"KEY PERSON DISCOUNT IN SMALL FIRMS: EVIDENCE FROM THE 1990s"

BY:

JAMES A. LARSON, PH.D., ASA, CFA AND JEFFREY P. WRIGHT, ASA, CFA

ABSTRACT

This study was conducted largely to update our earlier efforts into the research field of "key-person" discount. Upon completion of this current research, we have learned that our original hypotheses are still valid. The three major results of this study can be summarized briefly as follows:

- Business appraisers should not use the key-person specific risk factor as a quick and easy justification for building up a higher equity discount rate that in turn leads to a lower equity value

- The preponderance of evidence in this and earlier studies indicates that a "key-person" discount was present in less than one-half of all identified cases

- When the discount is deemed appropriate, the order of magnitude is generally a decrement of 4 - 6% in equity value.

These results are interesting to the business appraiser because they contradict the use of across-the-board key-person discounts in business valuation assignments. Our results are based on the assumption that changes in equity values due to the loss of key executives in smaller publicly traded businesses can be extrapolated into the universe of privately held firms.

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BACKGROUND

We published our initial key person discount research effort in the March 1996 edition of BVR, with an update following in September 1998.[1,2] Past readers of this journal may recall that our findings indicated very little empirical support for widespread unsubstantiated usage of key person discounts in business appraisal assignments. Our initial findings were based upon research that covered the six and one-half year period, January 1, 1990 - June 30, 1995. The update combined the information from the original effort with data through December 31, 1997. This latest study examined all previously compiled data, as well as the data covering the period 1998 and 1999. With the data for the final two years of the decade now available, we can draw conclusions with the benefit of a full decade of information. As with the previous efforts, the focus of this study continues to be determining when and to what extent the application of a "key-person" discount is appropriate in the appraisal of small and medium-sized, closely-held businesses.

INTRODUCTION

Since this study is in fact an update of two previously published articles in BVR, much of the introductory information is not included here. For those readers who desire access to the full text of the earlier articles, a hard copy may be requested from BVR or retrieved from the American Society of Appraisers web site at www.appraisers.org. The definition of a "key person" continues to be someone with a corporate title of President, Chairman, CEO or Chief Executive Officer. This definition has remained identical throughout each of the studies.

METHODOLOGY

The methodology used in this study is essentially unchanged from our earlier work. As we explained in those studies, the best way to determine if the key person discount is appropriate for application in the appraisal of a privately held business interest would be to obtain an equity value immediately before a death occurred and compare it to the value after the death. Unfortunately, by definition, a privately held concern has no public market for its stock, therefore the before and after assessment would be impossible. However, a viable alternative would be emulation of the same scenario in the public securities market. In other words, if very small publicly traded companies could be located where market prices do exist, perhaps these results could be used as a benchmark for the universe of smaller private counterparts.

Our study defines a "small" company as a business with a maximum of 500 employees, which is one of the Small Business Administration (SBA) guidelines.[3] Our data search was extended from the earlier eight year period to encompass the final two years of the decade, 1998 and 1999. The first year and final two years of the period were searched utilizing a multiple newspaper abstract database that contained the Wall Street Journal as well as the New York Times, Washington Post, Atlanta Constitution, Atlanta Journal, Boston Globe, Los Angeles Times, Chicago Tribune, USA Today and Christian Science Monitor. The intervening seven years were searched exclusively using the Wall Street Journal index. In all cases the search was conducted using the key words "President," "Chief Executive Officer," "CEO" and/or "Chairman" coupled with the words "death" or "died."

Our update published in 1998 had identified 42 instances where key executives in small public corporations had died. Extending the search through year-end 1999 identified 12 additional events, bringing the total to 54. Four of these newly discovered events had to be deleted from consideration because further research revealed that these four companies were involved in some type of corporate restructuring, merger, sale or spin-off of a major subsidiary during the period under study. Deleting these four events left a total of 50 events (net) for study. We checked each new datapoint for size and retained the data only if the number of employees numbered under 500.

We gathered additional information, including the name of the company and the executive, title(s) held, cause of death, day of the week death occurred, exchange where the stock traded, ticker symbol and corporate headquarters. If the news release did not contain all of this information, we referenced other sources.

Once we obtained the above information we then gathered stock price information. Since the intent of the study was to determine the effects of key person loss on privately held equity value, we again studied the price action immediately before and after the public corporation executive's death. Further, the price action under scrutiny needed to be "net of market" effects. Therefore, it became necessary to utilize a common index that would filter out market effects, thus leaving the pure key person effect isolated as much as possible. The Russell 2000 was again determined to be the best representative index for the type of companies comprising the universe. As noted by Peter Dietz and Jeannette Kirschman in Chapter 14 of Managing Investment Portfolios, it is widely available, understood, and used by professionals in the investment community who have interest in "small cap" stocks.[4] Information from Frank Russell Company also confirms this, since investors had holdings of more than $15 Billion dollars in funds that are benchmarked to the Russell 2000 as of 1998.[5]

A window of ten trading days before and ten trading days after the death was again used in determining the existence and/or extent of key person effect. This window was sufficiently limited in scope to minimize the potential distorting effects of other news items. If the death occurred during the week, the trading day upon which the death occurred was omitted from the study since there was no accurate way of determining if the market received the news before trading ceased for the day. Closing quotes on each stock for the twenty-day period were then divided by the Russell 2000 closing value for the same day. If no stock traded on a given day, that day was omitted from the calculation, but the search was then broadened to capture ten actual days when trades did in fact occur.

After the daily closing quotes had been divided by the Russell index for the same day, we averaged the ten values before death to produce an "Index Value - Pre Date of Death." We used the same approach on the ten values after the death to create an "Index Value - Post Date of Death." We then conducted a final search by company name to ensure that no other significant news such as a takeover, merger, spin-off or restructuring was announced during the twenty-day window described above. This analytical approach thus allowed for a "smoothed" company value (net of market effects) immediately before the death to be compared with the comparable value immediately after the death. Therefore, any change if detected, should be due to the loss of the executive. These values in addition to other

highlighted information on the fifty deaths discussed above can be found in Table 1. The previously identified events are numbered 1 – 42; the newly discovered events are numbered 43 – 50.

TABLE 1

Key Executive Deaths in Small Public Corporations: 1/1/90-12/31/99

COMPANY ID NUMBER	TITLE(S)	CAUSE OF DEATH	EXCHANGE	INDEX VALUE *PRE DOD*	INDEX VALUE *POST DOD*
1	Chairman	Heart Attack	AMEX	0.02767	0.02740
2	Chairman	Heart Attack	NDQ	0.01015	0.00949
3	Pres & CEO	Heart Attack	NDQ	0.03560	0.03104
4	Pres & CEO	Heart Attack	NDQ	0.04922	0.04987
5	Chairman	Heart Attack	NDQ	0.04266	0.04639
6	Pres, Chair & CEO	Heart Attack	NDQ	0.03279	0.03158
7	Pres	Heart Attack	NDQ	0.05093	0.04895
8	Pres & CEO	Accident	NDQ	0.03155	0.03057
9	Chairman	Heart Attack	NDQ	0.05597	0.05828
10	Pres & CEO	Cancer	NDQ	0.03627	0.03812
11	Chairman	Cancer	AMEX	0.02097	0.02134
12	Pres, Chair & CEO	Illness	AMEX	0.16981	0.17284
13	Chairman & CEO	Heart Attack	NDQ	0.02846	0.03119
14	Pres & CEO	Heart Attack	AMEX	0.11569	0.11477
15	Chair & CEO	Illness	NDQ	0.07105	0.06889
16	Chairman	Cancer	NYSE	0.03232	0.03614
17	Chairman & CEO	Overdose	AMEX	0.00502	0.00532
18	Pres & CEO	Heart Attack	NDQ	0.00760	0.00912
19	Pres, Chair & CEO	Cancer	NDQ	0.03841	0.04003
20	Pres, Chair & CEO	Cancer	NDQ	0.02449	0.02551
21	Chairman & CEO	Cancer	NDQ	0.01667	0.01608
22	Chairman & CEO	Heart Attack	NDQ	0.02853	0.03152
23	Chairman	Accident	NDQ	0.01930	0.01886
24	President	Heart Attack	NYSE	0.04015	0.04232
25	Chairman	Heart Attack	NYSE	0.03883	0.04456
26	Chairman	Pneumonia	NDQ	0.01214	0.01160
27	Pres & CEO	Unknown	NDQ	0.01348	0.01243
28	Chair & CEO	Heart Attack	AMEX	0.12450	0.13328
29	Pres & CEO	Heart Disease	NDQ	0.02363	0.02385
30	Chair, Pres & CEO	Aneurism	NDQ	0.00440	0.00390
31	Chairman	Pneumonia	NDQ	0.03623	0.03498
32	Chairman	Natural causes	NDQ	0.01745	0.01785
33	Pres & CEO	Heart Attack	NYSE	0.01835	0.01760
34	Chairman	Long Illness	NDQ(SC)	0.02070	0.01957
35	Pres & CEO	Heart Attack	NYSE	0.02343	0.02407
36	Chairman	Diabetes	NDQ	0.01480	0.01435
37	Chairman & CEO	Sudden Illness	AMEX	0.02164	0.02140
38	Chairman & CEO	Unexpected	NDQ(SC)	0.00129	0.00143
39	Pres & CEO	Plane Crash	NDQ	0.01207	0.01427
40	President	Heart Attack	NDQ	0.00774	0.00701
41	President & CEO	Cancer	NDQ	0.01917	0.02154
42	Chairman & CEO	Sudden Illness	NDQ	0.02146	0.02034
43	Chairman	Cancer	AMEX	0.01422	0.01494
44	Chairman	Accident	NDQ	0.03380	0.03068
45	President & CEO	Long Illness	NDQ	0.03268	0.03094
46	Chairman & CEO	Stroke	NYSE	0.00649	0.00679
47	Chairman	Unknown	AMEX	0.00964	0.00890
48	CEO	Heart Attack	NDQ	0.00904	0.00910
49	CEO	Brief Illness	NDQ	0.03408	0.03444
50	CEO	Heart Attack	NDQ	0.01202	0.01406

Given the construct of the above data, we again undertook the statistical paired difference test for two population means where the samples are not independent in order to ascertain whether or not there indeed was a diminution in equity value upon the death of the executive.[6] A one-tailed test was used with the "t" distribution as the appropriate test statistic because several of the data subsets described below possessed fewer than thirty observations. A 5% significance level was used in all cases. The null and alternate hypothesis were stated as follows:

H_0: $\mu_d = 0$ (There is no difference in the mean values.)

H_1: $\mu_d > 0$ (There is a decline in the mean values i.e. the differences are positive.)

RESULTS

The complete results of all of the statistical tests appear in the Appendices. Appendix A displays the results of the first test covering all fifty data points, and no significance was found. In other words, it cannot be concluded that there is a decline in corporate equity value after the death of a key executive. This is essentially the same result we found in both our initial report and the ensuing update.

In maintaining continuity with the first two studies, we tested a subset of the universe defined as "unexpected" deaths. These were defined in this project as deaths that were caused by heart attack, accident, or drug overdose, or that simply stated in the press release "sudden" or "unexpected." This test resulted in a universe of thirty-one. This rationale assumed that the market might be more likely to react negatively to a sudden or unexpected death as opposed to a longer-term situation such as cancer or heart disease where the potential loss of a key person might be slowly absorbed into the stock price. The results of this test appear in Appendix B, but again show no significant negative reaction, mirroring the results of our earlier work.

The next subset to warrant attention related to any possible distinction as to title. Some of the research mentioned in our earlier studies were on the large corporation universe and indicated a disparity in effects between CEO deaths as compared to Chairman death. For purposes of both this study and our previous efforts, "importance" was not associated with any particular title but instead with the number of titles held. Two or three titles were used as the proxy for importance, resulting in a universe of twenty-eight. The results of this test appear in Appendix C and show no significance; the same result noted in both previous studies.

The earlier published work of Worrell and Davidson in 1989[7] used a NASDAQ listing as equivalent to "small." They found some evidence that the death of key executives at NASDAQ-listed stocks resulted in a more severe impact on equity value than deaths at their larger NYSE counterparts. We tested their thesis using the methodology described herein and no significance was found as displayed in Appendix D. This tends to support the assertion we expressed in both previous reports that a NASDAQ listing is no longer a good proxy for a "small" company. It should be noted that the AMEX merged with the NASD in 1998. Since the AMEX still operates as a fully independent entity, events #43 and #47 were not included as NASDAQ Listings.

Significant statistical results were not found in Appendices A - D. These were the same subsets of data that were identified in both earlier efforts. With 50 events now identified, we added another data subset. The separation of the 50 events into two equal-sized sets of 25 data points, in date order of occurrence, provides a potential glimpse into any change in the dynamics of key-person discount over the

TABLE 2

Percentage Change(s)
Fifty Executive Deaths (1/1/90-12/31/99)

NEGATIVE CHANGES (23)		POSITIVE CHANGES (27)	
COMPANY ID NUMBER	*INDEX % CHANGE*	*COMPANY ID NUMBER*	*INDEX % CHANGE*
3	-12.81%	48	0.66%
30	-11.22%	29	0.92%
40	-9.38%	49	1.06%
44	-9.23%	4	1.33%
27	-7.81%	11	1.76%
47	-7.68%	12	1.78%
2	-6.48%	32	2.30%
34	-5.48%	35	2.72%
45	-5.32%	9	4.13%
42	-5.20%	20	4.17%
26	-4.49%	19	4.20%
33	-4.05%	46	4.62%
7	-3.89%	43	5.06%
6	-3.69%	10	5.08%
21	-3.52%	24	5.40%
31	-3.43%	17	6.01%
8	-3.11%	28	7.05%
15	-3.05%	5	8.75%
36	-3.02%	13	9.62%
23	-2.27%	22	10.47%
37	-1.09%	38	11.27%
1	-0.98%	16	11.80%
14	-0.80%	41	12.34%
		25	14.74%
		50	16.97%
		39	18.23%
		18	20.06%
Mean Change	-5.13%	Mean Change	7.13%
		Overall Percentage Change	1.49%

No statistically significant outcomes were noted in the above analysis that separated the events into the first and second half of the decade, as noted in Appendices E and F. However, computing the percentage change during the first and second halves of the decade might provide a slightly different perspective on the size and/or frequency of the key person discount. Therefore, information in Table 3 displays the percentage change data for the first half of the decade and Table 4 displays comparable information on the second half of the decade. Comparing the various percentage changes in Tables 3 and 4, there is no substantial difference in outcomes. Eleven of twenty-five events produced negative index changes during the first half of the decade, while twelve of twenty-five events resulted in negative changes in the latter half of the decade. When compared against the full decade of information in Table 2, the incidence of negative change is bounded by a range of 44 - 48%.

TABLE 3

Percentage Change(s)
Twenty Five Executive Deaths (1/1/90 - 11/5/94)

NEGATIVE CHANGES (11)		**POSITIVE CHANGES (14)**	
COMPANY ID NUMBER	*INDEX % CHANGE*	*COMPANY ID NUMBER*	*INDEX % CHANGE*
3	-12.81%	11	1.76%
27	-7.81%	12	1.78%
2	-6.48%	9	4.13%
26	-4.49%	20	4.17%
7	-3.89%	19	4.20%
6	-3.69%	10	5.08%
21	-3.52%	24	5.40%
8	-3.11%	17	6.01%
23	-2.27%	28	7.05%
1	-0.98%	5	8.75%
14	-0.80%	13	9.62%
		22	10.47%
		16	11.80%
		25	14.74%
Mean Change	-4.53%	Mean Change	6.78%
		Overall Percentage Change	1.80%

TABLE 4

Percentage Change(s)
Twenty Five Executive Deaths (11/6/94 - 12/31/99)

NEGATIVE CHANGES (12)		POSITIVE CHANGES (13)	
COMPANY ID NUMBER	*INDEX % CHANGE*	*COMPANY ID NUMBER*	*INDEX % CHANGE*
30	-11.22%	48	0.66%
40	-9.38%	29	0.92%
44	-9.23%	49	1.06%
47	-7.68%	4	1.33%
34	-5.48%	32	2.30%
45	-5.32%	35	2.72%
42	-5.20%	46	4.62%
33	-4.05%	43	5.06%
31	-3.43%	38	11.27%
15	-3.05%	41	12.34%
36	-3.02%	50	16.97%
37	-1.09%	39	18.23%
		18	20.06%
Mean Change	-5.68%	Mean Change	7.50%
		Overall Percentage Change	1.18%

When examining only the negative reactions displayed in the left hand columns of Tables 3 and 4, there are no significant differences in mean or median changes, as both data sets showed declines in the 4 - 6% range for both periods. Upon analysis of only the positive reactions in the right hand columns of Tables 3 and 4, again there were no major distinctions, with both data sets registering mean gains in the area of 7%. When comparing the overall mean change for each of the two periods, the mean percentage change declined slightly from +1.8% to +1.2%.

CONCLUSIONS

This study was conducted largely to update our earlier efforts into the research field of "key-person" discount. Upon completion of this current study, it is apparent that the original hypotheses developed in our earlier studies are still valid. The three major results of this study can be summarized briefly as follows:

- Business appraisers should not use the key-person specific risk factor as a quick and easy justification for building up a higher equity discount rate that in turn leads to lower equity value

- The preponderance of evidence in this and earlier studies indicates that a "key-person" discount was present in less than one-half of all identified cases

- When the discount is deemed appropriate, the order of magnitude is generally a decrement of 4 - 6% in equity value.

These results are interesting to the business appraiser because they contradict the use of across-the-board key-person discounts in business valuation assignments. Our results are based on the assumption that changes in equity values due to the loss of key executives in smaller publicly traded businesses can be extrapolated into the universe of privately held firms.

The reasons for the positive changes in stock prices are not known with certainty, but we believe three forces may be responsible for the results. First, the preponderance of positive equity changes may relate to the market's expectation that the death of the executive may lead to a potential sale of the business. An acquisition might occur at a premium to the trading price that existed prior to the death. The public securities market may view the death of the key executive as a "door opener" to a possible bidding war that would drive equity value higher, not lower. A second potential explanation may relate to the market's expectation that perceived substandard performance under a dominant management figure may be reversed under new leadership. Investors might be willing to pay more for the stock in the belief that increased participation by other senior managers may in fact improve company operations. These senior-level managers may be providing an additional layer of support to the CEO of the smaller business that may not have been evident ten or twenty years ago. Potential support for this contention can be found in the most recent U.S. Statistical Abstract which states that the workforce at companies with *over 500* employees grew by only 27% between 1980 -1997, while the workforce at companies with *fewer than 500* employees grew at a much healthier rate of 45%. This is a 66% difference in growth rates and has caused the percent of the workforce employed by small business to grow from 78.1% of total employment to 80.3%.[8] Given the layoffs in the ranks of middle and senior management in large corporations during the 1990s, it is likely that a large cadre of these highly qualified managers developed new careers at smaller firms. Third, an increase in stock price may also be the result of a breakup in a control position of the stock owned by the executive who passed away. In some instances of a key-person's death, a controlling block of stock is ultimately dispersed among several family members, thus leading to the breakup of the block and subsequent loss of control. Investors may bid up the price of the stock in anticipation of the removal of the control block. Further research is needed to determine which of these above factors or yet-to-be identified factors are most responsible for the positive equity value changes.

When the facts and circumstances of a case clearly justify the application of the key-person discount, quantifying the increment is the next important decision. Various methods could be chosen for dealing with this issue, but one simple, yet straightforward approach incorporates a key-person risk component into the specific risk factors used in building up the discount rate. For illustration purposes only, if a preliminary discount rate or cost of equity capital of 20% was computed (exclusive of specific risk factors) and a key-person risk component was deemed appropriate, a 1% increment might be added to the preliminary discount rate. This approach would develop a 21% final equity discount rate and would produce an approximate 5% reduction in equity value, holding all other variables constant.

In conclusion, business appraisers should diligently examine the specific facts of each case insofar as the issue of key-person discount is concerned. If deemed appropriate, the rationale for inclusion should be thoroughly explained and justified.

Both James A. Larson, Ph.D., ASA, C.F.A. and Jeffrey P. Wright, ASA, CFA are appraisers of closely held private business interests for Centerpoint Advisors. The firm is headquartered in Scottsdale, Arizona

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ENDNOTES

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APPENDIX A

All Observations

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.03149	0.03199
Variance	0.00096	0.00101
Observations	50	50
Hypothesized Mean Difference	0	
Degrees of Freedom	49	
t Statistic	-1.58826	
t Critical Value: one-tail	1.67655	

APPENDIX B

Unexpected Deaths

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.03066	0.03128
Variance	0.00079	0.00085
Observations	31	31
Hypothesized Mean Difference	0	
Degrees of Freedom	30	
t Statistic	-1.36377	
t Critical Value: one-tail	1.69726	

APPENDIX C

Two or More Titles

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.03621	0.03672
Variance	0.00153	0.00161
Observations	28	28
Hypothesized Mean Difference	0	
Degrees of Freedom	27	
t Statistic	-1.16082	
t Critical Value: one-tail	1.70329	

APPENDIX D

NASDAQ Listing

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.02588	0.02594
Variance	0.00025	0.00025
Observations	35	35
Hypothesized Mean Difference	0	
Degrees of Freedom	34	
t Statistic	-0.18694	
t Critical Value: one-tail	1.69092	

APPENDIX E

First Half of Decade

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.04210	0.04318
Variance	0.00149	0.00158
Observations	25	25
Hypothesized Mean Difference	0	
Degrees of Freedom	24	
t Statistic	-1.97656	
t Critical value: one-tail	1.71088	

APPENDIX F

Second Half of Decade

	INDEX VALUE	
	Pre DOD	*Post DOD*
Mean	0.03518	0.03583
Variance	0.00175	0.00184
Observations	25	25
Hypothesized Mean Difference	0	
Degrees of Freedom	24	
t Statistic	-1.30103	
t Critical Value: one-tail	1.71088	