

RADFORD PEERPICKER REPORT

Sniff Out Your Competition

The development of an appropriate peer group is one of the most fundamental and important objectives for any company's HR strategies. With the significant increase in Relative Total Shareholder Return (TSR) plans¹, the selection of a peer group not only affects the amount of targeted compensation, but it also affects the actual compensation delivered.

In light of this, we believe there may be situations in which the competitive peer group for purposes of developing target incentives may differ from the peer group used for determining Relative TSR payouts. We believe it is critical that in designing Relative TSR plans, companies should select comparitors that are appropriately correlated by stock price. Since future payouts will be determined as a function against comparitors stock price movements, any Relative TSR comparitors need to be developed such that TSR is actually aligned with stock price performance rather than any mitigating noise caused by external factors.

This report intends to: 1) illustrate statistical data on stock price returns for **your** identified peers (up to 20); and 2) summarize the "Top-20" statistically correlated companies from a group of more than 3,400 publicly traded companies currently being tracked by Radford. The Top-20 companies are selected on a combination of stock price correlation coefficient (do stock prices move similarly?), and the correlation coefficient of the residual error term compared against an anticipated stock price returns developed based on the overall market movement (how correlated are the stock prices after stripping out the effect of a general market movement?).

Name Your "Top-20": Company ABC (ABC) has provided Radford the following 20 companies. Appendix A summarizes statistical measures on these 20 companies based upon stock price.

#	Name	#	Name
1.	Peer Company 1	11.	Peer Company 11
2.	Peer Company 2	12.	Peer Company 12
3.	Peer Company 3	13.	Peer Company 13
4.	Peer Company 4	14.	Peer Company 14
5.	Peer Company 5	15.	Peer Company 15
6.	Peer Company 6	16.	Peer Company 16
7.	Peer Company 7	17.	Peer Company 17
8.	Peer Company 8	18.	Peer Company 18
9.	Peer Company 9	19.	Peer Company 19
10.	Peer Company 10	20.	Peer Company 20

A Fresh 20: Radford has calculated statistical correlations between Company ABC (ABC) and more than 3,400 publicly traded companies currently being tracked by Radford. Appendix B summarizes the Top-20 companies with the greatest statistical significance in stock price correlations.

On Appendix C, we have illustrated an example to provide an overview of the statistical metrics used to identify a peer.

¹ Visit www.RelativeTSR.com for a summary of companies who have recently initiated a Relative TSR plan

Appendix A: Name Your Top-20

Ticker	Name	Sector	Industry	Correlation	Residual
				Coefficient	Correlation
XXXX	Peer Company 1	XXXXXX	XXXXXXXXXXXXXXXXXX	0.7698	0.5270
XXXX	Peer Company 2	XXXXXX	XXXXXXXXXXXXXXXXXX	0.7538	0.4981
XXXX	Peer Company 3	XXXXXX	XXXXXXXXXXXXXXXXXX	0.7486	0.4852
XXXX	Peer Company 4	XXXXXX	XXXXXXXXXXXXXXXXXX	0.6555	0.3156
XXXX	Peer Company 5	XXXXXX	XXXXXXXXXXXXXXXXXX	0.6946	0.2651
XXXX	Peer Company 6	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5838	0.1900
XXXX	Peer Company 7	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5129	0.1619
XXXX	Peer Company 8	XXXXXX	XXXXXXXXXXXXXXXXXX	0.4800	0.1618
XXXX	Peer Company 9	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5115	0.1612
XXXX	Peer Company 10	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5647	0.1382
XXXX	Peer Company 11	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5174	0.0853
XXXX	Peer Company 12	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5115	0.0634
XXXX	Peer Company 13	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5590	0.0559
XXXX	Peer Company 14	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5134	0.0484
XXXX	Peer Company 15	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5736	0.0351
XXXX	Peer Company 16	XXXXXX	XXXXXXXXXXXXXXXXXX	0.4571	0.0311
XXXX	Peer Company 17	XXXXXX	XXXXXXXXXXXXXXXXXX	0.5983	0.0156
XXXX	Peer Company 18	XXXXXX	XXXXXXXXXXXXXXXXXX	0.3508	-0.0174
XXXX	Peer Company 19	XXXXXX	XXXXXXXXXXXXXXXXXX	0.4919	-0.1416
XXXX	Peer Company 20	XXXXXX	XXXXXXXXXXXXXXXXXX	0.7698	0.5270

Appendix B: Sniff Out The Competition

Name	Name	Sector	Industry	Correlation Coefficient	Residual Correlation
YYYY	New Peer Company 1	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.7698	0.5270
YYYY	New Peer Company 2	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.7538	0.4981
YYYY	New Peer Company 3	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.7486	0.4852
YYYY	New Peer Company 4	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.7091	0.3959
YYYY	New Peer Company 5	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6573	0.3831
YYYY	New Peer Company 6	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6935	0.3711
YYYY	New Peer Company 7	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6279	0.3221
YYYY	New Peer Company 8	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6811	0.3199
YYYY	New Peer Company 9	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6555	0.3156
YYYY	New Peer Company 10	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6094	0.3131
YYYY	New Peer Company 11	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6525	0.3123
YYYY	New Peer Company 12	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6523	0.2989
YYYY	New Peer Company 13	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.5966	0.2869
YYYY	New Peer Company 14	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6599	0.2857
YYYY	New Peer Company 15	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6506	0.2856
YYYY	New Peer Company 16	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6365	0.2752
YYYY	New Peer Company 17	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6223	0.2741
YYYY	New Peer Company 18	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6038	0.2738
YYYY	New Peer Company 19	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6626	0.2729
YYYY	New Peer Company 20	YYYYYYYY	YYYYYYYYYYYYYYYYYYYYYYYYYYYY	0.6325	0.2699

Companies have been **Grayed Out** if the company appeared in the original peer listing.

Appendix C: An Example

Four friends – Jake, Jim, Jon, and Terry - decide to spend the summer on the Jersey Shore, on a trip that will extend 40 days. As part of a dermatology study, the four friends each consent to see a dermatologist daily to be evaluated on their skin tone on a scale from 0-100, where 0 is the least coloration (palest), and 100 is brightest coloration (reddest). The Ultraviolet Index² (UV Index) will also be recorded daily during the 40 day period. On the following page, we've summarized each of the measurements during the 40-day period, and a summary of the UV Index. Jim has concluded that the two friends with the most similar summertime activities and sunscreen application habits can be extrapolated based upon the changes in skin coloring on given days.

Metric 1 – Correlation Coefficient of Skin Tone - In studying the data, we find the following correlation coefficients as determined through analyzing the skin tone between the four friends.

Skin Tone Correlations				
	Jake	Jim	Jon	Terry
Jake	1.0000	0.0037	0.0917	-0.4903
Jim	n/a	1.0000	0.4159	0.3669
Jon	n/a	n/a	1.0000	-0.2087
Terry	n/a	n/a	n/a	1.0000

The correlation simply compares the skin tone of pairs of the four friends. For example, it appears that Jim's skin tone was more similar to Jon's between days 3 through 17 and the overall trend near the end of the vacation was similar for both Jim and Jake. This is valuable data, and it suggests that Jim and Jon have the most comparable reaction to sun exposure as shown in the correlation table above. Because it is based purely on the skin tone of individuals, it ignores the fact that friends may have engaged in different summertime activities and applied different levels of sun tan lotion.

Metric 2 – Correlation Coefficient of Residual Error - However, there may be other variables that come into play which require more sophisticated statistical methods to uncover. For example, maybe some friends applied sunscreen more diligently, while some spent more time in the water when the UV Index gets high, or an urgent consulting project requires attention and limited their time in the sun. One methodology would be to analyze the actual change in skin tone for a given day compared against the projected change in skin tone for that day based on that day's UV Index.

The first step in the analysis is to perform a simple linear regression in which the UV index is the independent variable (the variable that drives the skin tone) and the skin tone change is the dependent variable (the variable the is driven by the UV Index). The results of this regression do not tell the full story however. The regression model ignores the various amount of time spent in the sun and the various level of sun tan lotion applied by the four friends.

In order to accurately determine the two friends with the most similar summertime activities and sun tan lotion application habits, the distribution of residual error must be analyzed since the simple correlation model can not detect these differences. Considering the data on the following page and comparing the skin tone to the UV Index (i.e. when Jim's skin tone decreases despite an increase in UV Index, and a similar pattern was illustrated with Jon, although the same pattern does not occur with Terry and Jake). Studying the residual errors of the regression sheds additional insight into the results

Correlation of Regression Residuals				
	Jake	Jim	Jon	Terry
Jake	1.0000	-0.0274	0.0436	-0.4823
Jim	n/a	1.0000	0.3240	0.4404
Jon	n/a	n/a	1.0000	-0.1424
Terry	n/a	n/a	n/a	1.0000

Although much can be gleaned from studying the correlation between individuals in a set of data, there can be many hidden reasons for which correlated individuals may move in unexpected patterns. Through analyzing the correlation of the regression residuals between the individuals in this study and the expected results, we have shown that although Jim and Jon showed the highest correlation of skin tone change given a days IV index, Jim and Terry actually spent similar amounts of time in the sun and applied sun tan lotion in similar manners. The fact that Jim and Jon displayed high correlation of skin tone change may actually show that Jim and Jon react very differently to sun exposure and the high correlation was driven by differences in the amount of time the two spent in the sun and various levels of sun tan lotion that was applied. This example illustrates that correlation alone is not enough when studying a group.

We have used a simplistic example of sun exposure here, but a similar approach can be used for studying peer groups based upon stock price movement – however substituting a publicly traded company for each friend, and a market index for the UV Index.

² The UV index announced in weather forecasts is a prediction of how strong the actual UV intensity will be at the sun's highest point in the day, which typically occurs during the four-hour period surrounding solar noon.

Appendix C: An Example (continued): Actual Data of Sun Exposure



Day	UV Index	Skin Tone of Friends				Model Error	Model Error	Model Error	Model Error
		Jake	Jim	Jon	Terry	Jake	Jim	Jon	Terry
1	4	46	32	0	5	-33	-14	14	17
2	1	48	20	0	0	-37	-10	5	20
3	5	64	35	17	0	-50	-14	0	21
4	7	41	15	31	0	-26	11	-8	19
5	8	38	31	30	0	-22	-3	-5	18
6	8	40	22	32	0	-24	6	-7	18
7	8	50	36	29	0	-34	-8	-4	18
8	8	25	33	42	7	-9	-5	-17	11
9	8	16	40	30	17	0	-12	-5	1
10	6	0	49	37	24	14	-26	-17	-4
11	10	13	68	42	40	4	-35	-11	-25
12	6	10	67	51	42	4	-44	-31	-22
13	10	1	68	39	48	16	-35	-8	-33
14	7	0	61	32	42	15	-35	-9	-23
15	4	0	61	26	49	13	-43	-12	-27
16	2	0	66	6	45	12	-53	2	-20
17	8	0	56	14	29	16	-28	11	-11
18	8	0	47	0	29	16	-19	25	-11
19	2	0	30	0	33	12	-17	8	-8
20	2	12	11	0	43	0	2	8	-18
21	3	0	11	0	58	12	5	11	-34
22	2	14	0	0	70	-2	13	8	-45
23	2	3	4	0	45	9	9	8	-20
24	5	0	0	12	26	14	21	5	-5
25	5	0	0	0	24	14	21	17	-3
26	3	0	6	6	11	12	10	5	13
27	3	11	0	18	1	1	16	-7	23
28	9	26	0	31	0	-10	31	-3	17
29	5	11	0	10	0	3	21	7	21
30	5	0	9	20	6	14	12	-3	15
31	1	7	0	24	8	4	10	-19	18
32	5	0	0	27	2	14	21	-10	19
33	5	2	0	30	11	12	21	-13	10
34	8	0	0	32	0	16	28	-7	18
35	9	0	0	14	11	16	31	14	6
36	3	4	0	0	16	8	16	11	8
37	9	14	0	0	29	2	31	28	-12
38	9	25	0	8	25	-9	31	20	-8
39	6	18	0	22	11	-4	23	-2	9
40	1	22	0	17	20	-11	10	-12	6

Correlation between Jim and Jon was higher than any other during the 40-day study

The error terms were the most correlated during the end of the study

For example, on Day 18, Jim had an error of -19 and Jon had an error of +25, illustrating that their skin tone did not move together as anticipated