			1927		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
00-049	9	6.3	00-049	5	3.4
05-099	8	7.7	05-099	7	4.6
10-149	4	6.6	10-149	4	5.0
15-199	4	4.5	15-199	2	4.7
20-249	5	2.5	20-249	5	3.9
25-299	1	1.2	25-299	2	2.9
30-349	2	.6	30-349	3	2.0
			35-399	1	1.3
			40-449	1	.8
			45-499	2	.5

Average Ratio: Mode = .093

Range of 50 per cent of frequencies centered about the mode, .035 to .150

$$\text{Equation: } y = 7.7e^{-1.8485x} \left(1 + \frac{x}{4.6998} \right)^{7.7476}$$

Average Ratio: Mode = .140

Range of 50 per cent of frequencies centered about the mode, .057 to .222

$$\text{Equation: } y = 5.0e^{-1.1337x} \left(1 + \frac{x}{7.1320} \right)^{8.0553}$$

TABLE XII.— $\frac{\text{NET WORTH}}{\text{TOTAL ASSETS}}$ RATIO FOR 1925

Distributions of the observed and graduated frequencies of the Net Worth to Total Assets ratio for department stores for 1925 classified according to the type of financial plan

WITH LONG TERM DEBT

Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
30-399	1	.3
40-499	3	1.3
50-599	5	3.8
60-699	10	8.5
70-799	11	11.7
80-899	4	7.3

Average Ratio: Mode = .701

Range of 50 per cent of frequencies centered about the mode, .620 to .787

$$\text{Equation: } y = 11.7e^{2.7375x} \left(1 - \frac{x}{3.6139} \right)^{9.8931}$$

WITHOUT LONG TERM DEBT

Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
30-399	1	.4
40-499	1	1.2
50-599	4	3.1
60-699	8	7.2
70-799	10	13.8
80-899	22	18.5
90-999	8	9.9

Average Ratio: Mode = .846

Range of 50 per cent of frequencies centered about the mode, .765 to .939

$$\text{Equation: } y = 18.5e^{1.4687x} \left(1 - \frac{x}{1.8845} \right)^{2.7678}$$

TABLE XIII.— NET WORTH
TOTAL ASSETS RATIO FOR 1927

Distributions of the observed and graduated frequencies of the Net Worth to Total Assets ratio for department stores for 1927 classified according to the type of financial plan

WITH LONG TERM DEBT			WITHOUT LONG TERM DEBT		
Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve	Size of Ratio	Number of Observed Frequencies	Graduated Frequencies for Smooth Curve
40-499	3	2.1	30-399	3	.8
50-599	8	7.0	40-499	2	1.9
60-699	9	10.1	50-599	6	4.1
70-799	5	7.2	60-699	9	7.7
80-899	5	2.7	70-799	10	12.1
			80-899	15	14.5
			90-999	12	11.3

Average Ratio: Mode = .643

Range of 50 per cent of frequencies centered about the mode, .556 to .730

Equation: $y = 10.1e^{-10.0004x} \left(1 + \frac{x}{14.1594} \right)^{142.5908}$

Average Ratio: Mode = .811

Range of 50 per cent of frequencies centered about the mode, .702 to .925

Equation: $y = 14.5e^{2.6372x} \left(1 - \frac{x}{3.9061} \right)^{6.3951}$