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David T. Whitford
Department of Finance

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University of Illinois at Urbana-Champaign
Department of Finance
116 David Kinley Hall
1407 West Gregory Drive
Urbana, IL 61801-3680

(217) 333-4638 (Office)

(217) 244-3102 (FAX)

BITNET: DOCWHIT@UIUCVMD

INTERNET: DOCWHIT@VMD.CSO.UIUC.EDU



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Chief Executive Officer Compensation: A Comparison the Stock Market's Reaction to Alternative Incentive Structures

Jensen and Murphy have advocated that the level of a CEO's compensation is not as important as the "how" of the incentive package. They identified two sets of twenty-five CEOs whose compensation package is "best" and "least" aligned with the interests of the shareholders. An analysis of these "best" and "worst" aligned firms' stock returns indicates that the market did not place a consistent return premium on pay for performance CEO firms versus misaligned CEO incentive firms during 1989 through 1990. These findings persist when one controls for CEO change as well as regulatory-interest rate influences. Although these empirical data appear to contradict the Jensen and Murphy position, capital market efficiency arguments suggest that one might expect these results to occur.

Issues regarding the compensation of U.S. corporate executives have received increased attention in recent years. In February 1992, the Securities and Exchange Commission's (SEC) shifted away from its long held position that management compensation is a matter of "ordinary business." Richard Breeden, Chairman of the SEC at that time, played an active role in this controversy. Under his direction, the SEC decided to give shareholders the right to vote on proposals that limit executive pay, although these votes were not to be binding. See Salwen [16].

In early 1992, the SEC ruled that shareholders can change corporate bylaws governing executive compensation, and the Commission announced proposals that would require corporations to value executive stock options in a uniform way [16]. Last June, the SEC proposed new regulations that would overhaul restrictive policies on shareholder communication in order to allow freer discussion before proxy votes. The proposals would permit shareholders to vote for individual members of the board of directors rather than a

slate of directors. The regulations would also require corporations to spell out how each top executive is paid in salary, bonus, options, restricted stock as well as several other pay categories [17]. In addition these regulations, which were approved in October, 1992, also require that annual reports contain charts that compare pay rates with stock price performance [13]. In effect the new SEC mandates require corporate compensation committees to reveal how executive compensation levels are determined and how the packages relate to company performance.

Recently, a rich and growing literature focusing on issues that fall under the rubric of corporate governance or the market for corporate control has developed. As early as the 1930s, Berle and Means [1] stressed the possibility of conflicts between widely dispersed shareholders and managers who have little ownership interest. Jensen and Meckling [8] developed a theoretical framework that could identify the costs of these principal-agent conflicts. These path breaking insights provided a robust series of paradigms to analyze such diverse issues as leveraged buyouts (LBOs), mergers and acquisitions, takeovers, corporate board structure and executive compensation. See Varian [19] as well as Jensen and Warner [11] and Mandelker and Marr [14] for an excellent overview of a sampling of the corporate control literature.

Crystal [4] documents a number of institutional practices which fail to link CEO compensation with the economic interests of the shareholders. Jensen and Murphy [9 & 10] have investigated CEO incentives. They suggest that the level of a CEO's compensation is not as important as the "how" of the incentive package. They contend large rewards for outstanding performance and meaningful penalties (including dismissal) for poor performance

mitigate many shareholder-manager conflicts. One of the most interesting aspects of Jensen and Murphy's research is the methodology they have developed to estimate CEO pay for performance. Their model attempts to capture the dollar compensation impact resulting from a \$1,000 change in aggregate shareholder wealth. Jensen and Murphy calculate an estimate of this compensation per \$1,000 in aggregate market value for each CEO in the 250 largest (based upon 1988 sales) U.S. public corporations included in the Forbes executive compensation surveys from 1975 through 1989. Based upon these data, they present a survey of the 25 "best incentive" and the 25 "worst incentive" CEOs. The top and bottom incentive compensation CEOs and their firms are presented in Exhibits 1 and 2, respectively.

If the position taken by Jensen and Murphy is valid, one would expect the risk-adjusted returns of the 25 "best incentive" firms to be positive and relatively larger than the 25 "worst incentive" firms in their sample. This logic is based upon the argument that a "best incentive" CEO would clearly have a economic motivation to pursue an aggressive strategy of undertaking all possible positive net present value (NPV) investment opportunities. In contrast, a "worst incentive" CEO would have less economic motivation in aggressively perusing positive NPV investment opportunities. Indeed it is possible that negative NPV investments have a higher probability of being undertaken by a corporation lead by a "worst incentive" CEO. For example a misaligned CEO might support the development of an economically foolish product such as a "smokeless" cigarette or the acquisition of a large fleet of executive corporate jets, that could be used for corporate as well as non-reimbursed personal trips. See Burrough and Helyar's enlightening account of this type of corporate behavior in their discussion of the takeover battle for RJR Nabisco [2].

Differences in economic motivation among CEOs could drive the "best incentive" firms to undertake fewer negative NPV investments vis-a-vis the "worst incentive" firms. As investments are made over time, positive (negative) NPV investments generate positive (negative) excess returns.

Proponents of the "strong," and perhaps and perhaps even "semi-strong" form of the efficient capital market (ECM) hypothesis would not agree with the scenario described above. In an ECM, a set of information is completely and instantaneously reflected in market prices. The information set of the "strong" form contains all public and private (i.e., insider) information; the "semi-strong" form information set contains all public information. Supporters of ECM would argue that once a CEO's incentive compensation classification category becomes part of the market's relevant information set, stock prices would immediately adjust to this good or bad news regarding future positive or negative NPV investments. Once the information is imbedded in stock prices, subsequent excess returns should be zero, unless of course, unanticipated and/or new events enter the relevant information set. Perfect foresight would completely eliminate excess returns. However, the unanticipated adoption of a negative (positive) NPV project will result in negative (positive) excess returns. The presence of excess returns will be critically dependent upon at least three economic conditions. The first is closely aligned with the Jensen and Murphy pay-for-performance perspective. It is dependent upon the degree to which CEOs and their management teams consistently pursue hard-nosed shareholder wealth maximization policies. The second and third conditions are jointly related to the efficiency of capital markets, the accuracy and depth of market participants' forecasts regarding future resource allocation

decisions and finally, the appropriateness of a risk-adjusted asset pricing specification. That is, how accurately can market participants forecast future corporate strategic decisions and innovations and how quickly are changes in investors' information sets incorporated into security prices on a **risk-adjusted basis**? The analysis that follows will jointly focus upon these issues.

What Are the Compounded Wealth and Cumulative Excess Return Patterns for High and Low Pay-for-Performance Corporations?

If one is to undertake an analysis of a proposal to cap¹ the compensation of a CEO or to evaluate an investment strategy based upon Jensen and Murphy's executive compensation arguments², an answer to the following question seems appropriate. Do firms whose CEOs' compensation packages are best aligned with their shareholders' interests outperform, **on a risk-adjusted as well as absolute basis**, those firms with CEOs who are compensated with

¹ According to the Wall Street Journal, Baltimore Gas & Electric shareholders were asked to approve a non-binding resolution to cap top officers' pay at twenty times that of the average worker. At Grumman Corp., the SEC approved a shareholder vote on a proposal to jettison the management bonus plan until the stock price regains its 1986 level of about \$27 a share. Also the SEC allowed Chrysler's shareholders to vote on a proposal limiting the size of its executives' stock options. See Salwen [16]. Both the Chrysler and Baltimore Gas & Electric proposals were soundly defeated. Subsequently the SEC reversed its ruling, and the Grumman proposal was not included in its 1992 proxy. The SEC's October, 1992 regulations did not address themselves to the issue of capping executive salaries. See Labaton [13].

² Recently the Wall Street Journal [6] highlighted a study conducted by Kevin J. Murphy of the Harvard Business School. Based upon the Murphy study, the United Shareholders Association, a shareholder-rights group that had helped focus attention on the issue of executive pay, is now praising stock-based pay. According to the Wall Street Journal, Murphy's study found that the returns on a portfolio consisting of firms whose CEOs' compensation is highly sensitive to stock returns earned an annual return of 29 percent during a recent ten year period. This compares with a annual return of 20 percent for a portfolio made up of firms whose CEOs' were least sensitive to stock returns. The article did not compare returns on a risk adjusted basis.

misaligned incentives? To this end, risk-adjusted-cumulative excess return and compounded wealth return data covering the period 1989 through 1990³ will be analyzed for two portfolios. The first is an equally weighted portfolio of the "best incentive" Jensen and Murphy firms; the second is an equally weighted portfolio of the "worst incentive" listed firms.

Traditionally the cumulative excess returns have been used in "event studies," which focus on the stock market's reaction a surprise event, such as a dividend and/or earnings increase, a stock split or an announcement of a hostile takeover. However, there is no clear cut "event date" associated with the firms in Exhibits 1 and 2, other than perhaps the May-June 1990 publication date of the Jensen and Murphy pay-for-performance Harvard Business Review (HBR) article. January, 1989 was selected as the beginning date for the evaluation of return performance primarily because all of the CEOs given in "CEO in Early 1989" columns of Exhibits 1 and 2 were in control at that point. It is interesting to note that nine of the "worst" incentive CEOs in Exhibit 2 had assumed their positions within the eighteen month period prior to January 1989. These include Messrs. Allen (AT&T), Borchelt (Central & Southwest), Derr (Chevron), Gleason (PacifiCorp), Johnson (GTE), Larsen (Johnson & Johnson), Paquette (Philadelphia Electric), Renier (Honeywell) and Walter (R. R. Donnelley). In contrast, only one of the executives in the "CEO in Early 1989" column of Exhibit 1, Mr. McDonnell (McDonnell-Douglas), had assumed his position in the eighteen months prior to January 1989. Thus although the length of tenure in the CEO position

³ A meaningful extension of the return measurement period beyond December, 1990 is not practical due to sample size limitations. See footnote seven.

varied, each was in control at the start of the return measurement period. The returns generated during the subsequent twenty-four month period reflect, in part, the reaction of security prices to the overall economic environment but they also reflect the appropriateness of the CEO's strategic vision and/or successful execution of his corporate strategy given the existing economic environment.

Return Data

Data in the form of pure and excess returns were obtained from the daily CRSP NYSE-ASE Daily Excess Return File, the NYSE-ASE Daily Return File and the Daily NASDAQ File, all produced by the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. The CRSP Excess Returns series contain daily returns for New York Stock Exchange (NYSE) - American Stock Exchange (ASE) individual stocks in excess of the daily returns of a portfolio of similar risk stocks. There are two excess return series. One is based upon a firm's systematic risk (i.e. beta). See Scholes and Williams [18] for a discussion of how beta values are computed for individual firms. The other excess return series utilizes the standard deviation of the daily raw return series for its portfolio risk ranking. See [3] for a detailed discussion of the specifics for both of these excess returns calculations. To obtain these portfolios, the NYSE-ASE stocks are divided into ten risk classes or portfolios. Each day, a given firm's excess return is calculated as the difference between that stock's return less the return on the portfolio to which the firm has been assigned.

The majority of the "top twenty-five" firms given in Exhibit 1 are listed on either the NYSE or ASE. Two, PACCAR and MCI are not; these firms trade in the over-the-counter

(OTC) market. Accordingly, CRSP NYSE-ASE excess return data are not available for these OTC firms. However, daily returns for both PACCAR and MCI are available on the CRSP NASDAQ file. As a result it is possible to replicate the CRSP beta and standard deviation portfolio assignment procedures for the OTC firms.⁴ Once the various risk-adjusted portfolios were determined, daily excess returns were calculated for PACCAR and MCI. All of the "bottom twenty-five" firms seen in Exhibit 2 are traded on either the NYSE or ASE. Given these data, monthly excess returns for each security were calculated based upon the geometric growth patterns of the daily returns during the calendar years 1989 through 1990. Next, equally weighted individual monthly portfolio returns were estimated for the "best" and "worst" portfolios. Finally, beginning in January 1989, a "cumulative sum" of each portfolio's monthly excess returns was calculated.

In a similar way, the daily raw return series were used to derive a monthly raw return for each of the twenty-five "worst" and "best" firms as well as the Standard and Poors (S&P) Index 500 Index. These 1989 through 1990 monthly raw returns were also based upon the daily geometric daily returns within a given month. Next these monthly raw returns were used to generate compounded wealth relatives for each firm as well as the S&P 500 over the period January, 1989 through December 1990. Two equally weighted, "buy and hold" portfolios were generated by averaging across the twenty-five "worst" and "best" incentive firms' compounded wealth returns.

Recent work by Fama and French [5] has raised serious concerns regarding the

⁴ Beta and standard deviation breakpoint levels for the risk-adjusted portfolios were obtained from the CRSP Research Office.

usefulness of systematic risk or beta in explaining cross-sectional variation in stock returns. However, they demonstrate that firm size and market-to-book equity values do explain cross-sectional variation in average stock returns. To account for the possibility that firm size (measured by sales) as well as industry effects may play a role in the return generating process, each of the fifty corporations in Exhibits 1 and 2 was assigned to a industry matched portfolio of comparable size firms. A listing of the firm's in each portfolio is provided in the Appendix. The primary source for these firms was Business Week's "Corporate Scoreboard" for the third quarter 1988 [14]. In addition various issues of the Value Line Investment Survey and S&P's Industrial COMPUSTAT Manual were also used to identify firms for the matching portfolios. Once the matching firms were identified, monthly raw returns were generated from the geometric growth pattern of the daily returns. The matching firms were placed in equally weighted industry portfolios and an average monthly returns were estimated for each portfolio. In turn, these matching portfolio returns were subtracted from their comparable "worst" and "best" incentive firm's return. These "size and industry" adjusted returns were average across the twenty-five "worst" and "best" incentive firms, thereby creating an alternative monthly "size and industry" adjusted excess return for two equally weighted portfolios. Finally beginning in January, 1989, cumulative sums of these portfolio's monthly excess returns were generated.

Raw Return and Cumulative Excess Return Patterns

The raw returns of the "best incentive" and "worst incentive" portfolios and the S&P 500 are given in Panel A of Exhibit 3. The beta, standard deviation and size-industry based cumulative excess returns are in Panel B.

From the Jensen and Murphy pay for performance perspective, the raw return and cumulative excess return patterns in Exhibit 3 are somewhat anomalous. A buy and hold investment in the S&P 500 at year-end 1988 would have generated a 29.44 percent return during 1989. However, by the end of 1990, that investment would have been 23.07 percent greater than its initial value. A strategy of investing in an equally weighted portfolio of the twenty-five "best" aligned firms would have yielded a return of 28.75 percent during 1989. By the end of 1990 this portfolio would have been only 6.75 percent greater than its original value. Over this two year period, the "best" portfolio underperformed the returns offered by Treasury Bills. In comparison, the "worst" incentive portfolio generated a 32.18 percent return in 1989, and at the end of 1990, this portfolio was 34.18 percent greater than its initial value. Although the disparity between the "worst" and "best" compounded returns is large, these differences are statistically significant in only six months. In three of these months, October, November and December, 1990, the "worst" exceeded the "best." In February, March and May, 1989, the "best" exceeded the "worst." While these raw returns are interesting, they contain a strong bias in that they are not adjusted for risk. The data in Panel B attempt to control for these risk differences.

During the first nine months of 1989, the beta cumulative excess return patterns generally conform to the "pay for performance" perspective in that the "worst" incentive returns are negative and in February and March the "best" cumulative returns, while negative, are better and statistically different from the "worst." During the last six months of 1990, this pattern is reversed. By the end of the period, the beta based cumulative excess return of the "worst" exceeds the "best" by over 22 percent, but the differences during the

last six months of 1990 are not statistically significant.

The standard deviation based cumulative excess returns in Panel B of Exhibit 3 are in general similar to their beta counter parts, although they tend to be larger. Again during the last six months of 1990, the return pattern is the inverse of what one might expect from the pay for performance perspective. The December, 1990 spread of 22.18 percent between the "best" and "worst's" cumulative excess return is statistically significant at the five percent confidence level.

Based upon the beta and standard deviation cumulative excess returns, one would hardly be pressed to advocate that shareholders in corporations with pay-per-performance CEOs consistently earn higher risk adjusted returns vis-a-vis shareholders in corporations with "misaligned" CEO performance incentives. These data suggest that during most of 1989 and early 1990, there was **no large** difference between the cumulative excess return performance of the "best" and "worst" firms. However, in June, 1990, after the publication month of the Jensen and Murphy HBR paper, the cumulative excess return pattern for the "best" and "worst" appears to be the **inverse** of the relationship that Jensen and Murphy suggest, although these differences are in general not statistically significant.

Although these data appear to contradict position taken by ECM-pay for performance advocates, one can construct a persuasive argument in support of a reversal of return performance in which the "worst" should outperform the "best" subsequent to the publication of the Jensen and Murphy HBR paper. Consider the following. The twenty-five "best" and twenty-five "worst" CEO incentive firms are large corporations with major institutional investor followings. Although there is a tendency for the "worst" incentive CEOs to have

been at the helm for a shorter time period vis-a-vis their "best" incentive counter parts, major institutional investors and advisors such as the California Public Employees' Retirement System (CALPERS) or the members of the Council of Institutional Investors would be aware of these CEOs' strategic vision and managerial profiles. Given the visibility of these corporations and their CEOs, it is quite likely that these firms' stock prices would have incorporated the expected value of future positive (and quite possibly negative) NPV investments. If these CEOs and their policies are entrenched, one would not expect nor does one observe extremely large positive or negative cumulative excess returns. Although during 1989 the "best" in some instances outperform the "worst" in a statistically significant manner. Enter Professors Jensen and Murphy who fire a shot across the bow of twenty-five corporations and CEOs whose compensation is judged to be "least aligned" with the interests of their shareholders. By revealing this compensation "squalor" to the disinfectant of public exposure, the probability that an entrenched CEO and/or corporate board would undertake shareholder wealth enhancing actions increases. The embarrassment of a misaligned and/or unresponsive CEO might well force outside directors to come to grips a significant corporate governance dilemma. As these possibilities entered the market's information set, large and positive cumulative excess returns could easily be generated for the "worst" aligned firms.

Even though there may be no need for a change in the governance and compensation structure of the "best" aligned firms, one might anticipate a reaction for these firms also. This line of reasoning suggests that the exposure of a group of CEOs whose compensation is closely aligned with the shareholders but is considered "grossly excessive" by the media and/or populist politicians might result in negative market returns. There is some interesting

evidence in Exhibit 3 beginning in June 1990 in support of the viewpoint. The attention generated by the Jensen and Murphy HBR article could clearly have played a role in bringing the CEO compensation issue to the public's attention. The expected fallout from the market's perspective could be legislative initiatives limiting and/or taxing excessive CEO compensation. These initiatives would tend to uncouple CEO incentive-shareholder alignment, and thereby reduce market returns.

Unfortunately, the size-industry based cumulative excess return patterns also seen in Panel B of Exhibit 3, provide no strong compelling corroboration for the disinfectant exposure-compensation realignment-ECM viewpoint. The cumulative returns for the "best" are negative and tend to decline consistently through the period, with a jump downward in June of 1990. In contrast the "worst" aligned firms' cumulative returns are generally positive and increasing. There is, however, no statistically significant difference between the size-industry cumulative returns. On balance the return data in Exhibit 3 do not at first blush strongly confirm or reject the pay for performance expected return patterns. But an interesting and logically consistent reaction for the "worst" and "best" aligned firms is apparent in June 1990. The market could have interpreted the exposure of a misaligned CEO as a justification for positive change. In addition, the presence of "excessive" but aligned compensation patterns could presage legislative interferences and an uncoupling of shareholder and management interests. However, it is possible that there are two additional factors that may be generating these results. Clearly these require consideration.

CEO Turnover

Several papers have investigated the impact of top management changes on share

prices. Warner, Watts and Wruck [20] found an inverse relationship between a firm's share price performance and the probability of a management change. However, they could not detect a price reaction at the announcement of a top management change. Weisbach [20] found a relationship between excess returns and CEO replacement by corporate boards dominated by outsiders. Weisbach suggests these data are consistent with the view that directors increase the value of the firm by removing bad management. Klein and Rosenfeld [12] point out that firms which pay greenmail experience above average management turnover within one year of the payment. These greenmail firms experience positive cumulative excess returns preceding a management change. In contrast, a random sample of other firms with management changes had negative abnormal returns. Gilson [7] has shown that almost all senior management change takes place because of financial distress or poor financial performance.

This empirical evidence suggests that management change might muddy the water and affect the return patterns for the "best" and "worst" incentive portfolios. That is, the "worst" aligned, positive cumulative excess return pattern seen in Exhibit 3 might be attributable to the announcement of a CEO change. As seen in Exhibits 1 and 2, only one firm from the "best" group, Wang Labs, had a new CEO by early 1991. In contrast, six of the "worst incentive" firms, Central & Southwest, Campbell Soup, AMP, Consolidated Edison, Detroit Edison and Eastman Kodak had a change in their CEO by early 1991. The firms that experienced as CEO change were removed from their respective "best" and "worst" portfolios, and the analysis was repeated.

The raw returns of the revised "best" and "worst" incentive portfolios as well as the

S&P 500 are given in Panel A of Exhibit 4. The beta, standard deviation and size-industry base cumulative excess returns are given in Panel B. The "best" incentive portfolios had 24 firms, and the "worst" incentive portfolio contained 19 firms.

The return patterns seen in Exhibit 4 are in general similar to those in Exhibit 3. However, there are some interesting differences. The returns of the "CEO retained-worst" portfolio are lower than the returns of the "all firms worst" portfolio in Exhibit 3. This suggests without ambiguity that the market reacted positively to the replacement of a CEO within the misaligned firms. As one might expect the opposite appears to be true in the "best" aligned firms; however, caution should be used for this group because only one CEO, albeit the founder of the firm, was replaced.

There are other important differences between Exhibits 4 and 3. Although the "worst" outperform the "best" during 1990, in no instances are these differences statistically significant. There are five months in 1989, April through August, when the raw returns of the "best" higher and statistically different from the "worst" aligned firms. There are also two months in 1989, April and May, when the beta based cumulative excess returns of the "best" aligned firms are positive and statistically different from the negative returns of the "worst" firms. Again an interesting June 1990 turning point appears in these data. Although the CEO change adjustment moved the returns precisely in the direction that a pay for performance advocate would suggest, the pay for performance case is not overwhelmingly supported. This could be attributable to an additional critical factor, changing interest rates.

Regulated-Interest Sensitive Firms

Conventional wisdom on Wall Street suggests that certain stocks are sensitive to

changes in interest rates. These would include regulated public utilities⁵ and a variety of regulated financial intermediaries such as banks, brokerage firms and insurance companies. As a group utilities tend to trade on their dividends, and are considered close substitutes for alternative, interest sensitive preferred stock and fixed income securities. Because financial intermediaries have a large portion of their assets invested in interest sensitive, financial assets, these firms' stock prices are also sensitive to changes in interest rates.

It is clear that firms from these industries dominate the "worst incentive" group. There are nine utilities and two regulated communications firms in Exhibit 2. In contrast, the top incentive firms contain no utilities⁶, but there are two insurance firms, one pipeline and one brokerage firm among these corporations. It is possible that regulatory influences in conjunction with the subsequent decline in interest rates could have systematically increased these firms' returns during 1990. Because the "worst" incentive group is dominated by so called interest sensitive firms, their positive return performance in 1990 vis-a-vis the less interest sensitive, "best" incentive firms could be related to regulatory effects and/or the realization unanticipated decreases in interest rates would occur. Accordingly, all firms that experienced either a management change or fell into the regulated-interest sensitive category were excluded from the "best" and "worst" incentive portfolios. Wang Labs, Aon

⁵ The regulatory process for a public utility strives to determine and administer a "fair and reasonable" rate of return for the utility's investors. Accordingly, one would not expect to observe through time, either consistently positive or negative excess returns for regulated utilities. This "fair return" regulatory intervention provides additional justification for excluding regulated monopolies from the sample.

⁶ MCI is an unregulated communications firm. This in conjunction with a relatively low dividend payout policy would exclude MCI from the "regulated-interest sensitive" stock category.

Corporation, Paine Webber Group, Coastal Corporation and American International Group were dropped from the "best" incentive portfolios. Similarly, Central & Southwest, Campbell Soup, AMP, Consolidated Edison, Detroit Edison, Commonwealth Edison, Texas Utilities, AT&T, Eastman Kodak, GTE, Pacific Gas & Electric, Philadelphia Electric PacifiCorp, and Carolina Power & Light were dropped from the "worst" incentive portfolios. These revised "best" and "worst" equally weighted portfolios contained twenty and eleven⁷ firms, respectively.

The raw returns of this revised "best" and "worst" incentive portfolios as well as the S&P 500 are given in Panel A of Exhibit 5. The beta, standard deviation and size-industry base cumulative excess returns are given in Panel B. A comparison of the raw returns in Panels A of Exhibits 4 and 5 indicates that the exclusion of interest rate sensitive firms tended to reduce the December 1990 compounded returns. A similar effect is also evident in the alternative December 1990 cumulative excess returns. Accordingly it appears that changes in the interest rate environment accounted for part of the return patterns seen earlier. The raw return as well as beta and standard deviation cumulative excess return data in Exhibit 5 suggest that during 1989, "best" aligned firms outperformed their "worst" aligned counterparts. In three instances these differences were statistically significant June and July for the raw returns and June for the standard deviation based cumulative excess returns. June 1990 continues to play an important role as a turning point for these returns series. At this

⁷ Clearly an extension of the return measurement period beyond December 1990 would be desirable. Unfortunately, the non-regulated--CEO retained "worst" sample size declines as the return measurement period increases. Borden and 3M had CEO changes in 1991 and 1992, respectively. These small sizes make meaningful hypothesis testing difficult at best.

point, the "best" aligned series tends to decline while the "best" aligned increases, although the differences in these alternative "best" and "worst" return series are not statistically significant.

Concluding Comments

On balance, this raw return and cumulative excess return evidence strongly suggests that the stock market did not place a consistent return premium on pay for performance CEO firms versus misaligned CEO incentive firms during 1989 through 1990. During 1990, the exact opposite appears to be the case. However, there were few statistically significant difference between the "best" and "worst" raw and cumulative excess return series when the "worst" outperformed the "best." Are there logical explanations for these apparently anomalous results? From the perspective of an efficient capital market advocate, these anomalies are easily explained. Exposure of entrenched, misaligned CEOs portend significant change in positive raw and excess returns. On the "best" incentive side, public perception of "grossly excessive" but aligned compensation could well result in restrictive and penalizing legislative initiatives inhibiting the governance of corporate affairs. Negative market returns would be the inevitable anticipated result.

If one is not a strong proponent of capital market efficiency, other explanations also exist. One obvious cause may be that the Jensen and Murphy are incorrect in their pay for performance beliefs. Alternatively their incentive classification technique might not accurately measure pay for performance. Another possible explanation might be that the CRSP and size-industry excess return data do not accurately measure true excess returns. Also, in view of the noise that is present in stock price returns as well as the small sample properties of these

"best" and "worst" incentive portfolios, one cannot guarantee that these results will persist over longer periods with other "best" and "worst" incentive samples. Given the "joint" nature of the economic factors necessary to observe excess returns, clearly one or more of these explanations could have accounted for these findings. However, these data point to at least two preliminary conclusions, if one accepts the large and robust body of empirical evidence regarding the efficiency of capital markets. First, it is likely that Jensen and Murphy are correct but they may have overstated their case for "pay for performance." In addition, it is unlikely that a wave of governmental regulations on executive compensation is justifiable on cost-benefit grounds. Public exposure rather than regulations may be adequate to insure the alignment of the interests of owners and managers.

References

1. A. A. Berle, Jr. and G. C. Means, The Modern Corporation and Private Property, New York: Macmillan, 1932.
2. B. Burrough and J. Helyar, Barbarians at the Gate, New York, Harper-Row, 1990.
3. Center for Research in Security Prices, CRSP Stock File Guide, Chicago: University of Chicago, 1989.
4. G. S. Crystal, The Overcompensation of American Executives, New York: W. W. Norton, 1991.
5. E. F. Fama and K. E. French, "The Cross-Section of Expected Stock Returns," Journal of Finance, Vol 47 (June 1992), pp.427-465.
6. G. Fuchsberg, "Former Critic of Big Stock Plans for CEOs Now Supports Them," Wall Street Journal (December 26, 1992) pp. B1 & B7.
7. S. C. Gilson, "Management Turnover and Financial Distress," Journal of Financial Economics, Vol. 25 (December 1989), pp. 241-262.
8. M. C. Jensen and W. H. Meckling, "The Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," Journal of Financial Economics, Vol. 3 (October 1976), pp. 305-360.
9. M. C. Jensen and K. J. Murphy, "Performance Pay and Top-Management Incentives," Journal of Political Economics, Vol. 98 (June 1990), pp. 225-264.
10. M. C. Jensen and K. Murphy, "CEO Incentives--It's Not How Much You Pay, But How," Harvard Business Review, Vol. 90 (May-June 1990), pp. 138-153.
11. M. C. Jensen and J. B. Warner, Eds., "Symposium on the Distribution of Power among Corporate Managers, Shareholders and Directors," Journal of Financial Economics, Vol. 20 (January-March 1988).
12. A. Klein and J. Rosenfeld, "Targeted Share Repurchases and Top Management Changes," Journal of Financial Economics, Vol. 20 (January-March 1988), pp. 493-506.
13. S. Labaton, "S.E.C. Will Require Fuller Disclosure of Executive Pay," The New York Times (October 15, 1992), pp. A1 & D10.

14. G Mandelker and M. W. Marr, Jr, Eds., (A Special Issue on Corporate Control) Financial Management, Vol. 21 (Autumn 1992).
15. R. Mims, Ed., "Corporate Scoreboard," BusinessWeek (November 14, 1988), pp. 156-186.
16. K. G. Salwen, "Shareholder Proposals on Pay Must Be Aired, SEC to Tell 10 Firms," The Wall Street Journal (February 13, 1992), p. A1.
17. K. G. Salwen, "SEC Is Seeking More Disclosure of Officers' Pay," The Wall Street Journal (June 24, 1992), p. A3 & A5.
18. M. Scholes and J. Williams (1977) "Estimating Betas from Nonsynchronous Data," Journal of Financial Economics, Vol. 5 (December 1977), pp. 309-327.
19. H. Varian, Ed., "Takeovers Symposium," Journal of Economics Perspectives, Vol. 2 (Winter 1988), pp. 3-82.
20. J. B. Warner, R. L. Watts and K. H. Wruck, "Stock Prices and Top Management Changes," Journal of Financial Economics, Vol. 20 (January-March 1988), pp. 461-492.
21. M. S. Weisbach (1988) "Outside Directors and CEO Turnovers," Journal of Financial Economics, Vol. 20 (January-March 1988), pp. 431-460.

Exhibit 1
Jensen and Murphy's Large Firm CEOs with
the Best Incentives (Top 25 of 250 Large Firms)

<u>Rank</u>	<u>Firm (Primary Industry)</u>	<u>CEO in Early 1989</u>	<u>CEO in Early 1991</u>
1.	Castle & Cooke [now Dole] (Food)	D. H. Murdock	no change
2.	Amerada Hess (Energy)	L. Hess	no change
3.	Wang Labs (Computer)	A. Wang	R. W. Miller
4.	Aon Corp. (Insurance)	P. G. Ryan	no change
5.	Loews (Conglomerate)	L. A. Tisch	no change
6.	Ethyl (Chemicals)	F. D. Gottwald, Jr.	no change
7.	Marriott (Hotel)	J. W. Marriott, Jr.	no change
8.	MCA (Entertainment)	L. R. Wasserman	*
9.	Paine Webber Group (Brokerage)	D. B. Marron	no change
10.	PACCAR (Heavy Trucks)	C. M. Pigott	no change
11.	Times Mirror (Newspaper)	R. F Erburu	no change
12.	Coastal Corp. (Pipeline)	O. S. Wyatt, Jr.	no change
13.	ADM (Food Processing)	D. O. Andreas	no change
14.	Carter Hawley Hale (Retail)	P. M. Hawley	no change
15.	McDonnell Douglas (Aircraft)	J. F. McDonnell	no change
16.	CBS (Television)	L. A. Tisch	no change
17.	Humana (Hospital)	D. A. Jones	no change
18.	Winn-Dixie Stores (Retail Food)	A. D. Davis	no change
19.	Masco (Home Improvement)	R. A. Manoogian	no change
20.	American Int'l. Group (Insurance)	M. R. Greenberg	no change
21.	Digital Equipment (Computers)	K. H. Olsen	no change
22.	MCI (Communications)	W. G. McGowan	no change
23.	Cummins Engine (Engines)	H. B. Schacht	no change
24.	Walt Disney (Entertainment)	M. D. Eisner	no change
25.	FMC (Chemicals & Special Machinery)	R. H. Malott	no change

* Effective December 29, 1990, MCA, Inc. was acquired by Matsuhita Electronic Industrial Company, LTD of Japan. Matsuhita is best known in the U.S. for its subsidiary, Panasonic. NYSE trading in MCA shares stopped on January 4, 1991. L. R. Wasserman remained as CEO of Matsuhita's MCA subsidiary.

Exhibit 2
Jensen and Murphy's Large Firm CEOs with
the Worst Incentives (Bottom 25 of 250 Large Firms)

<u>Rank</u>	<u>Firm (Primary Industry{ies})</u>	<u>CEO in 1989</u>	<u>CEO in Early 1991</u>
226.	Central & Southwest (Public Utility)	M. L. Borchelt	E. R. Brooks
227.	Campbell Soup (Food)	R. G. McGovern	D. W. Johnson
228.	3M (Specialty Chemicals-Manufacturing)	A. P. Jacobson	no change
229.	Sears Roebuck (Retail-Financial Services)	E. A. Brennan	no change
230.	AMP (Electrical Devices)	W. A. Rabb	H. A. McInnes
231.	Consolidated Edison (Public Utility)	A. Hausburg	E. R. McGrath
232.	Detroit Edison (Public Utility)	W. J. McCarthy, Jr.	J. E. Lobbia
233.	Commonwealth Edison (Public Utility)	J. J. O'Connor	no change
234.	Texas Utilities (Public Utility)	J. S. Farrington	no change
235.	Exxon (Energy)	L. W. Rawl	no change
236.	AT&T (Communications)	R. E. Allen	no change
237.	ARCO (Energy)	L. W. Cook	no change
238.	IBM (Computer)	J. F. Akers	no change
239.	Borden (Food)	R. J. Ventres	no change
240.	Eastman Kodak (Photography-Imaging)	C. H. Chandler	K. R. Whitmore
241.	R. R. Donnelley (Publishing)	J. R. Walter	no change
242.	Johnson & Johnson (Health Care)	R. S. Larsen	no change
243.	Chevron (Energy)	K. T. Derr	no change
244.	GTE (Communications)	J. L. Johnson	no change
245.	Pacific Gas & Electric (Public Utility)	R. A. Clarke	no change
246.	Philadelphia Electric (Public Utility)	J. E. Paquette, Jr.	no change
247.	PacifiCorp (Public Utility)	A. M. Gleason	no change
248.	Honeywell (Electrical Controls)	J. J. Renier	no change
249.	Carolina Power & Light (Public Utility)	S. H. Smith, Jr.	no change
250.	Navistar Int'l. (Heavy Trucks)	J C. Cotting	no change

Exhibit 3
Compounded Wealth Changes and Cumulative Beta,
Standard Deviation and Size-Industry Excess Returns
for All Firms in the CEO Incentive Sample

PANEL A

Period	S&P 500		All Firms	
	Compounded Wealth	Average Compounded Wealth	"Best" "Worst"	Average Compounded Wealth
1/89	6.75%	7.19%	5.08%	
2/89	4.81%	5.73%	2.37%	
3/89	7.09%	9.22%	4.00%	*
4/89	12.19%	15.20%	9.56%	*
5/89	16.54%	21.56%	13.57%	*
6/89	16.32%	22.00%	15.73%	
7/89	25.82%	33.17%	24.91%	
8/89	28.36%	32.64%	23.68%	
9/89	27.98%	30.21%	23.37%	
10/89	24.34%	24.95%	23.37%	
11/89	26.78%	28.41%	26.68%	
12/89	29.44%	28.75%	32.18%	
1/90	20.60%	15.56%	25.23%	
2/90	22.28%	19.26%	26.41%	
3/90	25.13%	20.88%	28.65%	
4/90	21.73%	16.35%	24.26%	
5/90	32.48%	28.17%	32.84%	
6/90	31.68%	24.97%	33.50%	
7/90	31.10%	23.59%	34.40%	
8/90	19.64%	12.30%	25.12%	
9/90	13.76%	5.60%	21.78%	
10/90	12.62%	0.21%	27.37%	*
11/90	19.73%	7.37%	32.26%	*
12/90	23.07%	6.75%	34.18%	*

PANEL B

Period	Beta		Std. Deviation		Cumulative Excess Returns		Size-Industry	
	"Best"	"Worst"	"Best"	"Worst"	"Best"	"Worst"	"Best"	"Worst"
1/89	-0.28%	-1.78%	1.20%	0.20%	-0.86%	0.13%	-0.86%	0.13%
2/89	-1.73%	-5.03%	-0.32%	-1.96%	-1.87%	-0.35%	-1.87%	-0.35%
3/89	-1.25%	-6.44%	0.86%	-1.89%	-0.78%	-0.44%	-0.78%	-0.44%
4/89	-0.51%	-5.81%	2.36%	-0.33%	-1.10%	0.93%	-1.10%	0.93%
5/89	0.26%	-6.39%	4.51%	0.20%	-1.36%	0.19%	-1.36%	0.19%
6/89	0.96%	-4.27%	5.08%	1.36%	-2.38%	2.46%	-2.38%	2.46%
7/89	3.25%	-2.30%	8.05%	4.04%	-2.27%	3.03%	-2.27%	3.03%
8/89	0.05%	-5.92%	5.64%	1.82%	-5.04%	1.30%	-5.04%	1.30%
9/89	-2.36%	-6.71%	3.60%	1.37%	-5.90%	1.62%	-5.90%	1.62%
10/89	0.01%	-0.60%	4.82%	4.51%	-5.99%	2.86%	-5.99%	2.86%
11/89	1.09%	0.59%	6.35%	5.84%	-5.30%	3.24%	-5.30%	3.24%
12/89	0.20%	3.65%	6.25%	8.54%	-5.03%	3.29%	-5.03%	3.29%
1/90	-1.99%	5.73%	1.71%	8.88%	-6.31%	4.15%	-6.31%	4.15%
2/90	-0.09%	5.01%	4.14%	8.97%	-3.87%	4.20%	-3.87%	4.20%
3/90	-1.59%	4.26%	3.41%	9.39%	-5.89%	3.62%	-5.89%	3.62%
4/90	-3.10%	2.88%	-0.09%	8.60%	-7.04%	4.42%	-7.04%	4.42%
5/90	-2.52%	3.42%	2.17%	10.57%	-8.83%	4.07%	-8.83%	4.07%
6/90	-5.80%	3.15%	-1.03%	10.74%	-10.86%	5.09%	-10.86%	5.09%
7/90	-4.43%	4.69%	-0.24%	11.78%	-7.54%	4.75%	-7.54%	4.75%
8/90	-2.74%	8.14%	-0.51%	12.68%	-5.40%	5.26%	-5.40%	5.26%
9/90	-0.17%	13.62%	-0.44%	15.36%	-4.62%	5.57%	-4.62%	5.57%
10/90	-1.46%	21.96%	-2.30%	21.27%	-5.42%	8.08%	-5.42%	8.08%
11/90	-0.82%	18.24%	0.43%	19.83%	-7.42%	6.09%	-7.42%	6.09%
12/90	-4.45%	17.68%	-2.79%	19.39%	-12.93%	5.92%	-12.93%	5.92%

* "Best" and "worst" returns are statistically different at the 5 percent confidence level.

Exhibit 4
Compounded Wealth Changes and Cumulative Beta,
Standard Deviation and Size-Industry Excess Returns
for the Retained CEO Firm Sample

PANEL A

Period	S&P 500		CEO Retained Firms	
	Compounded Wealth	"Best" Average Compounded Wealth	"Worst" Average Compounded Wealth	
1/89	6.75%	7.31%	5.34%	
2/89	4.81%	5.62%	2.80%	
3/89	7.09%	9.71%	5.05%	
4/89	12.19%	16.24%	* 9.68%	
5/89	16.54%	22.74%	* 13.86%	
6/89	16.32%	23.35%	* 14.92%	
7/89	25.82%	35.77%	* 24.12%	
8/89	28.36%	35.40%	* 23.58%	
9/89	27.98%	33.00%	23.70%	
10/89	24.34%	27.52%	24.06%	
11/89	26.78%	31.24%	26.72%	
12/89	29.44%	31.65%	31.04%	
1/90	20.60%	18.40%	24.80%	
2/90	22.28%	21.88%	25.82%	
3/90	25.13%	23.15%	27.48%	
4/90	21.73%	18.98%	23.07%	
5/90	32.48%	31.53%	32.12%	
6/90	31.68%	28.14%	32.89%	
7/90	31.10%	26.82%	33.82%	
8/90	19.64%	15.17%	24.16%	
9/90	13.76%	8.43%	20.68%	
10/90	12.62%	3.00%	24.78%	
11/90	19.73%	10.47%	28.90%	
12/90	23.07%	9.94%	31.39%	

PANEL B

Period	CEO Retained Firms		Firms		Cumulative		Excess Returns	
	Beta	"Best" "Worst"	Std. Deviation	"Best" "Worst"	Size-Industry	"Best" "Worst"	Size-Industry	"Best" "Worst"
1/89	0.02%	-1.19%	0.45%	0.15%	-0.93%	0.15%	-0.93%	0.15%
2/89	-1.74%	-4.44%	-1.56%	-0.33%	-2.15%	-0.33%	-2.15%	-0.33%
3/89	1.08%	-5.13%	-0.91%	-0.30%	-0.80%	-0.30%	-0.80%	-0.30%
4/89	1.29% *	-5.37%	-0.29%	0.02%	-0.66%	0.02%	-0.66%	0.02%
5/89	0.93% *	-5.67%	0.35%	-0.31%	-0.89%	-0.31%	-0.89%	-0.31%
6/89	0.85%	-4.44%	0.77%	1.23%	-1.95%	1.23%	-1.95%	1.23%
7/89	3.48%	-2.26%	3.68%	2.75%	-0.90%	2.75%	-0.90%	2.75%
8/89	-2.87%	-5.63%	1.67%	0.48%	-3.51%	0.48%	-3.51%	0.48%
9/89	-2.29%	-6.00%	1.49%	1.06%	-4.42%	1.06%	-4.42%	1.06%
10/89	2.18%	0.04%	4.80%	2.93%	-4.71%	2.93%	-4.71%	2.93%
11/89	1.38%	0.84%	5.80%	3.08%	-3.87%	3.08%	-3.87%	3.08%
12/89	0.75%	3.20%	7.74%	2.06%	-3.65%	2.06%	-3.65%	2.06%
1/90	1.64%	5.93%	8.48%	2.99%	-4.30%	2.99%	-4.30%	2.99%
2/90	1.28%	4.94%	8.39%	3.02%	-2.54%	3.02%	-2.54%	3.02%
3/90	-2.13%	3.74%	8.51%	2.05%	-5.00%	2.05%	-5.00%	2.05%
4/90	-0.86%	2.48%	7.63%	2.47%	-5.62%	2.47%	-5.62%	2.47%
5/90	1.21%	3.15%	9.98%	2.21%	-6.65%	2.21%	-6.65%	2.21%
6/90	-3.49%	3.10%	10.43%	3.70%	-9.03%	3.70%	-9.03%	3.70%
7/90	1.66%	4.64%	11.38%	3.01%	-5.57%	3.01%	-5.57%	3.01%
8/90	1.69%	7.62%	11.62%	2.72%	-3.79%	2.72%	-3.79%	2.72%
9/90	2.92%	13.14%	13.90%	2.79%	-3.26%	2.79%	-3.26%	2.79%
10/90	-1.02%	20.44%	18.60%	3.70%	-4.29%	3.70%	-4.29%	3.70%
11/90	0.96%	16.20%	16.63%	1.89%	-5.52%	1.89%	-5.52%	1.89%
12/90	-3.36%	16.03%	16.67%	2.36%	-10.47%	2.36%	-10.47%	2.36%

* "Best" and "worst" returns are statistically different at the 5 percent confidence level.

Exhibit 5
Compounded Wealth Changes and Cumulative Beta,
Standard Deviation and Size-Industry Excess Returns
for the Non-Regulated, Retained CEO Firm Sample

PANEL A

Period	S&P 500		Non-Regulated	
	Compounded Wealth	Index	CEO Retained Firms	Average
			"Best"	"Worst"
1/89	6.75%	7.22%	6.72%	6.72%
2/89	4.81%	4.90%	4.67%	4.67%
3/89	7.09%	10.21%	6.83%	6.83%
4/89	12.19%	16.63%	10.13%	10.13%
5/89	16.54%	23.02%	13.58%	13.58%
6/89	16.32%	23.77%	* 12.21%	* 12.21%
7/89	25.82%	36.11%	* 21.11%	* 21.11%
8/89	28.36%	33.98%	22.00%	22.00%
9/89	27.98%	32.05%	19.77%	19.77%
10/89	24.34%	26.74%	17.98%	17.98%
11/89	26.78%	29.49%	19.72%	19.72%
12/89	29.44%	31.26%	24.19%	24.19%
1/90	20.60%	15.80%	19.35%	19.35%
2/90	22.28%	19.86%	20.72%	20.72%
3/90	25.13%	21.57%	23.79%	23.79%
4/90	21.73%	17.95%	20.83%	20.83%
5/90	32.48%	28.51%	31.06%	31.06%
6/90	31.68%	25.39%	33.30%	33.30%
7/90	31.10%	24.27%	36.67%	36.67%
8/90	19.64%	12.89%	28.00%	28.00%
9/90	13.76%	7.52%	21.52%	21.52%
10/90	12.62%	0.85%	18.64%	18.64%
11/90	19.73%	7.93%	24.44%	24.44%
12/90	23.07%	6.25%	27.11%	27.11%

PANEL B

Period	CEO Retained Firms		Non-Regulated	
	Beta		Std. Deviation	
	"Best"	"Worst"	"Best"	"Worst"
1/89	0.15%	-0.30%	1.60%	1.08%
2/89	-1.71%	-2.63%	-0.28%	-0.51%
3/89	-0.50%	-4.73%	1.63%	-0.43%
4/89	0.91%	-6.95%	3.76%	-1.43%
5/89	1.63%	-8.68%	5.93%	-1.60%
6/89	2.26%	-8.74%	6.45%	* -2.71%
7/89	5.32%	-7.56%	10.15%	-0.24%
8/89	2.47%	-9.83%	8.03%	-1.60%
9/89	0.31%	-11.10%	6.23%	-3.53%
10/89	1.83%	-5.47%	6.70%	-1.32%
11/89	2.71%	-5.92%	7.93%	-0.68%
12/89	1.33%	-3.17%	7.36%	1.51%
1/90	-0.78%	0.94%	2.93%	3.75%
2/90	0.52%	0.45%	4.83%	3.92%
3/90	-1.31%	1.20%	3.79%	5.24%
4/90	-2.23%	1.44%	0.83%	5.38%
5/90	-1.71%	2.55%	3.02%	8.15%
6/90	-5.39%	2.81%	-0.51%	9.71%
7/90	-3.73%	6.32%	0.69%	12.39%
8/90	-2.81%	10.52%	-0.32%	13.86%
9/90	-0.21%	15.30%	-0.19%	14.47%
10/90	-1.92%	16.50%	-2.56%	14.10%
11/90	-0.65%	12.34%	0.82%	12.89%
12/90	-4.08%	12.56%	-2.20%	13.24%

* "Best" and "worst" returns are statistically different at the 5 percent confidence level.

Appendix
Size and Industry Matched Firms

Food and Food Processing

Best Incentive Firms: Castle & Cooke (now Dole), ADM
Worst Incentive Firms: Campbell Soup, Borden
Matching Firms: ConAgra, CPC International, General Mills, H.J. Heinz, IBP, Kellogg, Quaker Oats, Ralston Purina and Sara Lee

Energy

Best Incentive Firm: Amerada Hess
Worst Incentive Firms: Exxon, ARCO and Chevron
Matching Firms: Amoco, Ashland Oil, Mobil, Occidental Petroleum, Phillips Petroleum, Sun Company, Texaco and UNOCAL

Computers

Best Incentive Firms: Wang Labs and Digital Equipment
Worst Incentive Firm: IBM
Matching Firms: Apple Computer, Control Data, Hewlett Packard, NCR, Tandy and Unisys

Insurance

Best Incentive Firms: Aon and American International
Matching Firms: Aetna Life, American General and Chubb

Conglomerate

Best Incentive Firm: Loews
Matching Firms: Allied Signal, GE and Tenneco

Chemical

Best Incentive Firm: Ethyl
Matching Firms: Air Products & Chemicals, Englehard, Hercules and Rohm & Haas

Hotel-Restaurants

Best Incentive Firms: Marriott
Matching Firms: MacDonalds and Hilton Hotels [Matching firms create "synthetic industry" base upon Marriott's unique lines of business.]

Entertainment

Best Incentive Firms: MCA and Disney
Matching Firms: AMC Entertainment, Orion Pictures, Paramount Communications and Time Warner

Brokerage-Financial Services

Best Incentive Firm: Paine-Webber
Matching Firms: Merrill Lynch, Morgan Stanley Group and Salomon

Trucks-Transportation

Best Incentive Firm: Paccar
Worst Incentive Firm: Navistar
Matching Firms: Chrysler, Federal Signal, Ford and GM

Publishing

Best Incentive Firm: Times Mirror
Matching Firms: Dow-Jones, Gannett, Knight-Ridder, Tribune and Washington Post

Pipeline

Best Incentive Firm: Coastal
Matching Firms: Transco Energy and Panhandle Eastern

Retail

Best Incentive Firm: Carter Hawley Hale
Worst Incentive Firm: Sears
Matching Firms: Dayton-Hudson, K-Mart, May Department Stores, Melville, J.C. Penney, Service Merchandise, Wal Mart Stores and Woolworth

Aircraft

Best Incentive Firm: McDonnell Douglas
Matching Firms: United Technologies, Martin Marietta, Lockheed, General Dynamics and Boeing

Television Broadcasting

Best Incentive Firm: CBS
Matching Firms: Capital Cities/ABC, Turner Broadcasting (Class B)

Health Care Services

Best Incentive Firm: Humana
Matching Firm: National Medical Enterprises

Food-Retail

Best Incentive Firm: Winn-Dixie
Matching Firms: Great Atlantic & Pacific Tea and Kroger

Home Improvement

Best Incentive Firms: MASCO
Matching Firms: Armstrong World and Stanley Works

Telecommunications

Best Incentive Firm: MCI
Worst Incentive Firms: AT&T and GTE
Matching Firms: Ameritech, Bell Atlantic, Bellsouth, Centel, Contel, Nynex, Pacific Telesis, Southern New England Telephone Communications, Southwestern Bell, United Telecommunications and U.S. West

Automotive Parts

Best Incentive Firm: Cummins Engine
Matching Firms: Dana and Eaton

Special Machinery-Chemicals

Best Incentive Firm:

FMC

Matching Firms:

Deere, Ingersoll Rand, W.R. Grace and Georgia Gulf
[Matching firms create "synthetic industry" based upon FMC's unique lines of business.]

Public Utilities

Worst Incentive Firms:

Central & Southwest, Consolidated Edison, Detroit Edison, Commonwealth Edison, Texas Utilities, Pacific Gas & Electric, Philadelphia Electric, PacifiCorp and Carolina Power and Light

Matching Firms:

American Electric Power, Dominion Resources, Duke Power, FPL Group, Public Service Enterprise Group, SCE Corporation and Southern Company

Specialty Chemicals-Manufacturing

Worst Incentive Firm:

3M

Matching Firms:

Imperial Chemical Industries and Rhone-Poulen Rorer

Electrical Devices

Worst Incentive Firm:

AMP

Matching Firms:

Avnet, Harris and Varian

Photography and Imaging

Worst Incentive Firm:

Eastman Kodak

Matching Firms:

Polaroid and Xerox

Publishing

Worst Incentive Firm:

R. R. Donnelley

Matching Firms:

Delux Corporation, Dun & Bradstreet and Meredith Corporation

Health Care

Worst Incentive Firm:

Johnson & Johnson

Matching Firms:

Abbot Labs, Baxter International, Bristol Myers Squibb

Electrical Controls

Worst Incentive Firm:

Honeywell

Matching Firms:

General Signal, Perkin Elmer Corporation, Tektronix

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