CHAPTER 5
ANALYSIS OF RESULTS

This chapter begins with a description of the data and sample size. Information about the correlation and normality of the data follows. The next section contains the results of the tests of hypotheses that used the methods described in the "Statistical Analysis" section of Chapter 4. Lastly, an overall summary of the results by industry is presented by industry.

Data Description

Sample Size

As previously described in Chapter 4, the sample consisted of at least eight consecutive years of observations for each company in the sample. The sample began with 605 adopter companies - 283 from the Gaver study and the remainder from Frederick W. Cook and Associates, Compensation Consultants. The adopter sample size was reduced due to missing data. The final adopter sample consisted of 335 companies. These companies were spread over the nine industries as shown in Table 4.

The non-adopter sample was chosen from all possible firms available on the COMPUSTAT tapes. The sample was reduced to include those firms in the appropriate 3-digit SIC categories that had the required data items. This resulted in 2,896 non-adopter companies. These companies were also divided into the nine industry categories as shown in Table 4.

Descriptive Statistics

Descriptive statistics were calculated using Minitab's Descriptive procedure. These statistics were calculated for each of the three types of company classification (adopter, non-adopter, peer) for each of the nine industry groups for both dependent and independent variables. Tables 5 through 13, provide the mean, median, standard deviation and upper and lower quartiles for all variables by company classification and industry group.[1] As briefly explained below, a few interesting points can be ascertained from the descriptive statistics for each industry group. These points will be further clarified in the "Tests of Hypotheses" section of this chapter.

Table 5, Bank and Non-Bank Financial Adopters, shows that the mean percentage change for both ROE1 and ROE2 was a very small decrease. All other variables show mean positive increases. Non-adopter information for the same industry group shows that non-adopters had on

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[1] Descriptive statistics were not calculated on raw data items, rather they were calculated on the variables for percentage changes, i.e., Pre-Post1,and Pre-Post2.

average positive increases for all variables, including ROE1 and ROE2. Peer information for this industry shows positive average increases for all variables except the overhead control variables, OHCTRL1 and OHCTRL2. Mean sales across the three groups are similar; however, the standard deviation is significantly smaller for non-adopters, thereby implying that non-adopters are more similar in size as a group than are adopters and peers.

Information for the Chemical industry group is presented in Table 6. One consistency throughout this company classification is a negative mean change in the variables INV/SLS1 and INV/SLS2, implying that this may be the result of a truly industry wide phenomenon, and not necessarily the result of choices made by management. Also, adopters and peers seem well matched in this category as mean average sales for these two groups are very close.

Table 7 contains the information related to the adopters, non-adopters and peers for the Consumer Products Industry. Once again, adopters have larger average sales than non-adopters, and average sales indicate adopters are fairly closely matched to peers. The only consistency among the other variables seems to be a negative mean percentage change in ROE1 and ROE2 for both adopters and peers.

Adopter, non-adopter, and peer summary data for the Electrical, Electronics and Related Equipment group are presented in Table 8. The most glaring observation from this table is that adopter average sales are tremendously higher than average sales for the non-adopter group. This implies there are a significant number of small companies in the non-adopter group. The peer group subsample of the non-adopters is very close in average sales to the adopter group, however, indicating a relatively good match between the two classifications.

Once again, as presented in Table 9, the average sales for the adopters in the Food Processing and Distribution industry are significantly higher than the average sales of non-adopters, indicating adopters consist mostly of companies with a large market share within the industry. There were a sufficient number of large market share non-adopters to use as peers, resulting in a close match on these two classifications however.

In Table 10, for the Heavy Manufacturing group, the firms with the largest market share tend to be the adopters, while the non-adopter group appears to contain a significant number of smaller companies. Once again, adopters and peers are closely matched on average sales.

Descriptive statistics for the Mining and Extractive group are presented in Table 11. Obviously for this industry group, adopters tend to be some of the largest companies in the industry. As can be seen from the standard deviation for average sales for adopters, there is extreme variation in the size of adopters. Also, the match between adopters and peers is not very close as there are very few large non-adopters in this industry group.

Table 12 provides the information for Non-Financial Service adopters, non-adopters and peers respectively. It appears that adopters have larger sales on average than non-adopters in this industry as indicated by the mean and large standard deviation for adopters. However it was possible to obtain reasonable matches of peers to adopters.

Lastly, information for the Textiles, Paper and Forest Products group is presented in Table 13. Average sales for adopters is again higher than for non-adopters, and peers fairly

TABLE 4

Adopter and Non-Adopter Sample Size Information

Industry	Adopters	Adopter Obs.[1]	Non-Adopters	Non-Adopter Obs.[2]
Financial	33	264	123	1305
Chemical	44	352	181	2381
Consumer	33	264	376	4956
Electrical	35	280	565	7734
Food Process	39	312	175	2088
Heavy Mfg.	37	296	296	3665
Mining	41	328	446	6012
Service	35	280	271	2609
Textiles	38	304	463	6722

[1] Each adopter company has exactly eight consecutive years of data, thus observation years are the number   of firms times eight years.

[2] Each non-adopter company has at least eight consecutive years of data. Many of the companies have more than eight years of data.

closely match adopters. There are no other obvious consistencies between the three company classes.

To assist in the interpretation of the analysis of this study it was important to also assess the pre-adoption status of the adopters, with respect to the chosen variables, relative to non-adopters and peers for the same measurement periods. Differences in the percentage change in the variables between adopters and non-adopters and/or adopters and peers, will be dependent on how non-adopters were performing prior to the adoption relative to the non-adopters and peers. Therefore, descriptive statistics; mean, median and standard deviation, were measured for the pre-adoption time period for each of the three company classifications; adopter, non-adopter and peer. These descriptive statistics are presented for each industry group in Tables 14, 15 and 16. Analysis of these tables indicates some differences in the pre-adoption period between the three adoption classifications.   To determine if the pre-adoption means were significantly different between the groups, a two-tailed t-test was performed on the pre-adoption variables comparing adopters to non-adopters and also comparing adopters to peers. The results of this analysis are presented in Table 17.

These results indicate adopters in some industries were performing at a level below the remainder of the industry prior to adoption on some variables, but above the industry performance on other variables. Predominately the differences were between adopters and non-adopters with adopters and peers showing similar pre-adoption performance on most variables. Occasionally adopters were performing better than their non-adopting counterparts on a few measures. In general, in the following industry categories; Bank and Non-Bank Financial, Chemical, Electrical Products, Food Processing, and Non-Financial Services, adopters did not perform as well as non-adopters or peers during the pre-adoption measurement period.   In the Consumer Products, Heavy Manufacturing, Mining, and Textiles industry groups, adopters in general performed as well as non-adopters on some variables, but did not perform as well as peers for the pre-adoption measurement period.   These results and how they apply to the interpretation of the tests of hypotheses will be discussed in more detail in the Statistical Results section.

Diagnostics

Correlation

The data for this study contain some variables that are highly correlated. Appendix B shows the Pearson Correlation coefficients for the variables in each industry group. The correlations presented were tabulated separately for the Pre-Post1 data and for the Pre-Post2 data because the Pre-Post2 data contain the Pre-Post1 data plus two additional years. It appears from the tables that there is sufficient correlation between the industry specific variables to warrant the use of MANOVA as explained in the "Statistical Analysis" section of Chapter 4.

TABLE 5

Descriptive Statistics for Each Industry Group and Each Company Classification

Bank and Non-bank Financial

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00224	-0.00006	0.00829	0.00113	-0.00395
CAPGRW1	0.37750	0.31360	0.46250	0.62870	0.10120
OHCTRL1	0.01230	0.00800	0.06060	0.03930	-0.00740
DIV1	0.69100	0.31800	1.61100	0.81000	0.08700
ROE2	-0.00049	0.00049	0.00731	0.00182	-0.00163
CAPGRW2	0.62100	0.51900	0.61900	1.01700	0.18900
OHCTRL2	0.00535	0.00247	0.04958	0.02495	-0.02030
DIV2	0.75900	0.48400	1.09300	1.05900	0.03600
AVGSLS	2960	2347	3040	3418	794

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.02448	0.01381	0.04433	0.07310	-0.02229
CAPGRW1	0.87300	0.49400	0.58800	1.16500	0.44900
OHCTRL1	0.00569	-0.00789	0.03523	0.01662	-0.01887
DIV1	0.53200	0.41510	0.25580	0.60530	0.39210
ROE2	0.00095	0.00018	0.00572	0.00379	-0.00218
CAPGRW2	1.26900	0.79700	0.84700	1.63900	0.58800
OHCTRL2	0.00217	0.00207	0.01276	0.00292	-0.00641
DIV2	0.71350	0.60470	0.27480	0.84910	0.56450
AVGSLS	2216	1411	1305	3374	1002

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.15100	0.01300	1.43900	0.05100	-0.01700
CAPGRW1	0.84000	0.64400	0.78600	1.22400	0.26700
OHCTRL1	-0.13800	0.00400	1.39000	0.05800	-0.03300
DIV1	0.68800	0.32900	1.00200	0.96900	0.19200
ROE2	0.00803	0.00326	0.05360	0.04877	-0.03439
CAPGRW2	1.03700	0.79700	0.90400	1.63600	0.35700
OHCTRL2	-0.22600	0.007	1.92400	0.07200	-0.03900
DIV2	0.89400	0.51800	1.22600	1.25300	0.31100
AVGSLS	2999	2436	3186	3796	835

TABLE 6

Descriptive Statistics for Each Industry Group and Each Company Classification

Chemical Manufacturing & Distribution

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.01180	0.00510	0.07950	0.02480	-0.02020
INV/SLS1	-0.00677	-0.01026	0.02239	0.00446	-0.02068
RD/SLS1	0.00233	0.00066	0.00844	0.00495	-0.00136
CAPSP1	0.52610	0.35720	0.59580	1.01740	0.13550
ROE2	0.00142	0.00091	0.03336	0.02139	-0.01752
INV/SLS2	-0.01044	-0.01360	0.02737	0.00091	-0.02539
RD/SLS2	0.00325	0.00177	0.00931	0.00600	-0.00164
CAPSP2	0.62500	0.50900	0.66400	1.06400	0.04000
AVGSLS	2446	2044	2410	3096	824

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.09100	0.13550	0.17200	0.20040	-0.10380
INV/SLS1	-0.02721	-0.02236	0.04403	-0.01027	-0.05369
RD/SLS1	0.04400	-0.01380	0.16520	0.09630	-0.05120
CAPSP1	0.79800	0.45100	0.88600	1.46100	0.19400
ROE2	0.13620	0.21080	0.21660	0.31140	-0.15460
INV/SLS2	-0.04726	-0.04515	0.03858	-0.04174	-0.07255
RD/SLS2	0.08180	0.01400	0.20970	0.19400	-0.07570
CAPSP2	1.22700	0.56900	1.37100	2.98000	0.09600
AVGSLS	1239	1354	180	1368	1032

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.00156	0.00220	0.04810	0.03062	-0.02992
INV/SLS1	-0.01230	-0.00981	0.02735	-0.00001	-0.02296
RD/SLS1	-0.00212	0.00296	0.04179	0.00561	-0.00027
CAPSP1	1.20400	0.37300	3.19000	0.84000	0.23200
ROE2	0.01340	0.00780	0.07620	0.03980	-0.03080
INV/SLS2	-0.01601	-0.01375	0.02967	-0.00198	-0.02505
RD/SLS2	0.00118	0.00378	0.03734	0.00824	0.00084
CAPSP2	2.25500	0.49700	4.90700	1.294	0.32400
AVGSLS	2362	1958	2602	3085	650

TABLE 7

Descriptive Statistics for Each Industry Group and Each Company Classification

Consumer Products Manufacturing & Distribution

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00905	-0.00775	0.05466	0.02058	-0.02868
AD/SLS1	0.00106	-0.00000	0.00743	0.00272	-0.00283
INVTURN1	1.28800	0.51300	3.55600	1.07700	0.12200
SLSGRW1	0.46800	0.39800	0.58100	0.70100	0.09900
ROE2	-0.00137	-0.00056	0.01704	0.00583	-0.00735
AD/SLS2	0.00181	0.00032	0.00461	0.00213	-0.00065
INVTURN2	-0.75400	-0.25700	2.12500	-0.03500	-0.83800
SLSGRW2	0.62400	0.51900	0.70100	0.88400	0.17600
AVGSLS	3300	1800	6018	2747	663

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.01830	-0.01388	0.02630	0.04074	-0.00737
AD/SLS1	-0.00051	-0.00069	0.00131	-0.00034	-0.00167
INVTURN1	0.30650	0.26800	0.56280	0.55550	-0.15330
SLSGRW1	0.12960	0.10430	0.27620	0.19990	-0.07470
ROE2	-0.00213	-0.00135	0.00832	0.00127	-0.00805
AD/SLS2	0.00029	-0.00023	0.00091	0.00154	-0.00035
INVTURN2	-0.05160	-0.21170	0.53060	0.35700	-0.28400
SLSGRW2	0.17490	0.05930	0.30340	0.29920	-0.02660
AVGSLS	1572	1411	795	1790	1022

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.07930	0.00260	0.46440	0.03830	-0.01810
AD/SLS1	0.01530	0.00210	0.06920	0.00440	-0.00010
INVTURN1	1.00900	0.45400	2.00900	0.77400	0.15300
SLSGRW1	0.38560	0.35890	0.40860	0.51150	0.19770
ROE2	-0.03120	0.01630	0.22820	0.04530	-0.02940
AD/SLS2	0.00996	0.00236	0.03617	0.00627	-0.00064
INVTURN2	0.52400	0.02000	1.59700	0.46400	-0.19800
SLSGRW2	0.54900	0.42600	0.64100	0.76900	0.25900
AVGSLS	3400	1410	8315	3341	428

TABLE 8

Descriptive Statistics for Each Industry Group and Each Company Classification

Electrical, Electronics and Related Equipment

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00420	0.00260	0.03144	0.01428	-0.03073
RD/SLS1	0.00044	0.00036	0.01017	0.00655	-0.00518
SLSGRW1	0.61480	0.50820	0.46480	0.82720	0.33080
INVTURN1	0.61580	0.54550	0.52960	0.83370	0.34520
ROE2	-0.00261	-0.00101	0.01154	0.00614	-0.00988
RD/SLS2	0.00039	0.00087	0.00431	0.00236	-0.00219
SLSGRW2	0.86000	0.73600	0.73700	1.03100	0.36700
INVTURN2	-0.25420	-0.21860	0.45990	0.01690	-0.54810
AVGSLS	4385	1720	6401	6151	357

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.01174	0.00326	0.03012	0.04082	-0.00439
RD/SLS1	0.04901	0.05171	0.05019	0.10194	-0.00512
SLSGRW1	0.00025	0.00001	0.00568	0.00328	-0.00619
INVTURN1	0.02010	-0.02140	0.24990	0.17290	-0.28850
ROE2	-0.00266	-0.00354	0.00794	0.00387	-0.01045
RD/SLS2	-0.01720	-0.03680	0.08650	0.07620	-0.08380
SLSGRW2	0.00072	0.00131	0.00216	0.00252	-0.00105
INVTURN2	-0.00940	-0.01560	0.19960	0.13420	-0.25110
AVGSLS	555	551	38	572	518

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.01593	0.00557	0.05308	0.03717	-0.02006
RD/SLS1	0.00486	0.00089	0.01136	0.00869	-0.00225
SLSGRW1	0.61620	0.50720	0.40630	0.82810	0.31940
INVTURN1	0.69490	0.52170	0.45100	0.89800	0.40610
ROE2	0.01173	0.00870	0.05635	0.02423	-0.03029
RD/SLS2	0.00758	0.00380	0.01552	0.01192	-0.00065
SLSGRW2	0.84200	0.68100	0.63000	1.06300	0.40900
INVTURN2	0.29970	0.28970	0.56990	0.74660	0.04470
AVGSLS	4486	1794	7509	5625	263

TABLE 9

Descriptive Statistics for Each Industry Group and Each Company Classification

Food Processing & Distribution

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00415	-0.00360	0.01765	0.00822	-0.01017
AD/SLS1	0.00498	0.00124	0.01282	0.00576	-0.00106
WRKCAP1	0.20270	0.24470	0.43190	0.39750	-0.03630
SLSGRW1	0.38090	0.39550	0.29520	0.56320	0.22410
ROE2	-0.00033	0.00137	0.00977	0.00427	-0.00555
AD/SLS2	0.00172	0.00106	0.00493	0.00431	-0.00000
WRKCAP2	0.25750	0.23000	0.55360	0.54870	0.04450
SLSGRW2	0.50860	0.52490	0.37700	0.74510	0.28110
AVGSLS	3866	2974	3031	5508	1742

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.02593	0.01040	0.04250	0.05380	-0.00384
AD/SLS1	0.01006	0.00967	0.00442	0.01466	0.00849
WRKCAP1	0.37820	0.38880	0.16040	0.52100	0.32240
SLSGRW1	0.25620	0.25060	0.31670	0.51510	0.11600
ROE2	0.00008	-0.00066	0.00942	0.00261	-0.00970
AD/SLS2	0.00353	0.00350	0.00191	0.00452	0.00267
WRKCAP2	0.54550	0.61090	0.21110	0.70130	0.36170
SLSGRW2	0.33690	0.33650	0.40550	0.73560	0.14880
AVGSLS	1657	1526	697	2174	1063

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.45700	0.01300	2.90500	0.06400	0.00300
AD/SLS1	0.00237	0.00725	0.03065	0.01156	0.00156
WRKCAP1	0.44200	0.27300	0.66300	0.71600	0.04300
SLSGRW1	0.55010	0.37080	0.48190	0.82250	0.23960
ROE2	0.46100	0.02300	2.90600	0.06100	-0.00000
AD/SLS2	0.00545	0.01000	0.03502	0.01735	0.00312
WRKCAP2	0.46900	0.27000	0.68600	0.85500	-0.03300
SLSGRW2	0.74680	0.54170	0.58140	1.12580	0.32930
AVGSLS	3405	2982	2588	5375	1362

TABLE 10

Descriptive Statistics for Each Industry Group and Each Company Classification

Heavy Manufacturing

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00549	-0.00704	0.03477	0.02044	-0.02753
RD/SLS1	0.00023	0.00005	0.00668	0.00486	-0.00348
OPEX/REV1	-0.00266	-0.00169	0.03528	0.01525	-0.01415
EMP/SLS1	-0.00346	-0.00297	0.00586	-0.00169	-0.00657
ROE2	-0.00190	-0.00009	0.01536	0.00714	-0.01072
RD/SLS2	0.00040	0.00026	0.00422	0.00150	-0.00088
OPEX/REV2	0.00049	-0.00105	0.01189	0.00709	-0.00746
EMP/SLS2	-0.00092	-0.00087	0.00156	-0.00031	-0.00176
AVGSLS	8351	3537	16674	7858	1127

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.02040	0.03340	0.08450	0.08530	-0.02890
RD/SLS1	0.00437	0.00442	0.00407	0.00765	0.00074
OPEX/REV1	0.04470	0.00450	0.08080	0.12590	-0.00490
EMP/SLS1	-0.00297	-0.00294	0.00245	-0.00016	-0.00510
ROE2	-0.00774	-0.00787	0.03553	0.01047	-0.03620
RD/SLS2	0.00216	0.00224	0.00136	0.00288	0.00134
OPEX/REV2	0.00873	0.00085	0.03987	0.02560	-0.00769
EMP/SLS2	-0.00069	-0.00073	0.00075	-0.00020	-0.00094
AVGSLS	2210	2166	289	2443	2141

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.01560	-0.00460	0.09260	0.03600	-0.04440
RD/SLS1	-0.00122	0.00078	0.01144	0.00463	-0.00604
OPEX/REV1	-0.00377	0.00030	0.03123	0.01643	-0.01439
EMP/SLS1	-0.00376	-0.00298	0.00314	-0.00158	-0.00505
ROE2	-0.02450	-0.00840	0.11750	0.05480	-0.04340
RD/SLS2	-0.00044	0.00053	0.01264	0.00626	-0.00620
OPEX/REV2	-0.00330	-0.00314	0.03803	0.02229	-0.01834
EMP/SLS2	-0.00466	-0.00379	0.00369	-0.00200	-0.00685
AVGSLS	8959	2988	19032	9381	688

TABLE 11

Descriptive Statistics for Each Industry Group and Each Company Classification

Mining and Extractive

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.00721	0.00942	0.06204	0.04087	-0.03948
SLSGRW1	0.47750	0.49990	0.41620	0.81470	0.11290
CAPEX1	0.78800	0.62200	1.30000	1.05300	-0.05200
OPEX/REV1	0.01350	0.00140	0.08250	0.02730	-0.02600
ROE2	-0.01656	-0.01181	0.03556	0.00254	-0.02755
SLSGRW2	0.57160	0.58020	0.50530	0.96950	0.12720
CAPEX2	0.91700	0.71200	1.48300	1.12200	0.10800
OPEX/REV2	0.00053	-0.00125	0.01875	0.00911	-0.01003
AVGSLS	9756	4502	15040	9776	1715

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.02120	0.00250	0.07510	0.03620	-0.08410
SLSGRW1	0.42000	0.00200	0.64700	1.27000	-0.12100
CAPEX1	0.83200	0.92100	0.95600	1.00200	0.07000
OPEX/REV1	-0.01430	-0.00172	0.04008	0.01356	-0.03946
ROE2	-0.00964	-0.01386	0.01947	0.00763	-0.02603
SLSGRW2	0.48700	0.41400	0.55930	1.15170	-0.07840
CAPEX2	1.07300	0.98100	1.10700	1.89000	0.06900
OPEX/REV2	-0.00362	-0.00737	0.01144	0.00730	-0.01007
AVGSLS	1840	1906	422	2235	1624

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.45700	0.01300	2.90500	0.06400	0.00300
SLSGRW1	0.00237	0.00725	0.03065	0.01156	0.00156
CAPEX1	0.44200	0.27300	0.66300	0.71600	0.04300
OPEX/REV1	0.55010	0.37080	0.48190	0.82250	0.23960
ROE2	0.46100	0.02300	2.90600	0.06100	-0.00000
SLSGRW2	0.00545	0.01000	0.03502	0.01735	0.00312
CAPEX2	0.46900	0.27000	0.68600	0.85500	-0.03300
OPEX/REV2	0.74680	0.54170	0.58140	1.12580	0.32930
AVGSLS	3405	2982	2588	5375	1362

TABLE 12

Descriptive Statistics for Each Industry Group and Each Company Classification

Non-Financial Services

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.00964	-0.00087	0.04068	0.01281	-0.02393
OPEX/REV1	-0.00730	0.00150	0.09900	0.02320	-0.03240
AD/SLS1	0.00045	-0.00000	0.00268	0.00134	-0.00000
DIV1	0.43700	0.31600	0.47330	0.63350	0.01200
ROE2	0.00067	0.00083	0.01436	0.00542	-0.00795
OPEX/REV2	0.00573	-0.00398	0.05389	0.01074	-0.01425
AD/SLS2	0.00076	-0.00000	0.00190	0.00045	-0.00000
DIV2	0.58200	0.44800	0.76400	0.79500	0.00000
AVGSLS	3773	1188	7844	4248	358

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.02017	0.00754	0.04370	0.04880	-0.01010
OPEX/REV1	-0.00837	-0.00998	0.02012	0.00913	-0.02144
AD/SLS1	0.00428	0.00199	0.00441	0.00812	0.00114
DIV1	0.27110	0.28250	0.12910	0.30130	0.15570
ROE2	-0.00788	-0.00557	0.01374	-0.00465	-0.02093
OPEX/REV2	-0.00607	-0.00479	0.01391	0.01041	-0.01776
AD/SLS2	0.00075	0.00070	0.00174	0.00134	0.00048
DIV2	0.52700	0.28900	0.73500	0.32000	0.25600
AVGSLS	1166	573	1002	2571	463

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.02120	0.00670	0.25050	0.04210	-0.04980
OPEX/REV1	0.00320	0.00350	0.05920	0.02020	-0.01240
AD/SLS1	0.53000	0.00000	9.81000	0.20000	-0.07000
DIV1	0.41300	0.33100	0.67600	0.78300	0.00500
ROE2	-0.08200	-0.00200	0.60500	0.07200	-0.04900
OPEX/REV2	0.00380	0.00370	0.06610	0.01370	-0.01400
AD/SLS2	0.44600	0.00300	3.28400	0.18300	-0.03700
DIV2	0.81800	0.68000	1.18500	1.17300	0.11600
AVGSLS	2093	928	2514	3523	305

TABLE 13

Descriptive Statistics for Each Industry Group and Each Company Classification

Textiles, Paper and Forest Products

ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.00668	0.00923	0.03176	0.02232	-0.01114
OPEX/REV1	0.00371	0.00526	0.01860	0.01822	-0.00824
INVTURN1	-2.70000	0.77000	20.53000	1.18000	0.17000
CAPEX1	0.38840	0.37070	0.30880	0.54210	0.19120
ROE2	-0.00887	-0.00703	0.01410	0.00160	-0.01622
OPEX/REV2	-0.00198	-0.00078	0.00739	0.00254	-0.00665
INVTURN2	-1.65000	-0.48000	6.26000	-0.17000	-0.77000
CAPEX2	0.50570	0.45930	0.41580	0.69410	0.33930
AVGSLS	1872	1138	2329	2497	497

NON-ADOPTERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	0.02005	0.01921	0.03498	0.04758	-0.00531
OPEX/REV1	-0.00190	0.00029	0.01102	0.00817	-0.01216
INVTURN1	0.49230	0.47090	0.42000	0.92050	0.12590
CAPEX1	0.79300	0.46200	0.80600	1.42500	0.32500
ROE2	-0.00858	-0.01177	0.01884	0.00994	-0.02755
OPEX/REV2	-0.00257	-0.00319	0.00416	0.00211	-0.00604
INVTURN2	-0.26790	-0.46390	0.51800	0.31220	-0.63840
CAPEX2	1.25100	0.87700	1.05400	2.20600	0.38200
AVGSLS	478	463	86	510	422

PEERS

Variable	Mean	Median	Standard Deviation	Upper Quartile	Lower Quartile
ROE1	-0.07330	0.01970	0.37440	0.04970	-0.01880
OPEX/REV1	0.00771	0.00864	0.05842	0.02662	-0.01006
INVTURN1	1.40700	1.08700	1.73700	1.99900	0.41900
CAPEX1	1.45800	0.61400	1.89400	1.78800	0.29800
ROE2	-0.05920	0.01440	0.24980	0.04370	-0.03580
OPEX/REV2	0.00210	0.00360	0.07430	0.03300	-0.02420
INVTURN2	0.35100	0.46700	2.29400	0.91700	-0.03300
CAPEX2	2.31600	1.01200	3.22800	3.56300	0.38500
AVGSLS	1630	978	1596	2818	413

TABLE 14

Descriptive Statistics for Pre-Adoption Period Variables
To access how adopters compared to non-adopters and peers prior to adoption.

Industry	Descriptive Measure	Industry Variable	Adopters	Non-Adopters	Peers
Financial					
	Mean	ROE	0.01325	0.09078	0.09736
		CAPGRW	0.46700	2.08920	0.84000
		OHCTRL	-0.39980	-0.22930	-0.27820
		DIV	277	2.0061	0.688
	Median	ROE	0.00936	1.00710	0.10343
		CAPGRW	0.31860	1.99080	0.64400
		OHCTRL	-0.32380	-0.23950	-0.25210
		DIV	0	1.95740	0.32900
	St. Deviation	ROE	0.13670	0.03254	0.05044
		CAPGRW	0.54230	0.46890	0.78600
		OHCTRL	0.03042	0.02611	0.13350
		DIV	1450	0.16160	1.00200
Chemical					
	Mean	ROE	0.07933	0.13308	0.12980
		INV/SLS	0.17116	0.16482	0.18428
		RD/SLS	0.03067	0.03457	0.04039
		CAPSP	0.52610	0.18510	1.20400
	Median	ROE	0.07984	0.13198	0.12460
		INV/SLS	0.17412	0.16702	0.17647
		RD/SLS	0.02288	0.03310	0.03844
		CAPSP	0.35720	0.12780	0.37300
	St. Deviation	ROE	0.03856	0.01884	0.06850
		INV/SLS	0.04767	0.01311	0.04606
		RD/SLS	0.02640	0.00478	0.02535
		CAPSP	0.00398	0.21290	3.19000
Consumer					
	Mean	ROE	0.09077	0.12277	0.12200
		AD/SLS	0.03185	0.03184	0.03831
		INVTURN	6.09	1.0323	5.332
		SLSGRW	0.46800	0.34300	0.38560
	Median	ROE	0.08384	0.13259	0.12370
		AD/SLS	0.02789	0.03166	0.02727
		INVTURN	3.52	1.0380	4.086
		SLSGRW	0.39800	0.05760	0.35890
	St. Deviation	ROE	0.04450	0.02119	0.05830
		AD/SLS	0.03448	0.00086	0.04372
		INVTURN	11.35	0.06940	5.042
		SLSGRW	0.58100	0.09030	0.40860

TABLE 15

Descriptive Statistics for Pre-Adoption Period Variables
To access how adopters compared to non-adopters and peers prior to adoption.

Industry	Descriptive Measure	Industry Variable	Adopters	Non-Adopters	Peers
Electrical					
	Mean	ROE	0.07884	0.14088	0.11161
		RD/SLS	0.04720	0.05315	0.04009
		SLSGRW	0.61480	0.02600	0.65480
		INVTURN	2.957	2.8768	3.057
	Median	ROE	0.07932	0.14273	0.12104
		RD/SLS	0.04468	0.05201	0.03868
		SLSGRW	0.50820	0.04710	0.53930
		INVTURN	2.746	2.8564	2.839
	St. Deviation	ROE	0.02905	0.02647	0.05399
		RD/SLS	0.02981	0.00715	0.02426
		SLSGRW	0.46480	0.09500	0.43030
		INVTURN	1.336	0.2026	1.203
Food					
	Mean	ROE	0.08772	0.15722	-0.27600
		AD/SLS	0.03267	0.04563	0.04284
		WRKCAP	388.2	188.04	363.1
		SLSGRW	0.38090	0.11024	0.55010
	Median	ROE	0.08662	0.15594	0.14800
		AD/SLS	0.03049	0.04590	0.04114
		WRKCAP	301.2	205.21	202.7
		SLSGRW	0.3955	0.10445	0.3708
	St. Deviation	ROE	0.02983	0.03099	2.91200
		AD/SLS	0.02438	0.01584	0.02863
		WRKCAP	334.0	46.67	471.1
		SLSGRW	0.29520	0.05045	0.48190
Heavy Mfg.					
	Mean	ROE	0.06704	0.10813	0.14340
		RD/SLS	0.02416	0.03303	0.02678
		OPEX/REV	-0.19930	-0.09550	-0.17910
		EMP/SLS	0.01878	0.01326	0.01810
	Median	ROE	0.06621	0.13068	0.14680
		RD/SLS	0.02430	0.03140	0.01828
		OPEX/REV	-0.18980	-0.13100	-0.16800
		EMP/SLS	0.01668	0.01301	0.01747
	St. Deviation	ROE	0.03158	0.05449	0.09140
		RD/SLS	0.01529	0.00825	0.02026
		OPEX/REV	0.07600	0.08810	0.07250
		EMP/SLS	0.00925	0.00397	0.01001

TABLE 16

Descriptive Statistics for Pre-Adoption Period Variables
To access how adopters compared to non-adopters and peers prior to adoption.

Industry	Descriptive Measure	Industry Variable	Adopters	Non-Adopters	Peers
Mining					
	Mean	ROE	0.06370	0.15690	0.09450
		SLSGRW	0.47750	0.18360	0.73700
		CAPEX	0.78800	0.28350	0.63900
		OPEX/REV	-0.20000	-0.16544	-0.49880
	Median	ROE	0.07830	0.15940	0.09350
		SLSGRW	0.49990	0.77300	0.40100
		CAPEX	0.62200	0.15220	0.42200
		OPEX/REV	-0.17650	-0.16827	-0.56160
	St. Deviation	ROE	0.06670	0.06660	0.08610
		SLSGRW	0.41620	0.35100	2.45400
		CAPEX	1.30000	0.28740	1.26900
		OPEX/REV	0.15400	0.03803	0.47280
Service					
	Mean	ROE	0.06822	0.11582	0.12140
		OPEX/REV	-0.30630	-0.26103	-0.23570
		AD/SLS	0.00877	0.19380	-0.10100
		DIV	0.94700	0.08009	0.41300
	Median	ROE	0.07064	0.11474	0.12250
		OPEX/REV	-0.26150	-0.25795	-0.27730
		AD/SLS	0.00002	0.01812	0.30800
		DIV	0.35500	0.08695	0.33100
	St. Deviation	ROE	0.03908	0.03149	0.10130
		OPEX/REV	0.20340	0.02734	0.11810
		AD/SLS	0.01269	0.00477	2.90200
		DIV	2.83000	0.04194	0.67600
Textiles					
	Mean	ROE	0.07029	0.11626	0.13800
		OPEX/REV	-0.21770	-0.18981	-0.27690
		INVTURN	11.39	5.1708	7.182
		CAPEX	0.79000	0.22060	1.45800
	Median	ROE	0.07291	0.11502	0.11180
		OPEX/REV	-0.19500	-0.18303	-0.23540
		INVTURN	5.40	5.3298	5.554
		CAPEX	0.61100	.010910	0.61400
	St. Deviation	ROE	0.03034	0.02875	0.16610
		OPEX/REV	0.08260	0.01628	0.16440
		INVTURN	32.63	.02674	4.86
		CAPEX	0.81800	0.22510	1.8940

TABLE 17

t-Tests of Pre-Adoption Data
Tests of $\mu_{adopter} = \mu_{non\text{-}adopter}$ and $\mu_{adopter} = \mu_{peer}$
for each of the pre-adoption variables

Industry/Variable	Adopters = Non-Adopters t-statistic	Adopters = Peers t-statistic
Financial		
ROE	-12.67[a]	-9.28[a]
CAPGRW	-14.93[a]	-2.91[a]
OHCTRL	-3.38[a]	-3.27[a]
DIV	-4.66[a]	0.01
Chemical		
ROE	-8.31[a]	-4.26[a]
INV/SLS	0.85	-1.31
RD/SLS	-0.96	-1.76[c]
CAPSP	3.58[a]	-1.39
Consumer Products		
ROE	-3.74[a]	-2.45[b]
AD/SLS	0.01	-0.67
INVTURN	2.56[b]	0.35
SLSGRW	4.23[a]	4.23
Electrical		
ROE	-9.34[a]	-3.23[a]
RD/SLS	-1.15	1.11
SLSGRW	7.34[a]	-0.38
INVTURN	0.35	-0.33
Food		
ROE	-10.09[a]	0.78
AD/SLS	-2.78a	-1.69[c]
WRKCAP	3.71a	0.27
SLSGRW	5.64a	-1.87c
Heavy Mfg.		
ROE	-3.97[a]	-4.79[a]
RD/SLS	-3.11[a]	-0.63
OPEX/REV	-5.43[a]	-1.17
EMP/SLS	3.33[a]	0.30
Mining		
ROE	-6.33[a]	-1.81[c]
SLSGRW	3.46[a]	-0.67
CAPEX	2.43[b]	0.52
OPEX/REV	-1.39	3.85
Services		
ROE	-5.61[a]	-2.90[b]
OPEX/REV	-1.31	-1.02
AD/SLS	-4.63[a]	0.22
DIV	1.81	1.09
Textiles		
ROE	-6.78a	-2.47[b]
OPEX/REV	-2.04[b]	1.99c
INVTURN	1.17	0.79
CAPEX	4.14[a]	-2.00c

[a] significant at the .o1 level

[b] significant at the .05 level

[c] significant at the .10 level

<u>Normality</u>

It is not uncommon for financial statement data to have a distribution that is non-normal. For each variable in the industry groups several tests were run to assess normality. First, the Anderson-Darling Normality Test was run on each variable. This test provides a p-value for normality of the variable as well as measures of skewness and kurtosis. In addition, box-plots and normality plots were generated for each variable. Almost 75% of the variables (52 out of 72 variables) failed at least one of the normality tests, and the data were predominately skewed.

Original pre-manipulated data sets and graph points were then visually analyzed for extreme or possibly influential points. Obviously some companies are considerably larger than others within their industry and may exert influence over statistical results. On the other hand, there are a significant number of very small companies in many of the industry groups which could also influence results. Given that the analysis deals with percentage changes, however, this should put all company data on a similar scale. Thus, it is necessary to analyze the manipulated data - i.e., the percentage change data for potential influential points. For the observations that were identified by the statistical package as influential in each test of the hypotheses, there seemed to be no justifiable reason to delete the observations from the sample other than size. The <u>Wall Street Journal Index</u> was scanned for each of the companies containing influential points for the time period it was included in the sample. There were no significant changes reported that would result in the influential percentage changes being justifiably dropped from the sample.[2]

Most parametric statistical tests have some degree of normality assumption, however, whereas non-parametric statistical tests do not have a normality assumption. To ensure that the non-normal distribution of the data was not influencing the statistical results, non-parametric tests were conducted where possible.[3] Both the Wilcoxon Signed Rank test and the Kruskal-Wallis tests were run on each variable. The Wilcoxon Signed Rank is the non-parametric version of a one-sample t-test. The Kruskal-Wallis is the equivalent of a two-sample t-test and was run on each variable against the "adopt/non" variable. The results of the non-parametric tests were not significantly different than those obtained from performing the related parametric tests. Therefore it does not seem that the non-normal distribution of some of the data points is sufficient to violate the assumptions needed for the parametric tests.

<div align="center">Tests of Hypotheses</div>

The hypotheses stated in Chapter 3 were tested using the models presented in equations (1) through (7) and the methods described in the "Statistical Analysis" section of Chapter 4. The results of those tests follow.

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[2] The length of time each company is represented in the sample, eight years for adopters and peers and eight plus years for non-adopters, prevented the scanning of annual report footnotes for other changes that may have resulted in large percent change variables for these companies.

[3] There is not a non-parametric test equivalent to MANOVA, however, MANOVA has more relaxed normality assumptions than most other parametric tests.

<u>Tests of Hypotheses 1A and 2A</u>

In Hypotheses 1A and 2A it was predicted that adopters of a performance plan or a restricted stock plan would show significant improvements in the general performance measure (hypothesis 1A) and in the industry-specific performance measures (hypothesis 2A) after the adoption of either type of plan. These hypotheses were developed to establish a link between adoption and improved firm performance and were tested using 1-sample t-tests. Equations (1) and (2) depict the models used to test hypotheses 1A and 2A, respectively. These equations predict insignificant percentage changes in the variables as measured between the pre-adoption period and either post-adoption period. The results for hypothesis 1A are presented for all industry groups in Table 18 and the results for hypothesis 2A are presented in Tables 19 through 23.

Hypothesis 1A

For hypothesis 1A, the general performance variables ROE1 and ROE2 were analyzed for each industry. Interestingly, neither of these variables was positively significant at the .01 level for any of the nine industries (Table 18). As pointed out in the "Descriptive Statistics" section of this chapter, and as shown in Tables 5 through 13, many of the adopter companies had a negative mean percentage change in ROE1 and ROE2. Hypothesis 1A is therefore not supported for the general performance measure for either measurement period, Pre-Post1 (ROE1) or Pre-Post2 (ROE2). Based on these results, the adoption of a restricted stock plan or a performance plan does not appear to have a positive impact on the percentage change in return on equity for adopter firms.

Hypothesis 2A

For hypothesis 2A, three industry-specific measures were analyzed for each industry group using 1-sample t-tests. The results of the t-tests indicate which variables are significant for each industry group (Tables 19 and 20). Analysis of variance was applied to the significant variables to analyze the effects of TIME and SIZE interactions (Tables 21 and 22). Lastly, for significant TIME and SIZE interactions, analysis of means was performed to determine the exact levels of TIME and SIZE that are significant (Table 23). A discussion of the results for each of the industry groups follows.

Financial. For the financial group, two of the industry-specific variables were significant while the third was not significant. The measures of capital growth, CAPGRW1 and CAPGRW2, were both significant with t-statistics of 4.69 and 5.76, respectively, and p-values of < 0.0001. The increased t-statistic implies there was some improvement in the capital growth measure over the extended adoption measurement period, pre-post2. The dividend variables, DIV1 and DIV2, were significant (t-statistics of 2.46 and 3.99, and p-values of .019 and .0004) at the .05 level. Again, there was improvement in the long-run for the dividend variable. An analysis of variance was

TABLE 18

t-Test Results for Testing Hypothesis 1A which tests
an improvement in the general performance measure will follow
the adoption of a performance or restricted stock plan.

Industry/Variable	N	t-statistic[1]
Financial Services	33	
ROE1		-1.55
ROE2		-0.39
Chemicals	44	
ROE1		0.98
ROE2		0.28
Consumer Products	33	
ROE1		-0.95
ROE2		-0.46
Electrical	35	
ROE1		-0.79
ROE2		-1.34
Food	39	
ROE1		-1.47
ROE2		-0.21
Heavy Manufacturing	37	
ROE1		-0.96
ROE2		-0.75
Mining/Extractive	41	
ROE1		0.74
ROE2		-2.98
Textiles/Paper/Forest	38	
ROE1		1.30
ROE2		-3.88
Non-Financial Services	35	
ROE1		-1.40
ROE2		0.28

[1] None of the comparisons were statistically (p≤.10) significant.

performed to see if the significance of these variables was driven by the time of the adoption or the size of the adopting firm. There was neither a significant TIME nor SIZE effect on either of the significant variables; thus the improvements were driven by the effects of the adoption on the individual firms and not by other commonalties among the firms.

The variables for overhead control, OHCTRL1 and OHCTRL2, were not significant, nor was there improvement in the variables over the long term. Overall, the results for the financial industry support hypothesis 2A, and indicate the adoption of either a performance plan or restricted stock plan improves firm performance soon after the adoption as well as for a period up to four years after the adoption.

Chemical. The t-tests for the Chemical industry group resulted in significance for all of the industry-specific variables. Specifically, the inventory efficiency measure for the pre-post1 measurement period, INV/SLS1, was significant at the .10 level (p=0.051). Inventory efficiency improved over the long-term, with significance at the .01 level (p=0.015) for INV/SLS2. There was no TIME or SIZE effect on these variables indicating the improvement was due specifically to the adoption and not to when the plan was adopted or the market size of the firm at the time of adoption.

The measures of research activity within the industry, RD/SLS1 and RD/SLS2, were both significant at the .05 level. There was a long-term improvement in the percentage change of research and development to sales, as RD/SLS2 (p=0.026) had slightly improved significance over RD/SLS1 (p=0.074). For both of these variables, there was a significant TIME and SIZE effect. There was a bigger percentage mean change in RD/SLS in years 1982-1991 than in 1972-1982, indicating adopting companies spent more on research and development with respect to sales in the latter half of the sample period. As can be expected, the percentage change in RD/SLS was greater for companies with market shares in the top-half of the sample.

The third category of industry-specific measures relates to changes in capital spending, CAPSP1 and CAPSP2. Both were significant at the .01 level with p-values <0.0001. The larger t-statistic for CAPSP2 implies improvement in the variable over the long-term. Both capital spending variables show a significant TIME effect, with greater changes in capital spending in the early portion of the sample, 1972-1981, than in the later adoption years.

These results support hypothesis 2A with respect to the Chemical Industry and suggest adoption of either type of plan leads to improved firm performance. Additionally, a definite pattern exists for the Chemical Industry related to long-term performance. All of the variables for both measurement periods were significant indicating adoption contributes to improved long-term performance.

Consumer Products. The results of the analysis on the industry-specific variables for the consumer products industry were less clear than for previous industry groups. The measures of ability to improve sales performance, SLSGRW1 and SLSGRW2, were significant at the .01 level, and the t-statistics indicate sales growth improved over time. There was a significant SIZE effect on the first sales growth variable, SLSGRW1. Greater percentage changes in sales growth occurred in the initial years after an adoption for firms that adopted in the 1972-1981, than in the immediate time period after adoption for adoptions taking place in 1982-1991.

The results from the measures of management's ability to attract customers, AD/SLS1 and AD/SLS2, were conflicting. AD/SLS1 was not significant; however, measuring the change in

this variable over the full five year post adoption period, AD/SLS2, results in significance at the .05 level. This may occur because advertising campaigns have a delayed result. Dollars spent today on advertising tend to generate future sales, not immediate sales. Thus, it appears adoptions have a long-term effect on mean changes in advertising to sales, but the effect is not as significant soon after the adoption.

The inventory efficiency measures, INVTURN1 and INVTURN2, were also unclear. INVTURN1 was significant at the .05 level, but INVTURN2 was not significant and in fact had a negative t-statistic. This implies, that, on average, adopters in this industry became less efficient at managing inventory over the long-run. Overall, the results of the analysis for the consumer products group do not support hypothesis 2A, implying adoptions of performance or restricted stock plans for this industry are not effective in improving firm performance.

Electrical. For the electronics industry group, spending on research and development as a percentage of sales, RD/SLS1 and RD/SLS2, was not significant. The sales growth variables, SLSGRW1 and SLSGRW2, were both significant. For both sales growth variables there was a significant TIME effect with a greater percentage change in sales growth occurring for adopters in the first ten years of the analysis (1972-1981) than for adopters in the last ten years. In addition, a significant SIZE effect shows greater percentage changes in sales growth for the smaller firms than for the larger firms.

The variables measuring inventory management policies were not consistent in their results. INVTURN1, a measure of the change in inventory turnover between the pre-adoption and initial post-adoption period, was significant. A significant SIZE effect on this variable indicates larger firms were more successful at inventory management in the initial years after an adoption than were smaller firms. The effect on inventory management was not long-term, however, as the variable measuring the difference between the pre-adoption period and the entire five year post-adoption period was not significant.

Overall, the electronics industry group provides minimal support for hypothesis 2A implying performance or restricted stock plan adoptions somewhat improved firm performance in this industry.

Food Processing. The food processing industry group provides solid support for hypothesis 2A. The measures of sales growth, SLSGRW1 and SLSGRW2, were significant at the .01 level and showed improvement over the long-run. A significant TIME effect shows the percentage change in sales growth was greater for firms that adopted in years 1972-1981 than for firms that adopted in 1982-1992.

The change variables for working capital, WRKCAP1 and WRKCAP2, were also significant at the .01 level; however, there was no evidence of improvement in working capital over the long-run. The TIME effect indicates greater percentage changes in working capital for firms that adopted in the last half of the sample time period. Lastly, the measures of effective use of advertising, AD/SLS1 and AD/SLS2, were both significant at the .05 level, though there was no improvement in the variable over time.

Adoptions in this industry appear to have the desired effect, though adoptions that occurred in the first ten years of the sample period appear to have been more effective than adoptions that occurred in the last ten years.

Heavy Manufacturing. The results of analysis for the heavy manufacturing industry group do not support hypothesis 2A. Only two variables were significant. The measures of downsizing, EMP/SLS1 and EMP/SLS2, were significant at the .01 level (p=0.001 and p=0.000). There was no TIME or SIZE interaction for either of these measures, implying consistency in the downsizing measure across time and across various firm sizes. On the other hand, neither the measures of the use of research and development to generate sales, RD/SLS1 and RD/SLS2, nor the measures of cost containment, OPEX/REV1 and OPEX/REV2, were significant hypothesis 2A is therefore not supported by this industry group.

Mining. The mining industry group provides support for hypothesis 2A. Both the measures on sales growth, SLSGRW1 and SLSGRW2, and the measures on capital expenditures, CAPEX1 and CAPEX2, were significant. There was improvement over time for the capital expenditures measure.

A significant TIME effect on sales growth shows larger mean changes in sales growth for firms that adopted in 1972-1981 than for firms that adopted in later years. Capital expenditures were also greater for early adopters than for late adopters. This could be driven, however, by the small group sizes - n=29 for early adopters and n=12 for later adopters. Cost containment, as measured by OPEX/REV1 and OPEX/REV2, was insignificant. Overall, the long-term performance of the mining industry group appears to benefit from the adoption of either a performance or restricted stock plan.

Non-Financial Services. The non-financial services group does not support this hypothesis. The only variables that were significant were the measures of increase in dividends, DIV1 and DIV2, and the measure of the long range effect of advertising expense to sales, ADSLS2. There was no TIME or SIZE effect on any of these variables. The measures for cost containment, OPEX/REV1 and OPEX/REV2, were not significant. Therefore, the adoption of a performance plan or a restricted stock plan does not appear to improve the firm performance of companies in the non-financial services industry.

Textiles. The only measures that were significant for the textile industry group were those for capital expenditures, CAPEX1 and CAPEX2. The significance of these measures was not driven by either TIME or SIZE, implying the difference was primarily due to the adoption of either a performance or restricted stock plan. The other measures related to cost containment, OPEX/REV1 and OPEX/REV2, and to inventory management, INVTURN1 and INVTURN2, were not significant. Therefore, performance plans in the the textile, paper and forest products firms that make up this group do not support hypothesis 2A, indicating the long-term firm performance of firms in this industry does not benefit from the adoption of a performance or restricted stock plan.

Summary. Hypothesis 1A, which tested the change in a general performance measure after the adoption of either a performance plan or a restricted stock plan, was not supported by any of the industry groups. Five of the nine industry groups provided support for hypothesis 2A that industry-specific performance measures should improve after the adoption of either type of plan. Though the supporters were only slightly more than a majority, the most important point is that there was support within some of the groups. There are two implications from these results. First, industry-specific variables seem to provide a better evaluation of long-term plans than do general performance measures such as ROE. Second, the adoption of either of these

compensation components does not appear to have the same effect across industries. Adoption of these plans may be more effective for some industries than for others.

Comparing adopters to non-adopters, as is done in the next two hypotheses, provides a clearer indication of whether the results are driven by the adoption, or were a common outcome for the entire industry.

TABLE 19

t-Test Results for Testing Hypothesis 2A that
an improvement in industry-specific performance measures
will follow the adoption of a performance or restricted stock plan.

Industry/Variable	N	t-statistic
Financial Services	33	
CAPGRW1		4.69[a]
OHCTRL1		1.17
DIV1		2.46[b]
CAPGRW2		5.76[a]
OHCTRL2		0.62
DIV2		3.99[b]
Chemicals	44	
INV/SLS1		-2.01[b]
RD/SLS1		1.83[c]
CAPSP1		5.86[a]
INV/SLS2		-2.53[b]
RD/SLS2		2.31[b]
CAPSP2		6.24[a]
Consumer Products	33	
AD/SLS1		.82
INVTURN1		2.08[b]
SLSGRW1		4.62[a]
AD/SLS2		2.26[b]
INVTURN2		-2.04[b]
SLSGRW2		5.12[a]
Electrical	35	
RD/SLS1		0.26
SLSGRW1		7.82[a]
INVTURN1		6.88[a]
RD/SLS2		0.53
SLSGRW2		6.09[a]
INVTURN2		-3.27
Food	39	
AD/SLS1		2.43[b]
WRKCAP1		2.93[b]
SLSGRW1		8.06[a]
AD/SLS2		2.19[b]
WRKCAP2		2.90[b]
SLSGRW2		8.42[a]

[a]significant at the .01 level
[b]significant at the .05 level
[c]significant at the .10 level

TABLE 20

t-Test Results for Testing Hypothesis 2A that
an improvement in industry-specific performance measures
will follow the adoption of a performance or restricted stock plan.

Industry/Variable	N	t-statistic
Heavy Manufacturing	37	
RD/SLS1		0.21
OPEX/REV1		-0.46
EMP/SLS1		-3.59[b]
RD/SLS2		0.57
OPEX/REV2		0.25
EMP/SLS2		-3.59[b]
Mining/Extractive	41	
SLSGRW1		7.35[a]
CAPEX1		3.88[a]
OPEX/REV1		1.04
SLSGRW2		7.24[a]
CAPEX2		3.96[b]
OPEX/REV2		0.18
Non-Financial Services	35	
OPEX/REV1		-0.43
AD/SLS1		1.00
DIV1		5.46[a]
OPEX/REV2		.63
AD/SLS2		2.38[b]
DIV2		4.50[a]
Textiles/Paper/Forest	38	
OPEX/REV1		1.23
INVTURN1		-.81
CAPEX1		7.75[a]
OPEX/REV2		-1.65
INVTURN2		-1.62
CAPEX2		7.50[a]

[a]significant at the .01 level
[b]significant at the .05 level
[c]significant at the .10 level

Table 21
Anova Results from Testing Time and Size
Interactions on the Industry-Specific Measures for Hypothesis 2A[1]

Industry/Interaction	F-statistic
Financial	
CAPGRW1*TIME	0.00
CAPGRW1*SIZE	0.16
CAPGRW2*TIME	0.04
CAPGRW2*SIZE	0.24
DIV1*TIME	0.91
DIV1*SIZE	0.90
DIV2*TIME	0.41
DIV2*SIZE	0.70
Chemical	
INV/SLS1*TIME	0.11
INV/SLS1*SIZE	0.13
RD/SLS1*TIME	4.07[b]
RD/SLS1*SIZE	3.46[c]
CAPSP1*TIME	5.83[b]
CAPSP1*SIZE	0.10
INV/SLS2*TIME	0.02
INV/SLS2*SIZE	0.70
RD/SLS2*TIME	3.70[c]
RD/SLS2*SIZE	4.54[b]
CAPSP2*TIME	6.46[b]
CAPSP2*SIZE	0.07
Consumer Products	
SLSGRW1*TIME	2.69
SLSGRW1*SIZE	6.78[b]
INVTURN1*TIME	2.63
INVTURN1*SIZE	1.62
SLSGRW2*TIME	5.63[b]
SLSGRW2*SIZE	2.79
INVTURN2*TIME	1.76
INVTURN2*SIZE	2.31
ADSLS2*TIME	0.45
ADSLS2*SIZE	0.57
Electrical	
SLSGRW1*TIME	10.56[a]
SLSGRW1*SIZE	8.14[a]
INVTURN1*TIME	1.68
INVTURN1*SIZE	3.23[c]
SLSGRW2*TIME	8.49[a]
SLSGRW2*SIZE	10.44[a]
INVTURN2*TIME	0.96
INVTURN2*SIZE	3.65[c]

[1]Results are only for those individual variables with significant results
as reported in Tables 19 and 20.
[a]significant at the .01 level
[b]significant at the .05 level
[c]significant at the .10 level

Table 22
Anova Results from Testing Time and Size
Interactions on the Industry-Specific Measures for Hypothesis 2A[1]

Industry/Interaction	F-statistic
Food Processing	
AD/SLS1*TIME	0.30
AD/SLS1*SIZE	0.40
WRKCAP1*TIME	5.57[b]
WRKCAP1*SIZE	0.42
SLSGRW1*TIME	19.68[a]
SLSGRW1*SIZE	2.64
AD/SLS2*TIME	0.412
AD/SLS2*SIZE	0.29
WRKCAP2*TIME	7.90[a]
WRKCAP2*SIZE	1.34
SLSGRW2*TIME	19.43[a]
SLSGRW2*SIZE	2.22
Heavy Manufacturing	
EMP/SLS1*TIME	2.48
EMP/SLS1*SIZE	1.77
EMP/SLS2*TIME	1.25
EMP/SLS2*SIZE	0.57
Mining/Extractive	
SLSGRW1*TIME	11.33[a]
SLSGRW1*SIZE	2.58
CAPEX1*TIME	4.26[b]
CAPEX1*SIZE	0.53
SLSGRW2*TIME	15.08[a]
SLSGRW2*SIZE	2.45
CAPEX2*TIME	5.16[b]
CAPEX2*SIZE	0.49
Non-Financial Services	
DIV1*TIME	0.43
DIV1*SIZE	0.12
AD/SLS2*TIME	1.86
AD/SLS2*SIZE	1.98
DIV2*TIME	1.35
DIV2*SIZE	0.87
Textiles/Paper/Forest	
CAPEX1*TIME	0.55
CAPEX1*SIZE	0.32
CAPEX2*TIME	0.98
CAPEX2*SIZE	0.05

[1]Results are only for those individual variables
 with significant results as reported in Tables 19 and 20.
[a]significant at the .01 level
[b]significant at the .05 level
[c]significant at the .10 level

Table 23

Anomeans Results from Testing Time and Size Interactions
For Hypothesis 2A on the Industry-Specific Variables[1]

Industry/Interaction	N[2]	0-mean[3]	1-Mean[3]
Chemical			
RD/SLS1*TIME	12/32	0.006379	0.000811
RD/SLS1*SIZE	28/16	0.004071	-0.000720
CAPSP1*TIME		0.190300	0.652100
RD/SLS2*TIME		0.007529	0.001644
RD/SLS2*SIZE		0.005423	-0.000560
CAPSP2*TIME		0.233400	0.771300
Consumer Products			
SLSGRW1*SIZE	17/16	0.232700	0.717600
SLSGRW2*TIME	9/24	0.300400	0.745800
Electrical			
SLSGRW1*TIME	9/26	0.231400	0.747500
SLSGRW1*SIZE	18/17	0.416800	0.824500
INVTURN1*SIZE		0.420600	0.683300
SLSGRW2*TIME		0.300700	1.053100
SLSGRW2*SIZE		0.513300	1.226300
INVTURN2*SIZE		-0.115300	-0.401400
Food Processing			
WRKCAP1*TIME	12/27	-0.028700	0.305500
SLSGRW1*TIME		0.123300	0.495300
WRKCAP2*TIME		-0.086400	0.410300
SLSGRW2*TIME		0.123400	0.495300
Mining/Extractive			
SLSGRW1*TIME	12/29	0.174300	0.602900
CAPEX1*TIME		0.162000	1.047000
SLSGRW2*TIME		0.161900	0.741100
CAPEX2*TIME		0.138000	1.239000

[1] Results are only for those individual variable with significant interactions as reported
  in Tables 21 and 22.
[2] The number of observations for each mean are presented as N for 0-mean/N for 1-mean.
  N's are given only once for each type of interaction term, TIME and SIZE.
[3] TIME interactions for the 0-mean represent observations for years 1982-1991;
  TIME interactions for the 1-mean represent observations for years 1972-1981.
  SIZE interaction 0-means represent companies whose market size is in the top 50% of
  the industry; 1-means for SIZE interactions represent those companies in the bottom
  one-half of the industry based on market size.

<u>Tests of Hypothesis 1B</u>

Hypothesis 1B was generated to test whether or not there is a difference in the general performance measure, ROE, between adopters and non-adopters within each industry. Though the initial results of testing the general performance variable for adopters alone proved no significance, it is still important to compare adopters to non-adopters to see if the lack of significance was industry-wide. It is possible that the insignificant results for adopters may still be an improvement over non-adopters in the industry.

This hypothesis is represented by equations (5)and (6) and was tested using a one-way ANOVA for each industry group for both measures, ROE1 and ROE2, against the factor COCLASS, which has two levels, ADOPTER and NON-ADOPTER. Results of the individual ANOVAs (Table 24) only provide evidence of whether there was a difference in means between adopters and non-adopters. Analysis of means was used for all significant ANOVAs to determine which COCLASS, adopters or non-adopters, led to the significant ANOVAS (Table 25). In addition, as discussed in the "Statistical Analysis" section of Chapter 4, the time of the adoption[4] and/or the size of the company may have an impact on whether or not the ROE measures are significant. To evaluate the effect of the TIME and SIZE variables on the significance of results, these factors were added independently to the ANOVA and nested with the COCLASS variable to see if there was either a time or size effect (Tables 26 and 27). Lastly, if there was significance on the interaction terms, an analysis of means procedure was used to calculate which time periods and which size levels were significant (Table 28). The following paragraphs detail the results of these analyses for each industry group, and conclude with a summary of the results of this hypothesis.

Financial. For the financial industry group, the results show a significant difference between adopters and non-adopters for ROE1 (p=0.041), but the difference does not hold over the long-term as ROE2 is not significant. An analysis of means on ROE1 and COCLASS indicates non-adopters had larger mean changes in ROE1 (0.4848) than adopters (0.2424). The results of the tests of TIME and SIZE interactions on ROE1 provides evidence that both time and size react significantly with the COCLASS variable. The interactions, COCLASS*TIME and COCLASS*SIZE, were only significant for non-adopters with a p<0.0001, indicating both time of measurement and size of the company have an affect on the significance of ROE1. The analysis of means shows the greatest changes in ROE1 occurred for the smallest non-adopting firms, and for those non-adopters in the earliest measurement period of the sample, 1972-1981. Non-significant interaction results for adopters implies changes in ROE1 are consistent across time of adoption and size of firm.

Hypothesis 1B was not supported by the financial services industry as non-adopters outperformed adopters on the general performance measure, ROE.

Chemical. Both ROE1 and ROE2 were highly significant for the chemical industry group (p=0.007 and p=0.000 respectively). This indicates there was a difference between adopters and non-adopters over the measurement periods for these variables. The analysis of means indicates

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[4] For non-adopters, this would be the time of variable measurement as matched to an adoption year for adopters.

that the mean change in ROE1 was slightly smaller for adopters (0.0118) than for non-adopters (0.0910). For ROE2 the indication is that changes in long-run return on equity were again greater for non-adopters (0.1362) than for adopters (0.0014). Adopters showed no significant TIME or SIZE interactions for changes in the general performance measures, ROE1 and ROE2, implying the changes were not driven by either time of the adoption or size of the adopting company. Non-adopters on the other hand had significant TIME interactions for both ROE1 and ROE2 (p=0.001 and p=0.004). The analysis of means shows greater mean percentage changes for smaller non-adopter firms. These results may be driven by sample size, however, as there were only three non-adopting companies in the top half of the sample and 41 non-adopting companies in the bottom half.

Hypothesis 1B was not supported for the Chemical Industry as non-adopters overall outperformed adopters. This was especially interesting given that the non-adopter group is made up predominately of smaller firms.

Consumer Products. There was a significant difference between adopters and non-adopters in the consumer products industry group for ROE1 (p=0.012), but not for ROE2 (p=0.818). The analysis of means shows positive mean changes in ROE1 for non-adopters (m=0.0183) and negative mean changes for adopters (m=-0.00905) indicating non-adopters had more improvement in return on equity over the measurement period than did adopters. ANOVA results show a significant TIME and SIZE interaction for non-adopters but not for adopters indicating non-adopters results were not consistent across time or size of company. Analysis of means shows smaller non-adopter companies and non-adopters in the earlier measurement period (1972-1981) performed better than other non-adopters.

Once again, hypothesis 1B was not supported as non-adopters performed better than adopters for the Consumer Products Industry. The non-adopter sample is weighted by smaller companies (large, n=10 and small, n=23), which makes the results more interesting.

Electrical. ANOVAs for the Electrical Industry show a significant difference between adopters and non-adopters for ROE1 (p=0.034) but indicate the difference did not hold over the long-run as ROE2 (p=0.982) is not significant. The analysis of means indicates the mean change in ROE1 for non-adopters (m=0.01174) was greater than for adopters who had a negative mean change (m=-0.00420). A significant COCLASS*TIME*ROE1 and COCLASS*SIZE*ROE1 interaction exists for non-adopters, but not for adopters. The analysis of means shows non-adopters in the earlier measurement period had greater mean changes in ROE1 than did those non-adopters in the later measurement period. There were significantly more firms (26) in the early measurement period, however, than in the second period (9). Moreover, larger non-adopters outperformed smaller non-adopters. Again, sample size may drive the results as there were 22 non-adopters in the top-half of the sample, and 13 non-adopters in the bottom-half of the sample (based on market size).

Overall, hypothesis 1B was not supported for the Electrical Industry as adopters did not perform as well as adopters with respect to return on equity.

Food Processing. There was a difference between adopters and non-adopters within the food processing industry group with respect to the general performance measure ROE1 (p=0.000) but the difference did not persevere as ROE2 (p=0.850) was not significant. The analysis of means indicate non-adopters had positive mean changes in ROE1 (0.02593) while adopters had

negative mean changes (-0.00415). The general linear models procedures show significance (p=.085) only for one interaction related to ROE1, Adopters*TIME. Though both mean changes were negative, adopters from the most recent measurement period (1982-1991)had greater mean changes in ROE1 than those from the earlier period. Interestingly, there were fewer companies (12) in the later years than in the earlier years (27).

The results for the Food Processing Industry do not support hypothesis 1B as in general, non-adopters faired better than adopters in this industry vis-a-vis the general performance measure, ROE1.

Heavy Manufacturing. ROE1 was significant at the .10 level (p=0.089) for the Heavy Manufacturing Industry, indicating differences in this measure between adopters and non-adopters. The long-term effects did not indicate a difference between the two company classifications as ROE2 was not significant (p=0.361). The analysis of variance shows positive mean changes in ROE1 for non-adopters and negative mean changes in ROE1 for adopters. Tests of interactions, COCLASS*TIME and COCLASS*SIZE, were not significant, indicating the primary difference between the ROE1 measure is COCLASS. Given that non-adopters performed better than adopters, this industry group did not support hypothesis 1B.

Mining and Extractive. Initially results for the mining and extractive industry group were very similar to the prior groups. ROE1 was significant (p=0.065) indicating a difference between adopters and non-adopters, while ROE2 was not significant (p=0.277). The Mining Industry differs in the analysis of variance, however, as there were positive mean changes in ROE1 for adopters (0.0072) and negative changes for non-adopters (-0.02124). There were no interaction effects for TIME and SIZE, indicating the difference in ROE1 was driven by company classification. Results for this industry group support the hypothesis that the general performance measure will improve more for adopters than for non-adopters in the same industry after the adoption of a performance plans. The results did not support an extended effect of adoptions, however, as ROE2 was not significant, implying the two company classifications perform on the same level in regards to long-term measures of return on equity.

Non-Financial Services. Both ROE1 and ROE2 were significant (p=0.004 and p=0.013, respectively) for the non-financial services industry. These results show there is difference between adopters and non-adopters for the general performance measure. The results of the analysis of means were illuminating. For the ROE1 variable, the mean change for adopters was negative while the mean change for non-adopters was positive. The exact opposite was true for ROE2; the mean change for non-adopters was negative and the change for adopters was positive. This suggests adoptions improve return on equity in the early years after adoption but the improvement is not sustained over the long-run.

For ROE1, non-adopters show a significant TIME and SIZE interaction. Smaller firms, and those in the early measurement period (1972-1981), outperformed non-adopters in the other categories. There were 13 large non-adopters and 22 small non-adopters, however, indicating a preponderance of smaller non-adopter firms. Adopters also had a significant ROE1*SIZE interaction. For adopters, there was almost an even number of large and small firms, but smaller firms outperformed larger adopting firms.

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Hypothesis 1B was not supported for the non-financial services industry, indicating adoption of either a performance or restricted stock plan did not improve firm performance as measured by return on equity.

Textiles. ROE1 was marginally significant (p=0.085) indicating a difference between adopters and non-adopters. Once again, however, the trend toward long-term performance was not maintained - for the Textiles, Paper and Forest Products Industry, ROE2 was not significant (p=0.939). The analysis of variance shows positive mean changes in ROE1 for both adopters and non-adopters, though the mean change for non-adopters was slightly higher than the mean change for adopters. The TIME and SIZE interactions were not significant, indicating the only difference between the ROE1 measures was adoption status. This industry group did not provide support for this hypothesis because non-adopters again outperformed adopters.

Summary. Relying on ROE as a performance measure does not indicate that the adoption of a performance plan or a restricted stock plan universally improves firm performance. Results indicate the effects of adoption of either type of plan are fairly industry specific.

Table 24

ANOVA Results from Testing Hypothesis 1B that
the percentage change in the general performance measure
will be greater for adopters than for non-adopters in the same industry.

Industry/Variable	N	F-Statistic
Financial	66	
ROE1		4.34[b]
ROE2		0.310
Chemical	88	
ROE1		7.70[a]
ROE2		16.64[a]
Consumer Products	66	
ROE1		6.71[b]
ROE2		0.050
Electrical	70	
ROE1		4.69[b]
ROE2		0.000
Food Processing	78	
ROE1		16.66[a]
ROE2		0.040
Heavy Manufacturing	74	
ROE1		2.97[c]
ROE2		.084
Mining	82	
ROE1		3.50[c]
ROE2		1.200
Non-Financial Service	70	
ROE1		8.72[a]
ROE2		6.49[b]
Textiles/Paper/Forest	76	
ROE1		3.04
ROE2		0.01

[a]significant at the .01 level
[b]significant at the .05 level
[c]significant at the .10 level

TABLE 25

Anomeans Results from Testing Hypothesis 1B that the change in the general
general performance measure will be greater for adopters than for non-adopters.[1]

Industry/Variable	Coclass	N	Mean	St. Deviation
Financial Services				
ROE1	Adopters	33	0.24240	0.43520
	Non-adopters	33	0.48480	0.50750
Chemical				
ROE1	Adopters	44	0.01180	0.07950
	Non-adopters	44	0.09100	0.17200
ROE2	Adopters	44	0.00140	0.03340
	Non-adopters	44	0.13620	0.21660
Consumer Products				
ROE1	Adopters	33	-0.00905	0.05466
	Non-Adopters	33	0.01830	0.02630
Electrical				
ROE1	Adopters	35	-0.00420	0.03144
	Non-adopters	35	0.01174	0.03012
Food				
ROE1	Adopters	39	-0.00415	0.01765
	Non-Adopters	39	0.02593	0.04250
Heavy Manufacturing				
ROE1	Adopters	37	-0.00549	0.03477
	Non-adopters	37	0.02040	0.08453
Mining/Extractive				
ROE1	Adopters	41	0.00721	0.06204
	Non-adopters	41	-0.02124	0.07509
Textiles/Paper/Forest				
ROE1	Adopters	38	0.00668	0.03176
	Non-adopters	38	0.02005	0.03498
Non-Financial Services				
ROE1	Adopters	35	-0.00964	0.04068
	Non-adopters	35	0.02017	0.04370
ROE2	Adopters	35	0.00067	0.01436
	Non-adopters	35	-0.00788	0.01374

[1] Results are only for those variables with significant differences between adopters and non-adopters
as reported in Table 24.

TABLE 26

Anova Results from Testing Time and Size

Interactions on the General Performance Measure for Hypothesis 1B[1]

Industry/Interaction	Coclass	F-statistic
Financial Services		
ROE1*Time	Adopters	0.520
	Non-adopters	27.94[a]
ROE1*Size	Adopters	2.510
	Non-adopters	27.94[a]
Chemicals		
ROE1*Time	Adopters	2.190
	Non-adopters	0.190
ROE1*Size	Adopters	0.720
	Non-adopters	12.54[a]
ROE2*Time	Adopters	0.240
	Non-adopters	2.240
ROE2*Size	Adopters	0.920
	Non-adopters	9.18[a]
Consumer Products		
ROE1*Time	Adopters	0.020
	Non-adopters	8.01[a]
ROE1*Size	Adopters	0.090
	Non-adopters	12.58[a]
Electrical		
ROE1*Time	Adopters	1.240
	Non-adopters	30.44[a]
ROE1*Size	Adopters	1.430
	Non-adopters	6.04[b]
Food		
ROE1*Time	Adopters	3.14[c]
	Non-adopters	1.380
ROE1*Size	Adopters	0.250
	Non-adopters	1.380

[1] Interactions shown only for variables that resulted in significance from initial anovas between adopters and non-adopters as reported in Table 25.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 27

Anova Results from Testing Time and Size

Interactions on the General Performance Measure for Hypothesis 1B[1]

Industry/Interaction	Coclass	F-statistic
Heavy Manufacturing		
ROE1*Time	Adopters	0.340
	Non-adopters	2.040
ROE1*Size	Adopters	1.040
	Non-adopters	2.750
Mining/Extractive		
ROE1*Time	Adopters	0.170
	Non-adopters	0.570
ROE1*Size	Adopters	0.630
	Non-adopters	0.570
Textiles/Paper/Forest		
ROE1*Time	Adopters	1.370
	Non-adopters	0.970
ROE1*Size	Adopters	0.750
	Non-adopters	0.970
Non-Financial Services		
ROE1*Time	Adopters	0.080
	Non-adopters	11.75[a]
ROE1*Size	Adopters	1.560
	Non-adopters	11.75[a]
ROE2*Time	Adopters	0.090
	Non-adopters	0.000
ROE2*Size	Adopters	3.49[c]
	Non-adopters	0.000

[1] Interactions shown only for variables that resulted in significance from initial anovas between adopters and non-adopters as reported in Table 25.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 28
Anomeans Results from Testing Time and Size Interactions
for Hypothesis 1B on the General Performance Measure[1]

Industry/Interaction	Coclass	N[2]	0-mean[3]	1-mean[3]
Financial Services				
ROE1*Time	Non-adopters	16/17	0.00650	0.05364
ROE1*Size	Non-adopters		-0.00650	0.05364
Chemicals				
ROE1*Size	Non-adopters	3/41	-0.21040	0.11310
ROE2*Size	Non-adopters		-0.19900	0.16070
Consumer Products				
ROE1*Time	Non-adopters	9/24	-0.00086	0.02549
ROE1*Size	Non-adopters	10/23	-0.00280	0.02748
Electrical				
ROE1*Time	Non-adopters	9/26	-0.02322	0.02384
ROE1*Size	Non-adopters	22/13	0.02072	-0.00345
Food				
ROE1*Time	Adopters	12/27	-0.01145	-0.00090
Non-Financial Services				
ROE1*Time	Non-adopters	13/22	-0.00854	0.03713
ROE1*Size	Adopters	17/18	-0.00383	0.00492
	Non-adopters	13/22	-0.00854	0.03713

[1] Results are only for those individual variables with significant differences between adopters and peers as reported in Tables 26 and 27.

[2] The number of observations for each mean are presented as N for 0-mean/N for 1-mean. N's are given only once for each type of interaction term, TIME and SIZE for each industry.

[3] TIME interactions for the 0-mean represent observations for years 1982-1991; TIME interactions for the 1-mean represent observations for years 1972-1981. SIZE interaction 0-means represent companies whose market size is in the top 50% of the industry; 1-means for SIZE interactions represent those companies in the bottom 50% of the industry based on market size.

Hypothesis 2B, expressed in equation (7), states that adopters of a performance or restricted stock plan will show more significant improvement in industry-specific performance variables than will non-adopters in the same industry for the same measurement period. Adopters were measured independently on these same variables in the tests of hypothesis 2A. Although results did not indicate that adoption of a performance or restricted plan improves performance for all industry groups, it is important to test all the industry groups against non-adopters in the same industry. Significant or insignificant results could have been an industry wide phenomenon. Tests of hypothesis 2B indicate whether results of either type are industry specific or company classification specific.

Initially, this hypothesis was tested using MANOVA for the general linear models procedure (Table 29). Significant results of these tests indicate a difference between adopters and non-adopters on the group of industry specific variables, but not which variables were driving the significance. ANOVAs were analyzed to establish which of the individual variables within each group were significant (Tables 30 and 31). Significant variables were then evaluated using analysis of means to determine which company classification was moving in the appropriate direction (Table 32 and 33). Also, as for hypothesis 1B, COCLASS*TIME and COCLASS*SIZE interactions were tested where appropriate, utilizing ANOVAs (Table 34 through 37), with further clarification of significant time and size levels obtained by analysis of means (Tables 38 and 39). The following paragraphs contain the results for each industry group and a summary.

Financial. The group of industry-specific variables for the financial industry were significant for both measurement periods (p=0.002 and p=0.011, respectively). This implies there was a difference between adopters and non-adopters for the two groups of variables. Analysis of variance tests of the individual variables shows the only significant difference between adopters and non-adopters was on the measures for capital growth, CAPGRW1 and CAPGRW2. Analysis of means indicates that non-adopters have greater mean percentage changes for both variables than do non-adopters.

To see if the differences between adopters and non-adopters for the capital growth variables were driven by either TIME or SIZE, analysis of variance was employed. The results show a significant TIME and SIZE interaction for both CAPGRW1 and CAPGRW2 for non-adopters, but not for adopters. This implies the mean percentage change in these variables did not change over time for adopters; however, there was a change for non-adopters over time. Analysis of means showed the greatest mean change occurring for non-adopters in the early years of the study, 1972-1981. The SIZE variable produced very similar results. There was no significant SIZE effect for adopters but there was for non-adopters, with mean changes in the capital growth variables greater for smaller non-adopting companies.

The results suggest adoption of performance or restricted stock plans did not enhance firm performance in the Bank and Non-Bank Financial Industry.

Chemical. For both measurement periods, the general linear models procedure shows significance for all the industry-specific variables as a group at the .01 level for the chemical industry. Individual ANOVAs show significance on each of the six measures, indicating a

difference between adopters and non-adopters across these measures. The analysis of variance for each variable indicates that non-adopters had greater mean changes for each of the variables than did adopters, as shown in Table 32.

There was a significant TIME interaction for RD/SLS1, CAPSP1, RD/SLS2 and CAPSP2. For both adopters and non-adopters, an analysis of means indicates that spending on research and development was on average, greater in the later years of the analysis than in the earlier years. Conversely, capital spending was greater in the earlier years than the later years. These results indicate a trend that was more industry specific than compensation composition specific. Significant SIZE interactions for RD/SLS1 and RD/SLS2 imply that larger chemical companies, whether adopters or non-adopters, spent a greater percentage of sales dollars on research and development than did smaller companies. For non-adopters, a significant SIZE interaction exists for INV/SLS2, with the analysis of means indicating larger non-adopters were more efficient at using inventory to generate sales than were smaller non-adopting companies.

Adoptions of performance or restricted stock plans did not significantly improve firm performance for the Chemical Industry.

Consumer Products. The groups of industry-specific variables for the consumer products industry were significant at the .05 level for both measurement periods (p=0.015 and p=0.005). This indicates there was a difference between adopters and non-adopters across the variables. Looking at the variables individually through analysis of variance, the only significant variable for the first measurement period, pre-post1, was the sales growth variable, SLSGRW1. The mean change in SLSGRW1 was greater for adopters (0.4678) than for non-adopters (0.1296). All three variables for the second measurement period, pre-post2, were significant, with adopters exhibiting greater mean changes than non-adopters for all variables.

The results of the analysis of variance tests to see the effect of TIME and SIZE on the significant variables show a significant TIME and SIZE interaction on both SLSGRW1 and SLSGRW2, as well as on INVTURN2, with AD/SLS2 having only a significant SIZE effect. Smaller adopting companies had greater changes in sales growth soon after adoption than did larger adopters. Also, long-term improvement in sales growth was more significant for adoptions that occurred from 1972-1981. For non-adopters, however, larger companies had greater mean changes in sales growth; furthermore, non-adopters from the second time period (1982-1991) had more significant mean changes in sales growth than did non-adopters from the earlier measurement period. This was especially interesting, given that there were fewer non-adopting companies in the second-half of the sample period, n=9 vs. n=24.

For the Consumer Products Industry, adopters tended to outperform non-adopters, providing support for hypothesis 2B.

Electrical. The general linear models procedure shows a difference between adopters and non-adopters for the entire group of industry specific variables. Analysis of variance indicates a significant difference between the two groups on all of the variables except RD/SLS2. Further testing by analysis of means shows adopters had greater mean percentage changes than non-adopters for SLSGRW1, INVTURN1, SLSGRW2 and INVTURN2. Non-adopters outperformed adopters on RD/SLS1.

Significant TIME interactions exist for adopters on SLSGRW1 and SLSGRW2. For both variables, adopters in the earlier time period (1972-1981) had greater mean changes than did

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those in the later period. There was also a significant SIZE interaction for adopters on all of the variables, but the effect of size was not consistent across all variables. Specifically, larger adopters performed better than smaller companies on RD/SLS1 and both inventory variables, INVTURN1 and INVTURN2. Smaller adopters had greater mean changes in the area of sales growth however.

Non-adopters also showed significant TIME and SIZE interactions. Significant TIME interactions exist for SLGRW1 and INVTURN2. For sales growth, non-adopters in more recent years had greater mean changes than those in earlier years. Earlier non-adopters appear to do a better job of managing inventory over the long run. For non-adopters, significant SIZE interactions exist for SLSGRW2 only. Once again, non-adopters in the later years of the study outperformed those in the earlier portion of the study.

Overall, the results indicate adoption of either a performance or restricted stock plan improved firm performance for firms in the Electrical, Electronics and Related Equipment Industry when compared to non-adopters in the same industry.

Food Processing. The food processing industry shows significant differences p=0.0001, between adopters and non-adopters for the group industry-specific variables for the pre-post1 period only. This implies adopters and non-adopters differ significantly on the performance measures only in the initial measurement period and do not over the long-run. Analysis of variance shows differences exist across all three variables. The analysis of means shows that non-adopters have greater mean changes for AD/SLS1 and for WRKCAP1, whereas adopters had greater mean changes for SLSGRW1. All three variables exhibit significant TIME and SIZE interactions. As shown in Table 15, early adopters had greater mean changes in WRKCAP1*TIME and SLSGRW1*TIME, than later adopters. There were significantly more early adopters (27) than later adopters (12) however. Similar results exist for non-adopters. Non-adopters in the earlier years of the study outperformed those in later years, implying this result was an industry-wide phenomenon rather than company classification specific. Also small non-adopting firms had higher mean changes in the significant interactions than did larger firms.

Measurements of the percentage changes of the industry-specific variables for the Food Processing Industry do not support hypothesis 2B, as changes appear either to be common across the industry or non-adopters outperformed adopters.

Heavy Manufacturing. The groups of variables for both the heavy manufacturing industry were significant for pre-post1 but only marginally significant for pre-post2. Analysis of variance indicates differences between adopters and non-adopters for RD/SLS1, RD/SLS2, and OPEX/REV1. For both research and development variables, non-adopters had a greater mean percentage change than did adopters.

A significant TIME interaction exits for non-adopters on OPEX/REV1 and RD/SLS1. On both of these variables, non-adopters measured in the later years of the study outperformed those in the earlier years of the study. Adopters had a significant TIME interaction for the long-term measure of research and development spending, RD/SLS2. Early adopters had greater mean changes in the long-run measure of research and development spending than later adopters.

The results for the Heavy Manufacturing Industry did not support hypothesis 2B and indicate the adoption of either a performance or restricted stock plan did not enhance firm performance.

Mining and Extractive. The analysis for the mining and extractive industry group shows no difference between adopters and non-adopters for the group of industry-specific variables. This implies no difference between adopters and non-adopters in this industry, and suggests companies in the mining and extractive industry group did not improve firm performance, with respect to the chosen dimensions, by the adoption of either a performance or restricted stock plan.

Non-Financial Services. Only the group of variables for the pre-post1 period were significant for the non-financial services industry group, indicating a difference between adopters and non-adopters on these variables. The analysis of variance results in a difference on two of the variables, AD/SLS1 and DIV1. Non-adopters (0.004282) outperformed adopters (0.000453) for the AD/SLS1 variable while adopters (0.4370) outperformed non-adopters (0.2711) for DIV1.

There were significant TIME and SIZE interactions for both variables for non-adopters. The interactions on AD/SLS1 show smaller companies outperformed larger companies, and non-adopters in the 1972-1981 measurement period performed better than companies in the later measurement period. The opposite is true regarding dividends; where larger companies and those in the second-half of the sample had greater mean changes. Insignificant interactions for adopters imply that the mean changes in these variables were consistent over time as well as over differing company sizes.

Hypothesis 2B is not supported for the Non-Financial Services Industry, as non-adopters performed as well as, or better, than adopters.

Textiles. MANOVA results show a difference between adopters and non-adopters in the Textiles, Paper, and Forest Products Industry for the two groups of industry-specific variables ($p=0.013$ and $p=0.0001$). The analysis of variance indicates only CAPEX1 and CAPEX2 were significantly different between adopters and non-adopters. For both variables, non-adopters outperformed adopters on average.

The analysis of variance on the TIME and SIZE interactions shows no significance on either of the capital expenditure variables for adopters. Thus, adopters were consistent in mean percentage changes in capital expenditures over time as well as over differing firm sizes. Significant TIME and SIZE interactions for non-adopters show greater mean changes in the capital expenditures variables for smaller firms and for those firms in the early years of the study.

The results indicate adoption of either a performance or restricted stock plan was not beneficial to the Textiles Industry as non-adopters outperformed adopters.

Summary. Hypothesis 2B was supported by only two of the nine industry groups, Consumer Products and the Electrical Industry. The implication is that adoptions of performance or restricted stock plans only result in firm performance that is significantly improved above the performance level of the total industry for select industry groups. The analysis of the next hypotheses will help evaluate whether the positive results for these adopters are truly adoption specific or whether there are other reasons for the significant improvements.

TABLE 29

Manova Results for Testing Hypothesis 2B that
the percentage change in the industry specific performance measures
will be greater for adopters than for non-adopters in the same industry.

Industry/Measurement Period	N	F-statistic
Financial Services	66	
Pre-Post 1		5.702[a]
Pre-Post 2		4.070[b]
Chemicals	88	
Pre-Post 1		7.096[a]
Pre-Post 2		28.693[a]
Consumer Products	66	
Pre-Post 1		3.721[b]
Pre-Post 2		4.690[a]
Electrical	70	
Pre-Post 1		48.325[a]
Pre-Post 2		15.952[a]
Food	78	
Pre-Post 1		8.219[a]
Pre-Post 2		0.7070
Heavy Manufacturing	74	
Pre-Post 1		5.777[a]
Pre-Post 2		2.171[c]
Mining/Extractive	82	
Pre-Post 1		1.519
Pre-Post 2		0.907
Textiles/Paper/Forest	76	
Pre-Post 1		3.864[b]
Pre-Post 2		7.037[a]
Non-Financial Services	70	
Pre-Post 1		6.669[a]
Pre-Post 2		0.5630

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 level

TABLE 30

Anova Results from Testing Hypothesis 2B

on the Industry-Specific Variables[1]

Industry/Variable	N	F-statistic
Financial Services	66	
CAPGRW1		14.47[a]
CAPGWR2		12.60[a]
OHCTRL1		0.30
OHCTRL2		0.13
DIV1		0.04
DIV2		0.01
Chemicals	88	
INV/SLS1		7.53[a]
RD/SLS1		2.80[c]
CAPSP1		2.86[c]
INV/SLS2		26.65[a]
RD/SLS2		6.16[b]
CAPSP2		6.87[a]
Consumer Products	66	
AD/SLS1		1.42
INVTURN1		2.45
SLSGRW1		9.12[a]
AD/SLS2		3.48[c]
INVTURN2		3.40[c]
SLSGRW2		11.43[a]
Electrical	70	
RD/SLS1		31.50[a]
SLSGRW1		61.17[a]
INVTURN1		36.21[a]
RD/SLS2		1.45
SLSGRW2		47.49[a]
INVTURN2		8.35[a]

[1] Results are only for those variables with significant group differences
  between adopters and non-adopters as reported in Table 29.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 31

Anova Results from Testing Hypothesis 2B

on the Industry-Specific Variables[1]

Industry/Variable	N	F-statistic
Food	78	
AD/SLS1		5.47^b
WRKCAP1		5.66^b
SLSGRW1		3.23^c
Heavy Manugfacturing	74	
RD/SLS1		10.39^a
OPEX/REV1		10.69^a
EMP/SLS1		0.22
RD/SLS2		5.88^b
OPEX/REV2		1.45
EMP/SLS2		0.68
Textiles/Paper/Forest	76	
OPEX/REV1		2.56
INVTURN1		0.92
CAPEX1		8.34^a
OPEX/REV2		0.19
INVTURN2		1.84
CAPEX2		16.45^a
Non-Finanical Services	70	
OPEX/REV1		0.00
AD/SLS1		19.28^a
DIV1		4.00^b

[1] Results are only for those variables with significant group differences
between adopters and non-adopters as reported in Table 29.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 32

Anomeans Result from Testing Hypothesis 2B

on the Industry Specific Variables[1]

Industry/Variable	Coclass	N	Mean	St. Deviation
Financial Services				
CAPGRW1	Adopters	33	0.37750	0.46250
	Non-Adopters	33	0.87300	0.58830
CAPGRW2	Adopters	33	0.62080	0.61880
	Non-Adopters	33	1.26870	0.84650
Chemicals				
INV/SLS1	Adopters	44	-0.00677	0.02239
	Non-Adopters	44	-0.02721	0.04403
RD/SLS1	Adopters	44	0.00230	0.00840
	Non-Adopters	44	0.04400	0.16520
CAPSP1	Adopters	44	0.52610	0.59580
	Non-Adopters	44	0.79830	0.88620
INV/SLS2	Adopters	44	-0.01044	0.02737
	Non-Adopters	44	-0.04726	0.03858
RD/SLS2	Adopters	44	0.00320	0.00930
	Non-Adopters	44	0.08180	0.20970
CAPSP2	Adopters	44	0.62500	0.66400
	Non-Adopters	44	1.22700	1.37100
Consumer Products				
SLSGRW1	Adopters	33	0.46780	0.581000
	Non-Adopters	33	0.12960	0.276200
AD/SLS2	Adopters	33	0.00181	0.004606
	Non-Adopters	33	0.00029	0.000913
INVTURN2	Adopters	33	-0.75400	2.125000
	Non-Adopters	33	-0.05200	0.531000
SLSGRW2	Adopters	33	0.62430	0.700900
	Non-Adopters	33	0.17490	0.303400
Electrical				
RD/SLS1	Adopters	35	0.00044	0.01017
	Non-Adopters	35	0.04901	0.05019
SLSGRW1	Adopters	35	0.61480	0.46480
	Non-Adopters	35	0.00030	0.00570
INVTURN1	Adopters	35	0.61580	0.52960
	Non-Adopters	35	0.02010	0.24990

[1] Results are only for those individual variables with significant differences between adopters and
non-adopters as reported in Tables 30 and 31.

TABLE 33
Anomeans Result from Testing Hypothesis 2B
on the Industry Specific Variables[1]

Industry/Variable	Coclass	N	Mean	St. Deviation
Electrical (Continued)				
SLSGRW2	Adopters	35	0.85960	0.73730
	Non-adopters	35	0.00070	0.00220
INVTURN2	Adopters	35	-0.25420	0.45990
	Non-adopters	35	-0.00940	0.19960
Food				
AD/SLS1	Adopters	39	0.00498	0.01281
	Non-adopters	39	0.01006	0.00442
WRKCAP1	Adopters	39	0.20270	0.43190
	Non-adopters	39	0.37820	0.16040
SLSGRW1	Adopters	39	0.38090	0.29520
	Non-adopters	39	0.25620	0.31670
Heavy Manufacturing				
RD/SLS1	Adopters	37	0.00023	0.00667
	Non-adopters	37	0.00437	0.00406
OPEX/REV1	Adopters	37	-0.00266	0.03528
	Non-adopters	37	0.04472	0.08080
RD/SLS2	Adopters	37	0.00039	0.00421
	Non-adopters	37	0.00216	0.00135
Textiles/Paper/Forest				
CAPEX1	Adopters	38	0.38840	0.30880
	Non-adopters	38	0.79290	0.80650
CAPEX2	Adopters	38	0.50570	0.41580
	Non-adopters	38	1.25130	1.05430
Non-Financial Services				
AD/SLS1	Adopters	35	0.00045	0.00267
	Non-adopters	35	0.00428	0.00440
DIV1	Adopters	35	0.43700	0.47330
	Non-adopters	35	0.27110	0.12910

[1] Results are only for those individual variables with significant differences between adopters and
 non-adopters as reported in Tables 30 and 31.

TABLE 34

Anova Results from Testing Time and Size Interactions

Related to Hypothesis 2B on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	F-statistic
Financial Services		
CAPGRW1*Time	Adopters	0.00
	Non-adopters	34.40[a]
CAPGRW1*Size	Adopters	0.16
	Non-adopters	34.40[a]
CAPGRW2*Time	Adopters	0.04
	Non-adopters	52.75
CAPGRW2*Size	Adopters	0.24
	Non-adopters	52.75[a]
Chemicals		
INV/SLS1*Time	Adopters	0.11
	Non-adopters	0.11
INV/SLS1*Size	Adopters	0.13
	Non-adopters	1.19
RD/SLS1*Time	Adopters	4.07[b]
	Non-adopters	183.21[a]
RD/SLS1*Size	Adopters	3.46[c]
	Non-adopters	0.06
CAPSP1*Time	Adopters	5.83[b]
	Non-adopters	30.07[a]
CAPSP1*Size	Adopters	0.10
	Non-adopters	0.65
INV/SLS2*Time	Adopters	0.02
	Non-adopters	2.66
INV/SLS2*Size	Adopters	0.70
	Non-adopters	5.22[b]
RD/SLS2*Time	Adopters	3.70[c]
	Non-adopters	226.90[a]
RD/SLS2*Size	Adopters	4.54[b]
	Non-adopters	0.20

[1] Results are for interactions only with the individual variables that show
differences between adopters and non-adopters as reported in Tables 32 and 33.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 35

Anova Results from Testing Time and Size Interactions

Related to Hypothesis 2B on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	F-statistic
Chemicals (Continued)		
CAPSP2*Time	Adopters	6.46[b]
	Non-adopters	24.29[a]
CAPSP2*Size	Adopters	0.07
	Non-adopters	1.57
Consumer Products		
SLSGRW1*Time	Adopters	2.69
	Non-adopters	27.35[a]
SLSGRW1*Size	Adopters	6.78[b]
	Non-adopters	20.48[a]
AD/SLS2*Time	Adopters	0.45
	Non-adopters	2.26
AD/SLS2*Size	Adopters	0.57
	Non-adopters	4.18[b]
INVTURN2*Time	Adopters	1.76
	Non-adopters	7.37[a]
INVTURN2*Size	Adopters	2.31
	Non-adopters	3.68[c]
SLSGRW2*Time	Adopters	5.63[b]
	Non-adopters	48.15[a]
SLSGRW2*Size	Adopters	2.79
	Non-adopters	47.33[a]
Electrical		
RD/SLS1*Time	Adopters	0.67
	Non-adopters	0.98
RD/SLS1*Size	Adopters	4.53[b]
	Non-adopters	2.75
SLSGRW1*Time	Adopters	10.56[a]
	Non-adopters	32.63[a]

[1] Results are for interactions only with the individual variables that show
differences between adopters and non-adopters as reported in Tables 32 and 33.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 36

Anova Results from Testing Time and Size Interactions

Related to Hypothesis 2B on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	F-statistic
Electrical (Continued)		
SLSGRW1*Size	Adopters	8.14^a
	Non-adopters	0.17
INVTURN1*Time	Adopters	1.68
	Non-adopters	0.38
INVTURN1*Size	Adopters	3.23^c
	Non-adopters	0.65
SLSGRW2*Time	Adopters	8.49^a
	Non-adopters	0.00
SLSGRW2*Size	Adopters	10.44^a
	Non-adopters	31.16^a
INVTURN2*Time	Adopters	0.96
	Non-adopters	4.06^b
INVTURN2*Size	Adopters	3.65^b
	Non-adopters	0.24
Food		
AD/SLS1*Time	Adopters	0.30
	Non-adopters	15.75^a
AD/SLS1*Size	Adopters	0.40
	Non-adopters	15.75^a
WRKCAP1*Time	Adopters	5.57^b
	Non-adopters	70.77^a
WRKCAP1*Size	Adopters	0.42
	Non-adopters	70.77^a
SLSGRW1*Time	Adopters	19.68^a
	Non-adopters	50.25^a
SLSGRW2*Size	Adopters	2.64
	Non-adopters	50.25^a

[1] Results are for interactions only with the individual variables that show
differences between adopters and non-adopters as reported in Tables 32 and 33.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 37

Anova Results from Testing Time and Size Interactions

Related to Hypothesis 2B on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	F-statistic
Heavy Manufacturing		
RD/SLS1*Time	Adopters	0.43
	Non-adopters	3.01[c]
RD/SLS1*Size	Adopters	0.14
	Non-adopters	1.33
OPEX/REV1*Time	Adopters	0.09
	Non-adopters	16.61[a]
OPEX/REV1*Size	Adopters	2.17
	Non-adopters	1.73
RD/SLS2*Time	Adopters	3.02[c]
	Non-adopters	1.11
RD/SLS2*Size	Adopters	0.06
	Non-adopters	0.59
Textiles/Paper/Forest		
CAPEX1*Time	Adopters	0.55
	Non-adopters	8.94[a]
CAPEX*Size	Adopters	0.32
	Non-adopters	24.00[a]
Non-Financial Services		
AD/SLS1*Time	Adopters	0.60
	Non-adopters	25.94[a]
AD/SLS1*Size	Adopters	0.41
	Non-adopters	25.94[a]
DIV1*Time	Adopters	0.43
	Non-adopters	16.67[a]
DIV1*Size	Adopters	0.12
	Non-adopters	16.67[a]

[1] Results are for interactions only with the individual variables that show
 differences between adopters and non-adopters as reported in Tables 32 and 33.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 38

Anomeans of Results of Time and Size Interactions Related to

Hypothesis 2B on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	N[2]	0-mean[3]	1-mean[3]
Financial Services				
CAPGRW1*Time	Non-adopter	16/17	0.43990	1.2806
CAPGRW1*Size	Non-adopter		0.43990	1.2806
CAPGRW2*Size	Non-adopter		0.58680	1.9105
Chemicals				
RD/SLS1*Time	Adopter	12/32	0.00637	0.00081
	Non-adopter	12/32	0.28449	-0.04617
RD/SLS1*Size	Adopter	28/16	0.00407	-0.00072
CAPSP1*Time	Adopter		0.19030	0.65210
	Non-adopter		-0.12570	1.14480
RD/SLS2*Time	Adopter		0.00752	0.00164
	Non-adopter		0.39282	-0.03484
RD/SLS2*Size	Adopter		0.00542	-0.00056
CAPSP2*Time	Adopter		0.23270	0.77130
	Non-adopter		-0.11300	1.72900
INV/SLS2*Size	Non-adopter	3/41	-0.09415	-0.04383
Consumer Products				
SLSGRW1*Time	Non-adopter	9/24	0.43370	0.01550
SLSGRW1*Size	Adopter	17/16	0.22327	0.71760
	Non-adopter	10/23	0.3898	0.01640
SLSGRW2*Time	Adopter	17/16	0.36190	0.90320
	Non-adopter		0.55530	0.03220
SLSGRW2*Size	Non-adopter		0.52700	0.02170
AD/SLS2*Size	Non-adopter		-0.00190	-0.00049
INVTURN2*Time	Non-adopter		-0.42550	0.08860
INVTURN2*Size	Non-adopter		-0.30970	0.06060
Electrical				
SLSGRW1*Time	Adopter	9/26	0.23140	0.74750
	Non-adopter	9/26	0.00695	-0.00210
SLSGRW1*Size	Adopter	18/17	0.41680	0.82450
SLSGRW2*Time	Adopter		0.30070	1.05310

[1] Results are only for those individual variables with significant differences between adopters and
peers as reported in Tables 34 through 37.

[2] The number of observations for each mean are presented as N for 0-mean/N for 1-mean. N's are
given only once for each type of interaction term, TIME and SIZE for each industry.

[3] TIME interactions for the 0-mean represent observations for years 1982-1991; TIME interactions
for the 1-mean represent observations for years 1972-1981. SIZE interaction 0-means represent
companies whose market size is in the top 50% of the industry; 1-means for SIZE interactions
represent those companies in the bottom 50% of the industry based on market size.

TABLE 39

Anomeans of Results of Time and Size Interactions Related to

Hypothesis 2B on the Insdustry-Specific Variables[1]

Industry/Interaction	Coclass	N[2]	0-mean[3]	1-mean[3]
Electrical (Continued)				
SLSGRW2*Size	Adopter		0.51330	1.22630
	Non-adopter	22/13	0.00185	-0.00120
RD/SLS1*Size	Adopter		0.00382	-0.00310
INVTURN1*Size	Adopter		0.76730	0.45530
INVTURN2*Time	Non-adopter		0.10140	-0.04770
INVTURN2*Size	Adopter		-0.11530	-0.40140
Food				
WRKCAP1*Time	Adopter	12/27	-0.02870	0.30550
	Non-adopter	12/27	0.18570	0.46372
WRKCAP1*Size	Non-adopter	12/27	0.18570	0.46372
SLSGRW1*Time	Adopter		0.12330	0.49530
	Non-adopter		-0.09960	0.41430
SLSGRW1*Size	Non-adopter		-0.09960	0.41430
AD/SLS1*Time	Non-adopter		0.00648	0.01165
AD/SLS1*Size	Non-adopter		0.00648	0.01165
Heavy Manufacturing				
RD/SLS2*Time	Adopter	18/19	-0.00081	0.00153
	Non-adopter	18/19	0.00553	0.00327
OPEX/REV2*Time	Adopter		0.00501	-0.00379
	Non-adopter		0.09117	0.00071
Textiles				
CAPEX1*Time	Non-adopter	10/28	0.11900	1.0050
CAPEX1*Size	Non-adopter	18/20	0.26240	1.2703
Non-Financial Services				
AD/SLS1*Time	Non-adopter	13/22	0.00053	0.00649
AD/SLS1*Size	Non-adopter	13/22	0.00053	0.00649
DIV1*Time	Non-adopter		0.36700	0.21440
DIV1*Size	Non-adopter		0.36700	0.21440

[1] Results are only for those individual variables with significant differences between adopters and
  peers as reported in Tables 34 through 37.

[2] The number of observations for each mean are presented as N for 0-mean/N for 1-mean. N's are
  given only once for each type of interaction term, TIME and SIZE for each industry.

[3] TIME interactions for the 0-mean represent observations for years 1982-1991; TIME interactions
  for the 1-mean represent observations for years 1972-1981. SIZE interaction 0-means represent
  companies whose market size is in the top 50% of the industry; 1-means for SIZE interactions
  represent those companies in the bottom 50% of the industry based on market size.

<u>Tests of Hypothesis 1C</u>

This hypothesis was generated to test the relationship between adopters and a non-adopter peers on the general performance measure, ROE. The models in equations (5) and (6) were tested using analysis of variance (Table 40), which only indicates a difference exits between adopters and peers but does not provide the degree of the difference.[5] Analysis of means (Table 41) was used to determine which company classification was driving the differences that exist in the analysis of variance. TIME and SIZE interactions were evaluated using analysis of variance (Table 42). Details of the results for each industry group, and a summary follow.

Only one industry group had results that indicate a significant difference between adopters and non-adopters. For the Electrical Industry group, ROE1 was significant at the .10 level. Further analysis of the two levels of COCLASS indicate non-adopters had higher mean percentage changes in ROE over the measurement period than did adopters (Table 41). There was no significance for any of the other industry groups, nor was there a significant TIME or SIZE interaction for ROE1 for the Electrical Industry (Table 42).

Summary. Results did not support hypothesis 1C and indicate adoption of either a performance plan or a restricted stock plan does not lead to improved firm performance as measured by ROE when adopters are compared to peers.

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[5] The test on differences in percentage change for ROE between adopters and peers was also analyzed in a manner similar to Larker (1983) and Kumar, et al (1997) by testing if the difference in the percentage change between ROE for adopters and ROE for peers was significantly different from zero. These tests did not yield significantly different results.

TABLE 40

Anova Results for Testing Hypothesis 1C that the percentage change in the general profitability measure will be greater for adopters than for a non-adopting peer.

Industry/Variable	N	F-statistic
Financial Services	66	
ROE1		0.37
ROE2		0.82
Chemicals	88	
ROE1		0.53
ROE2		0.91
Consumer Products	66	
ROE1		0.74
ROE2		0.56
Electrical	70	
ROE1		3.73[a]
ROE2		2.18
Food	78	
ROE1		0.98
ROE2		0.98
Heavy Manufacturing	74	
ROE1		0.39
ROE2		1.35
Mining/Extractive	82	
ROE1		1.46
ROE2		0.81
Non-Financial Services	74	
ROE1		1.72
ROE2		1.54
Textiles/Paper/Forest	76	
ROE1		1.72
ROE2		1.54

[a] significant at the .10 Level

TABLE 41

Anomeans Results for Testing Hypothesis 1C on the General Performanc Measure[1]

Industry/Variable	Coclass	N	Mean	St. Deviation
Electrical				
ROE1	Adopters	35	-0.00420	0.03144
	Non-adopters	35	0.01593	0.05308

[1] Results shown only for the variable with a significant difference between adopters and peers as reported in Table 40.

TABLE 42

Anova Results on Time and Size Interactions

on the General Performance Measure for Hypothesis 1C[1]

Industry/Interaction	Coclass	F-statistic
Electrical		
ROE1*Time	Adopters	1.24
	Peers	1.79
ROE1*Size	Adopters	1.43
	Peers	0.30

[1] Interactions shown only for the variable that resulted in significance from
initial anovas between adopters and peers as reported in Table 41.

<u>Tests of Hypothesis 2C</u>

This hypothesis tests the link between adopters and peers for the industry-specific variables. The model in equation (7) was tested using multivariate analysis of variance as explained in the "Statistical Analysis" section of Chapter 4[6]. Significant results indicate only a difference between adopters and peers (Table 43). Analysis of variance was employed to evaluate on which variables the differences arise (Table 44). Analysis of means was then used to evaluate which COCLASS level, adopter or non-adopter was driving the significant results on the individual variables (Table 45). TIME and SIZE interactions were analyzed using analysis of variance (Table 46) and analysis of means was used for significant interactions to evaluate the significant levels of the interactions (Table 47). Explanations of results for each industry group and a summary follow.

Financial. The industry-specific variables for the first measurement period for the financial industry were significant for p=0.027, indicating a difference between adopters and peers across these variables. The variables for the second period were not significant. The analysis of variance for the factors adopter and peer indicates the difference between the two levels was on the variable for capital growth, CAPGRW1. Peers had a greater mean percentage change in capital growth over the first measurement period, pre-post1, than did adopters. There was neither a significant TIME or SIZE interaction for either of the capital growth measures, CAPGRW1 and CAPGRW2. All in all, results did not support hypothesis 2C, as peers performed either as well as, or better than, adopters.

Consumer Products. For the Consumer Products industry group, the group of variables for the first measurement period did not produce significant results but the variables representing the long-run effect were significant (p=.028) indicating a difference between adopters and peers for the industry-specific variables in the pre-post2 period, but not for the pre-post1 period. The results of the analysis of variance shows the difference between the two groups was attributed to the variable related to inventory control, INVTURN2. Analysis of means indicates peers had better average inventory turnover than did adopters. The difference between the two groups on this variable was not driven by TIME or SIZE as neither interaction produced significance. For the Consumer Products Industry, hypothesis 2C is not supported as peers performed at least as well as adopters.

Electrical. Only the variables representing the long-run measurement period, pre-post2, were significant for the Electrical and Electronics Industry group, indicating a difference between adopters and peers over the long-run for the industry-specific variables. Analysis of variance tests show differences between peers and adopters during this period on the research and development variable, RD/SLS2, and the inventory control variable, INVTURN2. Peers performed better on average than adopters on both of these measures as shown by the analysis of means test. The only significant interaction was a significant SIZE interaction for adopters on INVTURN2. An

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[6] The test on differences in percentage change for ROE between adopters and peers was also analyzed in a manner similar to Larker (1983) and Kumar, et al (1997) by testing if the difference in the percentage change between ROE for adopters and ROE for peers was significantly different from zero. These tests did not yield significantly different results.

analysis of means shows smaller adopters had greater long-run inventory efficiency than did larger adopters. Overall, hypothesis 2C was not supported for the Electrical Industry as once again, peers performed as well as or better than adopters.

       Heavy Manufacturing. Results from the Heavy Manufacturing industry group show a significant difference between peers and adopters across the industry-specific variables for the long-term measurement period, pre-post2. Analysis of variance shows this difference was driven by one variable, EMPSLS2, which is a measure of downsizing. Adopters appear, on average to have conducted more downsizing than peers. To see if the difference between the two groups on this measure was due to the effects of TIME or SIZE, analysis of variance was performed. There was both a significant TIME and SIZE interaction for peers on EMPSLS2. Analysis of means indicates adopters were fairly consistent in downsizing as there was no difference in mean changes for this variable over the two time decades analyzed, nor was there a difference based on size of the company. For peers, downsizing was more prevalent during the 1972-1981 period and for companies in the top half of the size category. Peers performed closely to adopters in the Heavy Manufacturing Industry, thus hypothesis 2C was not supported for this group.

       Textiles. The variables representing the second measurement period, pre-post2, for the Textiles, Paper and Forest Products Industry group were significant p=0.058. The analysis of variance indicates the difference between adopters and peers was generated by differences between the variable representing inventory control, INVTURN2, and the variable for capital expenditures, CAPEX2. Analysis of means shows peers performed better on average than adopters for both of these variables. There were significant TIME interactions for peers on CAPEX2 and INVTURN2. The mean change in the capital expenditures for peers was greater in the earlier years (1972-1981), but peers exhibited greater inventory efficiency in the later years of the analysis. Hypothesis 2C was not supported for the Textiles Industry as peers performed as well as or better than adopters.

       All Other Industries. There was no significant difference between adopters and peers for the remaining industries; Chemical, Food Processing, Mining and Extractive, and Non-Financial Services. The results for these groups did not support hypothesis 2C and indicate, at least for these industries, adoptions of performance or restricted stock plans did not have a significant effect on firm performance as measured by the various industry specific variables.

       Summary. Comparisons of peers and adopters in each of the industry groups did not result in significant differences. Therefore, it appears that previous differences that existed between adopters and non-adopters were caused by some other factor such as size of the adopting companies or the time of the adoption. This point is further clarified in the next section, which provides an overall summary for each of the nine industry groups.

TABLE 43

Manova Results for Testing Hypothesis 2C that
the percentage change in the industry-specific performance measures
will be greater for adopters than for a non-adopting peer.

Industry/Measurement Period	N	F-statistic
Financial Services	66	
Pre-Post 1		3.279^b
Pre-Post 2		1.945
Chemical	88	
Pre-Post 1		0.992
Pre-Post 2		1.682
Consumer Products	66	
Pre-Post 1		0.539
Pre-Post 2		3.253
Electrical	70	
Pre-Post 1		1.112
Pre-Post 2		8.982^a
Food	78	
Pre-Post 1		2.012
Pre-Post 2		1.799
Heavy Manufacturing	74	
Pre-Post 1		0.187
Pre-Post 2		10.587^a
Mining/Extractive	82	
Pre-Post 1		1.988
Pre-Post 2		2.009
Textiles/Paper/Forest	76	
Pre-Post 1		1.705
Pre-Post 2		2.403^c
Non-Financial Services	70	
Pre-Post 1		0.123
Pre-Post 2		0.875

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 44

Anova Results from Testing Hypothesis 2C on the Industry-Specific Variables

Industry/Variable	N	F-statistic
Financial Services	66	
CAPGRW1		8.49[a]
OHCTRL1		0.39
DIV1		0.00
Consumer Products	66	
AD/SLS2		1.65
INVTURN2		7.63[a]
SLSGRW2		0.21
Electrical	70	
RD/SLS2		6.97[a]
INVTURN2		20.02[a]
SLSGRW2		0.01
Heavy Manufacturing	74	
RD/SLS2		0.15
OPEX/REV1		0.34
EMPSLS2		32.32[a]
Textiles/Paper/Forest	76	
OPEX/REV1		0.11
INVTURN2		3.42[c]
CAPEX2		6.02[b]

[1] Results are only for those variables with significant group differences between adopters and peers as reported in Table 43.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 45

Anomeans Results from Testing Hypothesis 2C on the Industry-Specific Variables[1]

Industry/Variable	Coclass	N	Mean	St. Deviation
Financial Services				
CAPGRW1	Adopters	33	0.3775	0.4625
	Peers	33	0.8400	0.7861
Consumer Products				
INVTURN2	Adopters	33	-0.7540	2.1250
	Peers	33	0.5240	1.5970
Electrical				
RD/SLS2	Adopters	35	0.0004	0.0043
	Peers	35	0.0075	0.0155
INVTURN2	Adopters	35	-0.2542	0.4599
	Peers	35	0.2997	0.5699
Heavy Manufacturing				
EMPSLS2	Adopters	37	-0.0009	0.0016
	Peers	37	-0.0047	0.0037
Textiles/Paper/Forest				
INVTURN2	Adopters	38	-1.6490	6.2630
	Peers	38	0.3510	2.2940
CAPEX2	Adopters	38	0.9540	1.1370
	Peers	38	2.3160	3.2280

[1] Results are only for those individual variables with significant differences between adopters and
 peers as reported in Table 44.

TABLE 46

Anova Results from Testing Time and Size Interactions Related

to Hypothesis 2C on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	F-statistic
Financial Services		
CAPGRW1*Time	Adopters	0.00
	Peers	1.01
CAPGRW1*Size	Adopters	0.16
	Peers	0.84
Consumer Products		
INVTURN2*Time	Adopters	1.76
	Peers	0.09
INVTURN2*Size	Adopters	2.31
	Peers	0.01
Electrical		
RD/SLS2*Time	Adopters	1.52
	Peers	1.88
RD/SLS2*Size	Adopters	0.02
	Peers	2.06
INVTURN2*Time	Adopters	0.96
	Peers	0.63
INVTURN2*Size	Adopters	3.65
	Peers	0.56
Heavy Manufacturing		
EMP/SLS2*Time	Adopters	1.25
	Peers	30.96
EMP/SLS2*Size	Adopters	0.57
	Peers	24.99
Textiles/Paper/Forest		
CAPEX2*Time	Adopters	0.98
	Peers	4.65[b]
CAPEX2*Size	Adopters	0.05
	Peers	2.17
INTURN2*Time	Adopters	0.00
	Peers	4.74[b]
INVTURN2*Size	Adopters	1.29
	Peers	0.90

[1] Results are for interactions only with the individual variables that showed

  differences between adopters and peers as reported in Table 45.

[a] significant at the .01 Level

[b] significant at the .05 Level

[c] significant at the .10 Level

TABLE 47

Anomeans of Results of Time and Size Interactions Related to Hypothesis 2C

on the Industry-Specific Variables[1]

Industry/Interaction	Coclass	N[2]	0-Mean[3]	1-Mean[3]
Electrical				
INVTURN2*Size	Adopters	18/17	-0.1153	-0.4014
Heavy Manufacturing				
EMPSLS2*Time	Peers	18/19	-0.0021	-0.0071
EMPSLS2*Size	Peers	18/19	-0.0023	-0.0069
Textiles/Paper/Forest				
INVTURN2*Time	Peers	10/28	1.6430	-0.1110
CAPEX2*Time	Peers	10/28	0.5140	2.9600

[1] Results are only for those individual variables with significant differences between adopters and peers as reported in Table 46.

[2] The number of observations for each mean are presented as N for 0-mean/N for 1-mean. N's are given only once for each type of interaction term, TIME and SIZE for each industry.

[3] TIME interactions for the 0-mean represent observations for years 1982-1991; TIME interactions for the 1-mean represent observations for years 1972-1981. SIZE interaction 0-means represent companies whose market size is in the top 50% of the industry; 1-means for SIZE interactions represent those companies in the bottom 50% of the industry based on market size.

Industry Group Summaries

Financial. Results of this study indicate adoption of performance or restricted stock plans does not improve firm performance for this industry group. The general performance variable, ROE, did not move in the predicted direction after adoption and, in fact, was negative. When analyzing the industry-specific variables, the initial analysis on the effects of adoption solely on adopters, indicates adoptions do improve firm performance. When these same variables are compared across non-adopters and peers, however, it is evident that non-adopting firms, and particularly peers, performed better than adopters.
Adoptions appear to improve the firm performance for individual adopting firms, however, that improvement is not as significant as the improvement for the remainder of the industry.

Chemical. The first observation is that adoption seems to occur primarily in the larger companies in this industry. This may explain the results related to the industry-specific performance measures. Adopters performed better than non-adopters on these variables. When compared to peers, however, results for adopters were not significantly different than those for peers. This implies that the improved firm performance was an effect for large firms in the industry regardless of adoption status. Regarding the general performance measure, return on equity, non-adopters had greater changes in ROE then did adopters, and peers performed equally as well as adopters. Again, this leads to the conclusion that performance results are more size specific than compensation specific for the Chemical Industry.

Consumer Products. The general performance measure, ROE, did not indicate improved firm performance for adopting firms. In fact, adopters had negative mean changes in this variable, whereas non-adopters had positive changes. At first glance, the situation seems clearer when the industry specific variables are analyzed. Looking exclusively at the effects of these variables for adopting companies indicates adoptions do indeed improve firm performance. The positive effect of adoptions is further solidified when adopters are compared to non-adopters. On two of the three variables, adopters had higher mean percentage changes than non-adopters for both the pre-post1 and the pre-post2 measurement periods. It appears this difference between adopters and non-adopters is driven by some other factor, however, possibly size of the firms. This is evident when looking at the results of the adopter/peer analysis in which no significant differences exist. Thus, the significant effect on the industry-specific variables for adopters also exist for peers. This suggests improved firm performance is driven by common factors between peers and adopters rather than adoptions of various components of compensation plans.

Electric. Tests on the general performance measure, ROE, result in larger mean changes for non-adopters than for adopters, indicating either that adoptions within this industry do not improve return on equity or that changes in performance are not captured by ROE for this industry. These results are further confirmed when the industry-specific variables are analyzed. When looking at adopters alone, the industry-specific variables significantly improved between the pre and post adoption periods. Adopters did not perform substantially better than either non-adopters or peers on these measures however. Therefore, performance or restricted stock plan adoption by firms in the Electrical, Electronics and Related Equipment Industry may improve firm performance but not to the same level of improvement experienced by non-adopting firms in the industry.

Food Processing. Measures of the changes in the general performance variable, ROE, indicate non-adopters had larger percentage changes in return on equity than did non-adopters. This implies adoptions within this industry group do not improve return on equity. When the industry-specific variables were analyzed for adopters alone, significant improvement resulted between the pre and post adoption periods, implying adoption is beneficial for this industry. Further analysis comparing adopters to non-adopters and peers, indicates adoptions may result in improved performance for adopting firms but the level of improvement is not as significant as that of non-adopters and peers. Additionally, it appears the industry as a whole performed better in the early years of the study.

Heavy Manufacturing. For only one measure did adopters outperform non-adopters in this industry. Adopters had greater significance regarding downsizing than did their non-adopting counterparts. On all other comparisons, non-adopters outperformed adopters. Therefore it does not appear adoption of either a performance or restricted stock plan improves performance for firms in this industry as measured by the general and industry-specific variables.

Mining. ROE does not appear to improve with performance plan adoption in this industry. There is no significant difference between pre-adoption and post-adoption periods for adopters, nor is there any significant difference in ROE between adopters and peers. Initial analysis of the industry-specific variables for adopters alone indicates adoptions improve firm performance. On the other hand, when adopters are compared to non-adopters and peers, there is no significant difference on these variables. Thus, while it appears adoptions do improve firm performance for the adopting firms, the improvement does not keep pace with the general level of improvement for the industry.

Non-Financial Services. Adoptions have no significant positive effect on ROE as adopters had negative mean changes in this measure and non-adopters had positive mean changes for the same measure. The comparison of the industry-specific variables for adopters across the pre and post adoption periods did not yield significant results. The negative or ineffectual impact of adoptions is further clarified when adopters are compared to non-adopters and peers, both of which perform as well as or better than adopters. Therefore, adoption of either a performance or restricted stock plan does not seem to have a significant impact on firm performance for companies within this industry group.

Textiles. Adopters showed negative mean changes in the general performance measure within this industry, while their non-adopting counterparts had positive changes in ROE. The only positive result from the comparison of the pre-adoption and post-adoption period for adopters alone, improvement in capital expenditures, is an industry-wide effect and not adoption specific. For the other industry-specific variables, adopters were not significantly different from either non-adopter or peers. The implication is that adoptions of performance or restricted stock plans for firms within this industry do not lead to improvements in the long-term performance measures analyzed in this study.