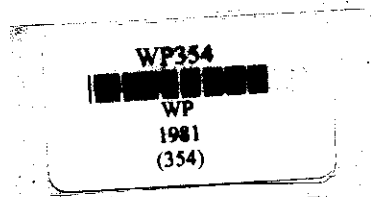


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**INDIAN INSTITUTE OF MANAGEMENT
AHMEDABAD**

**A STUDY ON THE WEALTH RATIOS OF
INDIAN COMPANIES**

By

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**INDIAN INSTITUTE OF MANAGEMENT
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A STUDY ON THE WEALTH RATIOS OF INDIAN COMPANIES

What does a shareholder gain from out of his investment in a company? Primarily he is entitled to get a share of the company's profits every year in the form of dividends - either cash dividends or through the issue of bonus shares. Secondly, in the event of increasing share prices, he may like to sell the shares resulting in his capital gains. The performance of a company during a particular period can be analysed by comparing the value of the investment at the end of the period with the amount invested at the beginning of the period. The relationship popularly known as the wealth ratio¹ is an effective performance measure of the company during a particular period.

With a view to finding out how the shareholders of the top companies in the Indian private sector have gained from out of their investment, the wealth ratios have been computed for the nine year period ending 1979. The ten companies included in the study are selected from out of the first twenty private sector industrial giants (in terms of their net sales) as reported by the Economic Times dated March 18, 1980.

¹Lawrence Fisher and James H Lorie, Some Studies of Variability of Returns on Investments in Common Stocks, The Journal of Business (April 1970).

These ten companies are Tata Engineering, Tata Steel, Delhi Cloth, Voltas, Brooke Bond, Escorts, Ashok Leyland, Century Spinning, Hindustan Motors, and Larsen & Toubro. The companies selected in the study belong to different industry classes for it is possible to make a comparative assessment of the rewards to shareholders irrespective of the industry classes to which investments have been made. Necessary data have been collected from the Bombay Stock Exchange Directory.

The wealth ratio computations are given in Exhibit I. Let us examine the case of TELCO. On 31st March, 1970, it had 14,34,928 shares outstanding, the average of high-low market price of its shares being Rs 249.38. The market value of shares (original investment in the present case) turns out to be Rs 3578.60 lakhs. Compared to this the value of investment as on 31st March 1979 is found to be Rs 9273.22 lakhs. There is therefore a capital appreciation to the extent of Rs 5694.62 lakhs during the nine year period ending 31st March 1979. During the same period the shareholders have also gained in the form of dividends. However, dividends received during 1970-71 are not comparable with dividends received during 1971-72, 1972-73,,, 1978-79. One can easily earn interest at the rate of 10 per cent per annum on the dividends received in the successive earlier period. This idea is built into the calculations by means of which Telco's Rs 2474.94 lakhs paid over a period of nine years becomes worth Rs 3490.25 lakhs.¹ This when added to the amount of capital appreciation

¹One can do the same exercise with an interest rate other than 10 per cent unless one wishes to ignore the time value of money totally.

gives us a total value of investment of Rs 9184.87 lakhs as on 31st March 1979. A comparison of this figure with the value of original investment gives us a wealth ratio of 2.56 : 1.²

Likewise wealth ratios of the other nine companies have been computed; and a comparison is made (Exhibit II). In terms of wealth ratio, Escorts heads the list (10.03 : 1), followed by Ashok Leyland (6.04 : 1) and Larsen & Toubro (5.40 : 1). At the bottom of the list is Hindustan Motors - its wealth ratio having gone down (-0.26 : 1). It may be noted that Hindustan Motors did not pay any dividend to its shareholders during the nine years ending 31st March 1979. A major determinant of the value of investment is therefore totally missing. The fall in the average of the high-low market price of its shares from Rs 16.96 at the 31st March 1970 year-end to Rs 10.45 at the 31st March 1979 year-end has resulted in the negative wealth ratio.

What is the relationship between wealth ratio and the average ROI of the companies? It may be noted from Exhibit II that in terms of average ROI (average of the nine years), Century Spinning tops the list with the average ROI of 17.85 followed by Larsen & Toubro (15.76) and Ashok Leyland (15.41 : 1).

Though in terms of wealth ratio Escorts heads the list, its average ROI is 14.76 which is less than that of Ashok Leyland and Larsen & Toubro and much less than that of Century Spinning. Hindustan Motors is at the bottom of the list both in terms of its wealth ratio and average ROI.

² It is possible to compute the wealth ratios for a period other than nine years.

The ten companies included in the present study are ranked in terms of their wealth ratios and average ROI and the rank correlation coefficient computed (Exhibit III). It comes out to 0.673 which shows that there exists a substantial positive association between wealth ratio ranks and average ROI ranks. How can we test this value of 0.673? For small values of n ($n = 10$ in the present case), the distribution of the rank correlation coefficient is not normal, and unlike other small sample statistics, it is not appropriate to use the 't' distribution for testing hypothesis about the rank correlation coefficient. Suppose we want to test the hypothesis that there is zero correlation in the ranked data of wealth ratio and the average ROI. We may look at the values for Spearman's Rank Correlation (r_s) for combined areas in both tails, in the row for $n = 10$ and the column for a significance level of 0.05^1 . We may find that the critical values for r_s are ± 0.6364 ; that is, the upper limit of the acceptance region is 0.6364, and the lower limit of the acceptance region is -0.6364 . Exhibit IV shows the limits of the acceptance region and the rank correlation coefficient. From this we find that the rank correlation coefficient lies outside the acceptance region. We may therefore conclude that there is a positive association between wealth ratio and the average return on investment.

¹Richard I. Levin, Statistics for Management, Prentice-Hall of India (P) Ltd., New Delhi 110001.

Conclusion

This study seeks to find out the extent to which the shareholders of the top companies in the Indian private sector have been benefitted from the investment they have made. Shareholders' rewards have been measured by the sum of capital appreciation and the total amount of dividends, adjusted for the time value of money. The value of investment thus arrived at is computed for the nine year period ending 1979. The wealth ratio indicates the value of investment at 1979 year end to what it was in 1971 year end. The ten companies selected in the present study are then ranked in terms of their wealth ratios. Next, in order to find out if there is any relationship between the wealth ratio and return on investment, the average ROI of the companies for the nine year period have been computed. The rank correlation test establishes a positive association between wealth ratio and the average ROI. Shareholders' rewards measured either in terms of wealth ratio or return on investment can therefore be effective indicators of the profitability of the investment. At the same time these measures may evaluate the performance of the companies during a particular period.

* * *

EXHIBIT I

Computation of Wealth Ratios

1. TELCO

Year ending	Dividends/Share	No. of Shares	Market Price/Share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
31-3-71	14.50	15,10,915	236.75	219.08	2.14	468.83	10.21
31-3-72	15.00	15,10,915	230.00	226.64	1.95	441.95	11.11
31-3-73	15.00	15,10,915	220.00	226.64	1.77	401.15	11.30
31-3-74	9.30	15,10,915	232.25	140.52	1.61	226.24	9.24
31-3-75	15.00	15,74,880	234.38	236.23	1.46	344.90	11.25
31-3-76	15.00	15,74,880	195.50	236.23	1.33	314.19	13.12
31-3-77	15.00	18,89,856	231.00	283.48	1.21	343.01	13.85
31-3-78	15.00	29,22,998	225.00	438.45	1.10	482.30	13.93
31-3-79	16.00	29,22,998	317.25	467.67 ¹	-	467.68	16.17
			TOTAL	2474.94		3490.25	110.18

ROI = 12.24%

Capital Appreciation

No. of shares held on 31-3-1979	29,22,998
Market price per share	Rs 317.25
Market value of shares	Rs 9273.22 lakhs
No. of shares held on 31-3-1970	14,34,928
Market price per share	Rs 249.38
Market value of shares (original investment)	Rs 3578.60 lakhs
Capital Appreciation	Rs 5694.62 lakhs
Total dividends (adjusted for interest)	Rs 3490.25 lakhs
Grand Total	Rs 9184.87 lakhs
Wealth Ratio = $\frac{9184.87}{3578.60}$	= 2.56 : 1.

Dividends on bonus shares included in the same year in which the shares have been issued.

EXHIBIT I (Contd)

2. ASHOK LEYLAND

Year ending	Dividends/ Shares	No. of Shares	Market Price/ Share	Dividends (Rs lakhs)	Adjust- ment for interest at 10%	Adjust- ed divi- dend (Rs lakhs)	ROI %
30-9-71	0.48	155,78,549	6.30	74.78	2.14	160.03	9.18
30-9-72	0.38	155,78,549	5.88	59.20	1.95	115.44	8.42
30-9-73	0.62	155,77,029	8.58	96.58	1.77	170.95	12.03
30-9-74	0.60	155,77,029	7.75	93.46	1.61	150.47	15.22
30-9-75	0.75	155,77,029	7.58	116.83	1.46	170.57	18.93
31-12-76	0.90	186,92,434	8.33	168.23	1.33	223.75	24.37
31-12-77	0.90	186,92,434	9.28	168.23	1.21	203.56	16.65
31-12-78	0.80	280,38,651	17.05	224.31	1.10	246.74	19.84
31-12-79	0.85	330,00,000	16.08	280.55	-	280.55	14.03
			TOTAL	1282.17		1722.06	138.67

ROI = 15.41%

Capital Appreciation

No. of shares held on 31-12-79	330.00 lakhs
Market price per share	Rs 16.08
Market value of shares	Rs 5306.40 lakhs
No. of shares held on 30-9-70	155.79 lakhs
Market price per share	Rs 6.31
Market value of shares (original investment)	Rs 998.61 lakhs
Capital Appreciation	Rs 4307.79 lakhs
Total dividends (adjusted for interest)	Rs <u>1722.06 lakhs</u>
Grand Total	Rs <u>6029.85 lakhs</u>
Wealth ratio	= $\frac{6029.85}{998.61}$ = 6.04 : 1

EXHIBIT I (Contd)

3. ESCORTS LIMITED

Year ending	Dividends/ share	No. of Shares	Market Price/ Share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
31-12-71	1.10	34,83,648	18.26	38.32	2.14	82.00	10.25
31-12-72	1.20	34,83,648	15.64	41.81	1.95	81.53	9.93
31-12-73	1.00	34,83,648	16.44	34.84	1.77	61.67	10.04
31-12-74	1.20	52,25,472	20.50	62.70	1.61	100.95	16.27
31-12-75	1.20	52,25,472	12.75	62.70	1.46	91.54	13.74
31-12-76	1.60	52,25,472	16.75	83.60	1.33	111.19	13.84
31-12-77	1.60	83,60,755	26.75	133.78	1.21	161.87	14.78
31-12-78	2.00	83,60,755	33.00	167.22	1.10	183.94	19.41
31-12-79	2.00	133,77,208	44.75	267.54	-	267.54	19.22
TOTAL				892.51		1142.23	127.42

Capital Appreciation

ROI = 14.16%

No. of shares held on 31-12-79	133.77 lakhs
Market price per share	Rs 44.75
Market value of shares	Rs 5986.21 lakhs
No. of shares held on 31-12-70	29.03 lakhs
Market price per share	Rs 22.25
Market value of shares	Rs 645.92 lakhs
Capital Appreciation	Rs 5340.29 lakhs
Total dividends (adjusted for interest)	Rs 1142.23 lakhs
Grand Total	Rs 6482.52 lakhs
Wealth ratio	= $\frac{6482.52}{645.92}$ = 10.03 : 1.

EXHIBIT I (Contd)

4. HINDUSTAN MOTORS

Year ending	Dividends/ share	No. of Shares	Market Price/ Share	Dividends (Rs lakhs)	Adjust- ment for interest at 10%	Adjust- ed divi- dends (Rs lakhs)	ROI %
31-3-71	-	131,65,208	14.20	-	-	-	4.33
31-3-72	-	131,65,208	10.72	-	-	-	6.74
31-3-73	-	131,65,208	6.68	-	-	-	3.16
31-3-74	-	131,65,208	10.53	-	-	-	5.99
31-3-75	-	131,65,208	8.90	-	-	-	3.99
31-3-76	-	131,65,208	6.38	-	-	-	3.66
31-3-77	-	131,65,208	7.93	-	-	-	12.91
31-3-78	-	131,65,208	6.80	-	-	-	11.02
31-3-79	-	131,65,208	10.45	-	-	-	9.08
TOTAL							60.88

Capital Appreciation

ROI = 6.76%

No. of shares held on 31-3-79	131.65 lakhs
Market price per share	Rs 10.45
Market value of shares	Rs 1375.74 lakhs
No. of shares held on 31-3-70	109.69 lakhs
Market price per share	Rs 16.96
Market value of shares	Rs 1860.34 lakhs
Capital Appreciation	(Rs 484.60 lakhs)
Total dividends (adjusted for interest)	-
Grand Total	(Rs 484.60 lakhs)
Wealth ratio =	$\frac{(484.60)}{1860.34} = (0.26) : 1.$

EXHIBIT I (Contd)

5. LARSEN & TOUBRO LIMITED

Year Ending	Dividends/Share	No. of Shares	Market Price/Share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
31-3-71	1.25	39,93,000	21.63	49.91	2.14	106.81	13.23
31-3-72	1.40	45,17,209	22.63	63.24	1.95	123.32	13.43
31-3-73	1.50	45,17,209	26.62	67.78	1.77	119.97	14.57
31-3-74	1.12	59,62,716	29.00	66.79	1.61	107.53	13.08
31-3-75	1.80	59,62,716	29.38	107.33	1.46	156.70	16.83
31-3-76	1.80	74,53,395	25.33	134.15	1.33	178.42	18.13
31-3-77	1.60	74,53,395	35.50	119.25	1.21	144.29	19.84
31-3-78	1.60	74,53,395	33.88	119.25	1.10	131.18	15.80
31-3-79	1.70	115,32,672	36.13	196.06	-	196.06	16.92
TOTAL				923.76		1264.28	141.83

ROI = 15.76

Capital Appreciation

No. of shares held on 31-3-79	115.33 lakhs
Market price per share	Rs 36.13
Market value of shares	Rs 4166.87 lakhs
No. of shares held on 31-3-70	39.93 lakhs
Market price per share	Rs 21.25
Market value of shares	Rs 848.51 lakhs
Capital Appreciation	Rs 3318.36 lakhs
Total dividends (adjusted for interest)	Rs 1264.28 lakhs
Grand Total	Rs 4582.64 lakhs

$$\text{Wealth ratio} = \frac{4582.64}{848.51} = 5.40 : 1$$

EXHIBIT I (Contd)

6. THE DELHI CLOTH & GENERAL MILLS COMPANY LTD

Year ending	Dividends/ share	No. of shares	Market Price/ share	Dividends (Rs lakhs)	Adjust- ment for interest at 10%	Adjust- ed divi- dends (Rs lakhs)	ROI %
30-06-71	2.50	69,97,497	71.63	174.93	2.14	374.35	11.89
30-06-72	2.50	69,97,497	43.22	174.93	1.95	341.11	9.99
30-06-73	2.50	69,97,497	46.78	174.93	1.77	309.62	6.97
30-06-74	0.80	69,97,497	58.12	55.98	1.61	90.13	7.18
30-06-75	1.25	69,97,497	47.81	87.46	1.46	127.69	8.95
30-06-76	1.80	69,97,497	36.96	125.95	1.33	167.51	7.10
30-06-77	2.50	69,97,497	31.33	174.93	1.21	210.06	8.54
30-06-78	2.50	69,97,497	36.59	174.93	1.10	192.42	11.40
30-06-79	2.50	69,97,497	41.03	174.93	-	174.93	12.02
			TOTAL	1318.97		1987.82	84.04

ROI = 9.34%

Capital Appreciation

No. of shares held on 30-6-79	69.97 lakhs
Market price per share	Rs 41.03
Market value of shares	Rs 2870.87 lakhs
No. of shares held on 30-6-70	39.03 lakhs
Market price per share	Rs 51
Market value of shares	Rs 1990.53 lakhs
Capital Appreciation	Rs 880.34 lakhs
Adjusted dividend	Rs 1987.82 lakhs
Grand Total	Rs 2868.16 lakhs
Wealth ratio =	$\frac{2868.16}{1990.53} = 1.44 : 1$

EXHIBIT I (Contd)

7. THE CENTURY SPG & MFG COMPANY LIMITED

Year Ending	Dividends/ share	No. of shares	Market Price/ Share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
31-12-71	45.00	354,882	812	159.75	2.14	341.87	16.23
31-12-72	40.00	709,764	875	284.00	1.95	553.80	12.83
31-12-73	33.00	709,764	538	234.30	1.77	414.71	18.66
31-12-74	33.00	709,764	545	234.30	1.61	377.22	22.31
31-12-75	33.00	709,764	532	234.30	1.46	342.08	19.94
31-12-76	23.00	709,764	617	163.30	1.33	217.19	15.76
31-12-77	23.00	1064,646	506	244.95	1.21	296.39	18.92
31-12-78	26.00	1064,646	563	276.90	1.10	304.59	16.88
31-12-79	26.00	1064,646	721	276.90	-	276.90	19.10
			TOTAL	2108.70		3124.75	160.63

ROI = 17.85%

Capital Appreciation

No. of shares held on 31-12-79	10.65 lakhs
Market price per share	Rs 721
Market value of shares	Rs 7678.65 lakhs
No. of shares held on 31-12-70	3.55 lakhs
Market price per share	Rs 824
Market value of shares	Rs 2925.20 lakhs
Capital Appreciation	Rs 4753.45 lakhs
Adjusted dividend	<u>3124.75 lakhs</u>
Grand Total	<u>Rs 7878.20 lakhs</u>
Wealth ratio = $\frac{7878.20}{2925.2}$	= 2.69 : 1

EXHIBIT I (Contd)

8. THE TATA IRON & STEEL CO LTD

Year Ending	Dividends/ share	No. of Shares	Market Price/ share	Dividends (Rs lakhs)	Adjust- ment for interest at 10%	Adjust- ed divi- dends (Rs lakhs)	ROI %
31-3-72	8.60	51,44,027	98.25	442.38	2.14	946.69	6.06
31-3-73	8.60	51,44,027	86.50	442.38	1.95	862.64	6.04
31-3-74	4.75	51,44,027	97.75	244.34	1.77	432.48	8.27
31-3-75	8.30	51,44,027	75.75	426.95	1.61	687.39	10.31
31-3-76	7.75	51,44,027	81.75	398.66	1.46	582.04	8.38
31-3-77	10.00	51,44,027	85.75	514.40	1.33	684.15	9.67
31-3-78	11.00	51,44,027	92.00	565.84	1.21	684.67	7.88
31-3-79	12.00	51,44,027	108.00	617.28	1.10	679.01	11.17
31-3-80	13.50	51,44,027	104.38	694.44	-	694.44	11.02
			TOTAL	4662.63		6263.51	78.80

Capital Appreciation

ROI = 8.76%

No. of shares held on 31.3.80	51.44 lakhs
Market price per share	Rs 104.38
Market value of shares	Rs 5369.31 lakhs
No. of shares held on 31.3.71	36.74 lakhs
Market price per share	Rs 109.75
Market value of shares	Rs 4032.21 lakhs
Capital Appreciation	Rs 1337.10 lakhs
Adjusted dividend	Rs 6263.51 lakhs
Grand Total	Rs 7600.61 lakhs
Wealth ratio	= $\frac{7600.61}{4032.21}$ = 1.88 : 1

EXHIBIT I (Contd)

9. BROOKE BOND INDIA LTD

Year Ending	Dividends/ share	No. of shares	Market Price/ share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
30-6-71	2.00	67,00,000	30.10	134.00	2.14	286.76	12.71
30-6-72	2.00	67,00,000	26.66	134.00	1.95	261.30	11.63
30-6-73	2.00	67,00,000	27.36	134.00	1.77	237.18	13.96
29-6-74	1.10	67,00,000	37.70	73.70	1.61	118.66	11.33
28-6-75	2.00	67,00,000	37.10	134.00	1.46	195.64	11.91
3-7-76	2.00	67,00,000	31.30	134.00	1.33	178.22	12.00
2-7-77	1.30	67,00,000	17.33	87.10	1.21	105.39	9.27
30-6-78	1.20	142,46,150	14.63	170.95	1.10	188.05	10.64
30-6-79	1.50	151,22,150	15.48	226.83	-	226.83	15.28
			TOTAL	1228.58		1798.03	108.75

Capital Appreciation

ROI = 12.83%

No. of shares held on 30-6-79	151.22 lakhs
Market price per share	Rs 15.48
Market value of shares	Rs 2340.88 lakhs
No. of shares held on 30-6-70	67 lakhs
Market price per share	Rs 30.10
Market value of shares	Rs 2016.70 lakhs
Capital Appreciation	Rs 324.18 lakhs
Adjusted dividend	Rs 1798.03 lakhs
Grand Total	Rs 2122.21 lakhs
Wealth ratio =	$\frac{2122.21}{2016.70} = 1.05 : 1$

EXHIBIT I (Contd)

10. VOLTAS LTD

Year ending	Dividends/ share	No. of shares	Market Price/ Share	Dividends (Rs lakhs)	Adjustment for interest at 10%	Adjusted dividends (Rs lakhs)	ROI %
31-8-71	15.00	519,480	231.25	77.92	2.14	166.75	11.39
31-8-72	17.00	519,480	223.25	88.31	1.95	172.21	23.40
31-8-73	17.00	623,376	219.25	105.97	1.77	187.58	11.91
31-8-74	110.50	623,376	236.50	65.45	1.61	105.38	14.04
31-8-75	12.00	623,376	268.00	74.80	1.46	109.22	14.27
31-8-76	12.00	623,376	146.80	74.80	1.33	99.40	12.90
31-8-77	67.00	623,376	148.00	43.63	1.21	48.90	11.40
31-8-78	12.00	623,376	128.00	74.80	1.10	82.29	12.52
31-8-79	15.00	623,376	151.00	93.50	-	93.50	14.29
			TOTAL	699.18		1065.32	126.12

ROI = 14.01%

Capital Appreciation

No. of shares held on 31.8.79	6.23 lakhs
Market price	Rs 151
Market value of shares	Rs 940.73 lakhs
No. of shares held on 31.8.70	4.33 lakhs
Market price	Rs 230.25
Market value of shares	Rs 997.78 lakhs
Capital Appreciation	(Rs 57.05 lakhs)
Adjusted dividend	Rs 1065.32 lakhs
Grand Total	Rs 1008.27 lakhs
Wealth ratio	= $\frac{1008.27}{997.78}$ = 1.01 : 1

EXHIBIT II

Wealth Ratios and Average R.O.I of the Indian Companies

<u>S.No.</u>	<u>Name of the Company</u>	<u>Wealth Ratio</u>	<u>Rank</u>	<u>Average ROI</u>	<u>Rank</u>
1	Telco	2.56 : 1	V	12.24	VII
2	Ashok Leyland	6.04 : 1	II	15.41	III
3	Escorts	10.03 : 1	I	14.16	IV
4	Hindustan Motors	(0.26 : 1)	X	6.76	X
5	Larsen & Toubro	5.40 : 1	III	15.76	II
6	The DCM	1.44 : 1	VII	9.34	VIII
7	Century Spinning	2.69 : 1	IV	17.85	I
8	Tisco	1.88 : 1	VI	18.76	IX
9	Brooke Bond India	1.05 : 1	VIII	12.83	VI
10	Voltas	1.01 : 1	IX	14.01	V

* * *

EXHIBIT III

Computation of the Rank Correlation Coefficient

<u>Wealth Ratio Ranks</u>	<u>Average ROI ranks</u>	<u>Difference</u>	<u>Difference squared</u>
5	7	-2	4
2	3	-1	1
1	4	-3	9
10	10	0	0
3	2	1	1
7	8	-1	1
4	1	-3	9
6	9	-3	9
8	6	2	4
9	5	4	<u>16</u>
			<u>54</u>

$$\begin{aligned}
 \text{Rank correlation coefficient (rs)} &= 1 - \frac{6\sum d^2}{n(n^2-1)} \\
 &= 1 - \frac{6 \times 54}{10(100-1)} \\
 &= 1 - \frac{324}{990} \\
 &= \frac{666}{990} \\
 &= 0.673
 \end{aligned}$$

EXHIBIT IV

Test showing the acceptance region and the Sample rank correlation coefficient

