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STOCK MARKET REACTION TO ETHICAL INITIATIVES OF DEFENSE CONTRACTORS: THEORY AND EVIDENCE

EDMUND J. BOYLE, MARK M. HIGGINS AND S. GHON RHEE

College of Business Administration, University of Rhode Island, Kingston, RI 02881, USA

This paper offers an Investor Decision Framework (IDF) to describe and measure investor behavior toward social responsibility information. This framework seeks to explain how investors perceive the effects of social responsibility information on firm value. The formation in 1986 by 32 major defense contractors of the Defense Industries Initiative (DII) provides an ideal example to assess stock market reaction to an ethical initiative. The performance of the DII firms was compared with that of a control group of non-DII defense firms, which did not sign the agreement, in order to measure and determine the extent to which the market placed substance on the DII as a public commitment to ethics. We initially posited that the DII firm's stock price would move in a significantly positive direction. However, when our analysis revealed a significant negative impact not only on DII, but also on non-DII defense stock prices, we were forced to reject this a priori hypothesis. The market interpreted this ethical initiative as (i) a precursor of future sanctions towards firms engaged in defense contracting or (ii) as a penalty for social irresponsibility imposed by socially conscious investors. Either way, it would have a negative impact upon future cash flows.

Introduction

During the 1980s, defense spending grew at an unprecedented rate, fueled primarily by national concerns about America's military readiness, the continuing Cold War, and the rapid development of increasingly sophisticated military technologies. The modernization and expansion of the armed forces created lucrative opportunities for the private sector, most notably for major defense contractors. Concurrently, the proliferation in defense spending facilitated increases in allegations of defense contract corruption. In 1985, President Reagan appointed David Packard to chair a commission on defense management with the objective of examining and evaluating the entire defense procurement system.

The Packard Commission offered two separate reports with numerous recommendations for improving the administration and structuring of the Department of Defense (DOD), as well as industry and government accountability. In the summer of 1986, when the final report was issued, 32 major defense contractors signed a six-principle agreement, entitled "Defense
Industries Initiative on Business Ethics and Conduct (DII).” Essentially, the participating DII firms agreed to foster organization-wide standards of ethical conduct including a commitment to public accountability.

The normative and empirical literature suggests that investor decisions may be influenced by both their economic and social motives. Accordingly, the DII provides a medium to examine the stock market’s reaction to ethical initiatives. Initially, based upon the mainstream business ethics literature, the emergence of the DII led us to hypothesize that the markets would react favorably to information of ethical initiatives in the defense industry. Essentially, the existing theory suggests that a set of ethical principles, grounded in public accountability, would be perceived as “good news.” This study’s empirical findings, however, reveal a significant decline in stock prices of the entire defense industry, including non-DII signers. We believe that the market interpreted this ethical initiative as either a precursor of future sanctions towards the firms engaged in defense contracting or as a penalty for social irresponsibility as inferred from our proposed Investor Decision Framework (IDF).

The first section presents a historical perspective of the Packard Commission and the DII, with an emphasis on the events leading up to the formation of this initiative. A theoretical framework is offered in the second section to describe and explain the motives which drive investor decisions concerning social responsibility issues. The third section presents the research methodology, descriptive statistics for the firms in the sample and control groups, and empirical results. In the final section, conclusions are derived from the study along with suggestions for future research.

The Packard Commission and the Defense Industries Initiative

The enlistment of the private sector for military procurement has become the predominant means of supplying the Armed Services of the United States, and thus providing for the common defense and security of the nation (Weinberger, 1986). During the Reagan administration, national defense spending soared to record levels. Joseph H. Sherick, then Inspector General of the DOD, reported to a Congressional Hearing that nearly 15 million defense contracts were approved in 1985. Further, he estimated the value of these contracts at approximately $164 billion, with 70% of the cost of the contracts going to 100 defense contractors (Packard Commission, 1986b). However, as defense spending proliferated throughout the early 1980s, the integrity and credibility of the defense industry suffered, in part, because of increased allegations of intentional noncompliance with federal acquisition regulations by major contractors. As of May 1985, 45 of the 100 largest defense contractors were under investigation for 131 charges of misconduct including defective pricing, subcontractor kickbacks and false claims. Additionally, one major contractor was facing 12 separate investigations for infractions committed between June 1983 and April 1985 (Packard Commission, 1986b, p. 1). The publicity generated from these reported breaches in contract compliance helped to create an atmosphere among the American people of mistrust and alleged guilt toward defense contractors. Moreover, these events further
supported the claims that the defense program existed more for economic profiteering rather than national security interests.

In July 1985, amid growing concerns about the character of the defense industry, President Reagan appointed David Packard, the Chairman of Hewlett-Packard and a former Deputy Secretary of Defense, to chair a “Blue Ribbon Commission on Defense Management.” At the onset, this task force, entitled the Packard Commission, was charged by the President, “… to conduct a study of important dimension, encompassing current defense management and organization in its entirety” (Packard Commission 1986a, p. 1).

The Packard Commission Reports

Initially, as a means of establishing an empirical basis for their investigation of the state of the defense industry, and to assess public perception of defense contractors, the Commission sponsored a number of surveys to gather “information about American public opinion on a broad range of defense management issues” (Packard Commission, 1986a, p. 2). An Arthur Andersen review (1986) of government oversight functions of defense contractors uncovered multiple examples of inefficient and redundant practices in the defense industry. A Market Opinion Research poll (1986) revealed that many Americans viewed defense contractors as profit seeking entities with little or no commitment to a set of legal or ethical standards. The results of these and other surveys, led the Commission to explore further the issue of accountability. As a result, two separate reports were issued: An Interim Report to the President and Conduct and Accountability (Packard Commission (1986a,b)).

The Commission’s Interim Report, dated February 28, 1986, presented numerous recommendations for improvement in four broad and distinct areas of defense management: (i) national security planning and budgeting, (ii) military organization and command, (iii) acquisition organization and procedures, and (iv) government-industry accountability. Notably, while most of this report focused on the administration of the DOD, the last section of recommendations affirmed the legal and ethical responsibilities of defense contractors in the nation’s military acquisition program. In fact, the Commission encouraged more effective contractor self-governance to uncover fraudulent practices with the following recommendation:

“‘To assure that their houses are in order, defense contractors must promulgate and vigilantly enforce codes of ethics that address the unique problems and procedures incident to defense procurement.’” (Packard Commission (1986a, p. 21)).

The Packard Commission’s second report Conduct and Accountability offered recommendations for each side of the defense transaction: (i) Industry Accountability: Contractor Self-Governance, and (ii) Government Accountability: DOD Auditing and Oversight, Standards of Conducts and Ethics. Overall, this latter report expressed concern about the effect that defense contractor corruption would have on the future of the defense procurement system. In particular, the Commission members believed that the public’s
lack of confidence might: (i) affect support for important defense programs, thereby weakening national security, (ii) undermine the implementation of management reforms to increase efficiency, and (iii) impair the desire for innovative organizations to contract with the DOD.

The Defense Industries Initiative

It was becoming apparent from the evidence collected throughout the Packard Commission’s investigation that defense contractors needed to demonstrate a stronger commitment to ethical standards:

“Management and employees of companies that contract with the Defense Department assume unique and compelling obligations to the people of our Armed Forces, the American taxpayer, and our nation. They must apply (and be perceived as applying) the highest standards of business ethics and conduct... Contractors have a legal and moral obligation to disclose to government authorities misconduct discovered as a result of self review.” (Packard Commission, 1986a, p. 20).

Consequently, during the spring of 1986, David Packard contacted several major contractors with the objective of determining what the private sector might do to improve the adverse state of the defense industry. In early June, as a result of these discussions, top management officials from various firms met and drafted the DII. Subsequently, on July 3, 1986, 32 defense contractors formally agreed to a program which mandated minimum standards of ethics and conduct. (See Appendix 1 for a listing of the original DII firms). Specifically, each signer agreed to adopt and implement six principles of business ethics and conduct which would govern and direct their corporate responsibilities to the DOD and the public (See Appendix 2 for the DII Principles).

The DII firms announced responsibility for self-governance in an apparent effort to remedy the inadequacies identified in the defense procurement system and to define a social responsiveness beyond what is mandated by legal or contractual norms. Carroll (1979, p. 500) comments on firm-sponsored ethical responsiveness in his conceptual model of corporate social responsibility:

“... there are additional behaviors and activities that are not necessarily codified into law but nevertheless are expected of business by society’s members. Ethical responsiveness is ill defined and consequently are among the most difficult for business to deal with... Suffice it to say that society has expectations of business over and above legal responsibilities.”

Accordingly, by signing the initiative one could assume that these DII firms were truly committed to the proper performance of contractual regulations as a just and fair practice. Indeed, a rational organization will adapt to environmental demands and expectations as a means of increasing legitimacy and thus ensuring survival (Thompson, 1967). On the other hand, considering the lucrative potential profits available to defense contractors, it is also possible that these organizations were reacting to environmental pressures, evidenced by the deteriorating confidence of the government and the American people to the defense industry. If governmental oversight initiated from angry taxpayers sought to investigate, regulate, or mitigate conventional defense
appropriation practices, the impact on future cash flows could be significant and unfavorable. *A priori*, we posited that the markets would react positively to these ethical initiatives. The DII principles outlined a substantial change in the long accepted practices of the industry, and if enacted, would likely improve the perception of the public. More convincingly, however, the sixth principle requiring public accountability for compliance with DII gave the appearance of substance and integrity.

### The Investor Decision Framework: Conceptual Framework

#### Corporate Social Responsibility

Investors must assimilate a vast array of information-laden signals in their evaluation of the present value of a firm’s equity shares. These investment decisions are traditionally conceived and driven by economic motives, in that investors will seek to maximize the profitability of their portfolios while reducing their respective risk exposures. Thus, the greater an item of information contributes to the prediction of stock performance, the greater the demand for this information. Moreover, as investors seek new information, as well as elaboration on conventional forms of disclosure, organizations are more likely to adapt to these demands in a manner that places the firm in its most favorable position. The investor’s dissemination of information is further complicated, however, by the uncertainty concerning the true nature and meaning of respective disclosures. That is, an information asymmetry arises between the producers of the disclosures and the ultimate users.

Increasingly, a network of non-economic forces has raised the awareness of corporate management’s responsibility in addressing the social and environmental consequences of its actions (Epstein, 1991). Some theorists contend that the firm should concentrate solely on the maximization of shareholder wealth since other pursuits, regardless of their societal implications, are inefficient, competitively disadvantageous, and essentially outside the scope of the organization’s expertise. Friedman (1962, p. 133) finds the doctrine of social responsibility to be “fundamentally subversive” when he argues, “few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible.” And, Levitt (1958, p. 49) suggests, “business will have a better chance of surviving if there is no nonsense about its goals—that is, if long-term profit maximization is the one dominant objective in practice as well as in theory.”

Yet, a consensus of researchers has questioned the exclusivity of this profit objective (e.g. McGuire, 1963; Sethi, 1975; Backman, 1975; Carroll, 1979). Simon, Powers and Gunnemann (1972, p. 21), for instance, rate corporate social behavior on a continuum ranging from “affirmative duties”, the pursuit of social causes unrelated to the corporation’s economic orientation, to “negative injunctions” where firms are mandated to maintain a “moral minimum,” that is the avoidance and correction of “social injury.” Organizations have a “prima facie obligation... to regulate their activities so that they do not injure others and so that they correct what injury they do cause.” In
addition, this social obligation to refrain from social injury encompasses a dual principle of not only avoiding self-caused injury but also correcting injury caused by others (e.g. members of the same industry).

If the contemporary organizational mission has evolved to incorporate a greater commitment to social responsibility, because of some mix of affirmative choice and/or negative injunction, how and to what degree have investors chosen to weigh this information in measuring the value of their investment decisions? A number of surveys support the premise that investors do in fact consider corporate social responsibility information in evaluating the market values of their equity securities. An emerging collection of market studies have also examined social responsibility disclosures, however to date, the results of this research method have not been as convincing as the surveys (e.g. Belkaoui, 1976; Spicer, 1978; Anderson & Frankle, 1980; Shane & Spurr, 1983; Folger & Nutt, 1975, Alexander & Buchholz, 1978, Abbott & Monsen, 1979; Cochrane & Wood, 1984; Vance, 1975; Aupperle, Carroll & Hatfield, 1985). Overall the early inductive theory formulation on investor behavior to social responsibility information has focused on establishing association(s) between a firm’s social reputation and a variety of accounting/market measures of performance.

Patten (1990) examines the trading volume and stock price reactions of a group of firms which adopted the Sullivan Principles—an agreement mandating fair and equal economic opportunities to non-white employees in South Africa. He suggests three possible reasons why investors find this form of information useful in choosing stocks: (i) a substantive concern about the morality of corporate activities, (ii) the capacity for social responsibility information to be a surrogate for other economic information, and/or (iii) the information content of social responsibility disclosures as a precursor of potential public or regulatory sanctions against the firm.

By coupling Patten’s (1990) typology with prior research a conceptual foundation can be developed which provides a comprehensive framework to explain why investors use social responsibility information in their investment decisions. In the context of information asymmetry, it is posited that investors seek out information, whether in the form of financial reporting or externally-derived disclosures, which satisfies both an economic and/or a social concern motive (see Figure 1). In essence, an investor’s strategic investment posture can be influenced either by the traditionally accepted desire to maximize future risk adjusted returns, or a willingness to pay a premium for the stocks of socially responsible firms.

The Investor Decision Framework

Management is more apprised about the state of the firm than investors, and accordingly, has access to superior information which may be unknown to the public. At the same time, the managers who disseminate information for public disclosure are motivated, through a variety of incentives, to accentuate favorable attributes of the organization and to suppress unfavorable news. This information asymmetry creates an adverse selection phenomenon where management has privileged knowledge of an entity’s value, and a capability to shape its perceived financial position. In particular,
managers within an organization, or across some commonality of firms, may possess favorable information, not explicitly within the scope of mandated reporting disclosure(s), and not accessible by the public. The voluntary, or collective disclosure of this information can bolster investor confidence, as well as stock price. On the other hand, managers may be aware of the firm’s association with unwanted events that could be interpreted by investors as ambiguous, and inevitably cause a negative drag on firm values. In this latter case, a strategy of disclosing unfavorable information might legitimize the firm to the markets by enabling management to clarify, shape and influence public opinion before it can negatively impact on its stock price.

Consequently, investors need to study closely the information and misinformation which is reported by respective organizations. In effect, a less informed investor will need to interpret the signaling behavior implicit in a firm’s disclosure to more accurately measure the value of the underlying securities. Ultimately, the market will classify disclosures as communicating “good news” or “bad news”. In the case of corporate social responsibility information, the Investor Decision Framework (IDF) suggests that these interpretations will incorporate some mix of economic and social concerns.

The economic motive component of the IDF can influence investment decisions in one of two ways. First, social responsibility information might possess good news and therefore be perceived as a surrogate for favorable market performance. A firm that is committed to social responsibility, as well as profit maximization goals, may report more favorable accounting measures (Bowman & Haire, 1975; Spicer, 1978; McGuire et al., 1988), and more superior risk-adjusted stock returns (Belkaoui, 1976; Ingram, 1978; Spicer, 1978; Anderson & Frankie, 1980; Trotman & Bradley, 1981; Shane & Spicer, 1983) than less socially-oriented firms.

In contrast, if the socially derived information portrays bad economic news investors may be inclined to sell off shares of the irresponsible firm, especially if the information is perceived as a predictor of potential or inevitable negative sanctions. Spicer (1978, p. 97) notes that public apprehension concerning the
social and environmental outcomes of corporate activities has prompted stringent sanctions as a means of regulating these activities. He elaborates on an economically-oriented rationale for establishing an association between a firm's social performance and its respective investment value:

"Recognizing that socially undesirable corporate activity may result in costly sanctions against the offending corporation in times of rapid social change and a heightened public awareness of the interplay between corporate operations and issues of social concern."

Firms may attempt to mitigate the impact of social or governmental sanctions on the value of their stock through a more active and visible strategy of social responsiveness, by using voluntary disclosures concerning social responsibility issues (Patten, 1990). As noted earlier, some empirical studies have demonstrated a positive association between socially responsible firms and stock market performance. Firms might also seek to minimize the likelihood or severity of sanctions through either individual or industry-wide self-regulation. Indeed, organizational theory suggests that managers will model their organizations after firms that have successfully addressed environmental pressures as a means of satiating these external forces and improving legitimacy (Meyer & Rowan, 1977; DiMaggio & Powell, 1983). In discussing their continuum of corporate responsibility, Simon et al. (1972, p. 37) state:

"If the injury occasioned is unique not to the corporation itself but rather to an industry... the individual corporation can at least be expected to work for industry wide self-regulation within the limits of antitrust."

Thus, organizations that share common strategic and operational goals may find it opportune to attempt some form of self-regulation to better buffer and control the impact of external forces.

The second component of the IDF suggests that investors may also be motivated by social or moral concerns; a motive which has been discussed in the literature as "the ethical investor" (Simon et al., 1972; Spicer, 1978; Anderson & Frankle, 1980). Similar to the possible outcomes of economically driven investment decisions, the ethical investor can be faced with one of two choices. Social responsibility information which provides good news may be seen as a reflection of positive social performance, or organizational concern for the cause/effect of firm actions on environmental issues. In turn, socially conscious investors may support those firms for addressing social and moral factors. Yet, on the downside, bad news disclosures could be interpreted as a measure of negative social performance, thus yielding poor stock performance. In effect, ethical investors will punish firms for the social effects of their activities on society.

It is difficult to delineate the impact of each motive upon the investment decision, nor is it posited that the social motive should be given equal weight in explaining the market reaction to social responsibility information. Admittedly, as Anderson and Frankle (1980, p. 469) note, the resultant investment decision may be jointly driven by economic and social motives, to the extent that they are inseparable. They state:

"Certain corporate social action programs may have a long-run favorable
impact on profits. For example, some programs may help to build a favorable image with employees, customers, and the public."

The 32 defense contracting firms which adopted the DII provide an ideal opportunity to investigate the impact of investors’ reaction to ethical initiatives. If the market perceives this ethical initiative as an attempt by DII participants to bolster moral practices within their firms, or to mitigate public pressures or as an effort to secure continued long-term funding from the DOD, the stock price of DII firms likely will rise. Alternatively, prospective investors might also see the DII as an affirmation of poor social responsibility, leading to a possible loss or reduction in the size of defense contracts, thereby resulting in a negative stock reaction by all signers. The DII-signers and non-signers provide an ideal experimental setting to test the notion that the socially responsible investor model is not timeless.

Sample, Methodology, and Results
Sample
The original sample of firms was drawn from a list of the top 100 defense contracting organizations, in terms of contract dollars awarded, for the fiscal year 1986. (U.S. Government DOD, 1986). This annual list provides summary information on the firms receiving the largest DOD contracts during the fiscal year ending September 30, 1986. From the initial collection of firms, 25 organizations which were neither publicly traded nor listed in the CRSP tape were eliminated (e.g. Johns Hopkins University). Financial statement information was obtained for the remaining 75 firms from the COMPUSTAT tapes. An additional 11 firms were eliminated; eight because financial data were not available and three due to negative book equity. The remaining sample was then divided into two groups: 25 signers of the DII and 39 non-signers (See Appendix 3 for a listing of the DII-signers and non-signers).

Table 1 presents the descriptive statistics of key variables for the 25 signing and 39 non-signing firms. Notably, the signers are much larger than the non-signing firms when measured by net sales. However, the magnitude of firm size is about the same on the basis of total assets between the two groups of firms. In fact, the total sales for the signature almost 26% greater than those of their counterparts. A greater disparity between the two groups is found when comparing the return on assets. The signing firms return on assets, as measured by net income to total assets, is 5.12%, compared with 2.97% estimated for non-signing firms. Two other interesting characteristics of the signing firms are: (i) the ratio of defense contracts to total assets is 80% higher for signers; and (ii) the ratio of defense contracts to net sales is 57% greater for signers than for non-signers. This appears to indicate that firms which signed the DII had a greater economic impetus than a social or ethical impetus to join the DII. These characteristics affirm the observations of Chomsky (1979, 1981) concerning the monetary dependence and overall economic links of large defense contractors to the DOD. Consistent with that logic, both of these ratios indicate that an upturn or downturn in the markets’ perception of defense contractors should have had a greater effect on those firms who joined the DII.
Table 1 Means and Standard Deviations of Key Variables

<table>
<thead>
<tr>
<th></th>
<th>Assets</th>
<th>Sales</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>($ Millions)</td>
<td>(11,736.28)</td>
<td>(14,421.29)</td>
<td>(17,611.45)</td>
</tr>
<tr>
<td>Sales</td>
<td>14,814.80</td>
<td>11,721.57</td>
<td>126.39%</td>
</tr>
<tr>
<td>($ Millions)</td>
<td>(16,932.47)</td>
<td>(20,363.56)</td>
<td></td>
</tr>
<tr>
<td>Current ratio</td>
<td>1.56</td>
<td>1.66</td>
<td>93.97%</td>
</tr>
<tr>
<td></td>
<td>(0.6403)</td>
<td>(0.7665)</td>
<td></td>
</tr>
<tr>
<td>Total debt/total assets</td>
<td>58.56%</td>
<td>57.81%</td>
<td>101.30%</td>
</tr>
<tr>
<td></td>
<td>(0.1079)</td>
<td>(0.1504)</td>
<td></td>
</tr>
<tr>
<td>Net income/total assets</td>
<td>5.12%</td>
<td>2.97%</td>
<td>172.39%</td>
</tr>
<tr>
<td></td>
<td>(0.0352)</td>
<td>(0.0553)</td>
<td></td>
</tr>
<tr>
<td>Operating income/total</td>
<td>14.26%</td>
<td>12.27%</td>
<td>116.22%</td>
</tr>
<tr>
<td>assets</td>
<td>(0.492)</td>
<td>(0.0792)</td>
<td></td>
</tr>
<tr>
<td>Plant prop. &amp; equip./total</td>
<td>60.12%</td>
<td>73.65%</td>
<td>81.62%</td>
</tr>
<tr>
<td>assets</td>
<td>(0.1843)</td>
<td>(0.3377)</td>
<td></td>
</tr>
<tr>
<td>Intangibles/total assets</td>
<td>3.80%</td>
<td>2.96%</td>
<td>128.38%</td>
</tr>
<tr>
<td></td>
<td>(0.0546)</td>
<td>(0.0670)</td>
<td></td>
</tr>
<tr>
<td>Contract/net sales</td>
<td>5.71%</td>
<td>3.35%</td>
<td>170.45%</td>
</tr>
<tr>
<td></td>
<td>(0.0314)</td>
<td>(0.0369)</td>
<td></td>
</tr>
<tr>
<td>Contract/total assets</td>
<td>29.04%</td>
<td>18.55%</td>
<td>156.55%</td>
</tr>
<tr>
<td></td>
<td>(0.2489)</td>
<td>(0.2276)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>45.93%</td>
<td>25.55%</td>
<td>179.77%</td>
</tr>
<tr>
<td></td>
<td>(0.4857)</td>
<td>(0.3648)</td>
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In measuring the technological differences between these two groups, the ratio of R&D expenses to assets for the signing firms is 70% greater than for non-signing firms. This suggests that those who joined the DII were uniquely positioned in their respective industries and produce specialized or distinct products.8

Methodology

The methodology employed to measure the magnitude and timing of security price adjustments to the signing of the DII was the residual analysis technique based upon the market model9. This methodology, introduced by Fama et al. (1969) and later refined by Brown and Warner (1980, 1985), has been widely accepted. Assuming that the market model is a valid representation of the stochastic process which generates returns for security j in time period t, the daily abnormal return. $AB_{jt}$ for each sample firm j on each event day t during the period of interest is estimated as:

$$AB_{jt} = R_{jt} - (a_j + b_j R_{mt}),$$  \hspace{1cm} (1)

where

- $R_{jt}$ = continuously compounded rate of return on the common stock of firm j on event day t;
- $R_{mt}$ = continuously compounded rate return on the value-weighted New York Stock Exchange market portfolio on event day t; and

$a_j$ and $b_j$ are ordinary least square estimates of market model parameters estimated over the 90-day period (95 days before to 6 days before the event date).
Statistical tests on the abnormal returns are based upon the following Z-statistic:

$$Z = \frac{1}{\sqrt{N}} \sum_{j=1}^{N} \left[ \frac{1}{b-a} \sum_{t=a}^{b} AB_{jt} / \sqrt{\text{Var} \left( \sum_{t=a}^{b} AB_{jt} \right)} \right]$$

(2)

where \(a\) is the first day of the study period interval, \(b\) the last day, \(N\) the number of firms in the sample, and the denominator is the square root of the variance of the cumulative abnormal returns of firm \(j\). To adjust for the cross-sectional dependence introduced by the identical event dates of the sample firms in the defense industry, we adopted the variance measure introduced by Mikkelson and Partch (1988). This variance is defined as:

$$\text{Var} \left( \sum_{t=a}^{b} AB_{jt} \right) = S^2_j \left[ T + \frac{T^2}{ED} + \frac{\sum_{t=a}^{b} R_{mt} - T(\bar{R}_m)^2}{\sum_{i=1}^{ED} (R_{mt} - \bar{R}_m)^2} \right]$$

(3)

where \(S^2_j\) is the residual variance of firm \(j\)’s market model regression, \(T\) is the number of days in the interval and equals \(b - a + 1\), \(ED\) is the number of days in the estimation period for the market model, and \(\bar{R}_m\) is the mean market return in the estimation period. The study used a five-day event window of two days prior to and two days after the July 3 event date.

Stock Price Behavior around the Event Day (July 3, 1986)

The July 3, 1986 signing of the DII represented a collective commitment by defense firms to a higher standard of ethics and came at a time when defense contractors faced sharp criticism from the government and taxpayers. As previous studies have suggested (Belkaoui, 1976; Ingram, 1978; Spicer, 1978, Anderson & Frankle, 1980), we posited that the firms who signed the DII should experience favorable stock market performance as a reflection of their formal and public affirmation of exemplary ethical practices. Additionally, these signing firms would be expected to show a more significant positive reaction than non-signing defense contractors.

Contrary to empirical evidence documented in the past, the formation and signing of the DII had a negative impact on both signers and non-signers. The average cumulative abnormal returns (CARs) for both the pre (−2 to 0) and post (+1 to +2) event periods are summarized in Panel A of Table 2. The data were analyzed using both the Z-statistic (in parentheses) as defined by equation (2) and F-values from two sets of dummy regressions. The first set of dummy regressions was designed to test whether there was a difference between the two groups (i.e. signers and non-signers), while the second regression was designed to determine if the CARs before the signing date differed from those after the signing date (i.e. pre- vs. post-event period returns).

As Panel A of Table 2 indicates, for the pre-event period, average CARs are not different from zero for both the 25 sample DII-signing firms and the 39 non-signers in the control group. Notably, CARs in the post-event period are
negative and significantly different from zero for both signers and non-signers. The strong downturn after the event date indicates that the market perceived the DII as bad news not only for the signers but for non-signers as well. Not surprisingly, the difference between abnormal returns during the pre- and post-periods within each group is significant as indicated by the large F-values from the dummy regressions as reported in the bottom of panel A. However, the small F-values (reported in the last column) of the dummy regressions between the two groups indicate an insignificant difference between the market reaction to the signers and the non-signers both in the pre- and post-event periods

The IDF discussed earlier suggests a number of explanations for the observed market reaction. From an economic perspective, the downturn in the non-signers’ portfolio may have been interpreted by the market, as a portent of increased industry-wide regulation (Patten, 1990). On the other hand, it is also conceivable that socially motivated investors inferred that both signers and non-signers had previously exhibited poor social performance. That is, the ethics initiative was perceived by socially conscientious investors as an acknowledgement by the signers of prior unethical practices, and by the non-signers as a continuance of their unethical behavior. The negative reaction by the markets may reflect that investors saw the initiative as a precursor to governmental sanctions, which would in turn reduce the defense industry’s ability to accrue abnormal returns through lucrative DOD contracts.

In order to mitigate the effect of confounding information during the event window, the Wall Street Journal was reviewed to determine if any of the sample firms had contemporaneous news announcements (i.e. disclosing earnings, dividends, lawsuits, mergers and acquisitions). In eliminating firms we applied a more stringent exclusion rule than the one suggested by Foster (1986) by excluding all firms which had any confounding information during
the event window. A total of 20 signers and 28 non-signers survived this test. As summarized in Panel B of Table 2, for both the signers and the non-signers, two important findings remain unaffected: first, abnormal returns drastically decline from the pre- to post-event period; and second, no significant differences in abnormal returns are observed between the sample and control groups during both pre- and post-event periods. One change is noted, however, as the reduced sample firms are examined. Abnormal returns are positive and significant for the signers during the pre-event period. A possible explanation for the positive abnormal returns might be that the market anticipated the signers would receive an explicit commitment from the government, as opposed to the ex ante implicit guarantee which they received. That is, signers would be viewed more favorably in the contract award process than non-signers. Nevertheless, an important point is that the signers failed to enjoy positive CARs after the event day.

Most important of all, the results do not support prior normative and conventional wisdom that the market does favorably react to social responsibility information. Our results are unique in that they differ from previous research findings that socially responsible corporate actions are helpful for shareholders’ wealth.

Long-Run Impact on Stock Price

To evaluate the long-term impact of the DII signing, we measured the market-adjusted returns \( R_{jk} - R_{mk} \) where \( k \) signifies either 6- or 18-month period after the event date. The underlying motivation of investigating long-term performance of the signers and non-signers was to test whether the firms with higher social concern experienced positive long-term performance as the literature suggests or whether they continued to experience negative abnormal returns.

The results summarized in Table 3 indicate that average cumulative market-adjusted return for the 6-month period for signers was not different from zero (−0.01%). However, 18 months later this return was further reduced to −5.66%. In contrast, the non-signers in the control group experienced a 3.39% increase in stock returns within the first 6 months and further experienced an increase of 5.42% over the 18-month period. Apparently, the signers did not exhibit positive long-term performance. The results strongly indicate that corporate behavior which may be perceived as socially responsible does not guarantee positive performance either short- or long-term.

<table>
<thead>
<tr>
<th>Post-event period</th>
<th>Signers ((n = 25))</th>
<th>Non-Signers ((n = 36))</th>
<th>(t)-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-month period ((\text{July 3, 1986} - \text{December 31, 1986}))</td>
<td>−0.01% ((0.1330))</td>
<td>3.39% ((0.1633))</td>
<td>−0.9006</td>
</tr>
<tr>
<td>18-month period</td>
<td>−5.66% ((0.3110))</td>
<td>5.42% ((0.2615))</td>
<td>−1.44 +</td>
</tr>
</tbody>
</table>

Notes: + significant at the 0.10 level. Standard deviations in parentheses.
The Impact of Government Contracts on Abnormal Returns

In an effort to examine the determinants of the change in cumulative abnormal returns, a cross-sectional regression approach was employed. The following regressions highlight whether the change in cumulative abnormal returns from the pre- to post-event periods was a function of: (i) the dollar amount of defense contracts, as measured by two respective ratios of defense contracts to sales and defense contracts to assets; and (ii) the interaction of DII membership and the percentage of defense contracts to sales:

\[
CHANGE_j = a_0 + a_1X_{1j} + a_2(X_{1j}D_j) + e_j \quad (4)
\]

\[
CHANGE_j = b_0 + b_1Y_{1j} + b_2(Y_{1j}D_j) + u_j \quad (5)
\]

where

\(CHANGE_j\) = the difference between the post- and pre-event period cumulative abnormal returns for firm \(j\);

\(X_{1j}\) = the ratio of defense contracts to total assets of firm \(j\);

Table 4. Determinants of the Change in CARs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression Coefficients</th>
<th>Regression Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equation (4)</td>
<td>Equation (5)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.00052</td>
<td>0.00060</td>
</tr>
<tr>
<td></td>
<td>(0.7400)</td>
<td>(0.7057)</td>
</tr>
<tr>
<td>Contract/Assets</td>
<td>0.002612</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(0.5229)</td>
<td></td>
</tr>
<tr>
<td>Contract/Sales</td>
<td>—</td>
<td>0.00371</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.6310)</td>
</tr>
<tr>
<td>Interaction [(Contract/Assets) × Dummy]</td>
<td>−0.007768</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(0.0961)</td>
<td></td>
</tr>
<tr>
<td>Interaction [(Contract/Sales) × Dummy]</td>
<td>—</td>
<td>−0.01308</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0833)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>5.37%</td>
<td>5.45%</td>
</tr>
<tr>
<td>(F)-value</td>
<td>0.159</td>
<td>0.086</td>
</tr>
<tr>
<td></td>
<td>(0.8532)</td>
<td>(0.9179)</td>
</tr>
</tbody>
</table>

Panel B (Reduced Sample):

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression Coefficients</th>
<th>Regression Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equation (4)</td>
<td>Equation (5)</td>
</tr>
<tr>
<td>Intercept</td>
<td>−0.0091</td>
<td>−0.00993</td>
</tr>
<tr>
<td></td>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Contract/Assets</td>
<td>0.00604</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(0.5229)</td>
<td></td>
</tr>
<tr>
<td>Contract/Sales</td>
<td>—</td>
<td>0.00943</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.1820)</td>
</tr>
<tr>
<td>Interaction [(Contract/Assets) × Dummy]</td>
<td>−0.00942</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(0.0533)</td>
<td></td>
</tr>
<tr>
<td>Interaction [(Contract/Sales) × Dummy]</td>
<td>—</td>
<td>−0.01533</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0526)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>8.37%</td>
<td>7.97%</td>
</tr>
<tr>
<td>(F)-value</td>
<td>0.9820</td>
<td>0.4670</td>
</tr>
<tr>
<td></td>
<td>(0.4276)</td>
<td>(0.7245)</td>
</tr>
</tbody>
</table>

Notes: Figures in parentheses represent \(P\)-values. * Significant at the 0.10 level.
Table 5. Correlation Between Contract Size and Abnormal Returns

<table>
<thead>
<tr>
<th></th>
<th>Abnormal Return</th>
<th>Sales/Contract</th>
<th>Assets/Contract</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Firms:</strong></td>
<td>1.00</td>
<td>0.0234</td>
<td>0.0589</td>
</tr>
<tr>
<td></td>
<td>(0.0000)</td>
<td>(0.8543)</td>
<td>(0.6441)</td>
</tr>
<tr>
<td>Abnormal return</td>
<td>0.0234</td>
<td>1.00</td>
<td>0.9503</td>
</tr>
<tr>
<td></td>
<td>(0.8543)</td>
<td>(0.0000)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Sales/Contract</td>
<td>0.0589</td>
<td>0.9503</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>(0.6441)</td>
<td>(0.0001)</td>
<td>(0.0000)</td>
</tr>
<tr>
<td><strong>DII Firms:</strong></td>
<td>1.00</td>
<td>0.0136</td>
<td>0.0365</td>
</tr>
<tr>
<td></td>
<td>(0.0000)</td>
<td>(0.9347)</td>
<td>(0.8253)</td>
</tr>
<tr>
<td>Abnormal return</td>
<td>0.0136</td>
<td>1.00</td>
<td>0.9321</td>
</tr>
<tr>
<td></td>
<td>(0.9347)</td>
<td>(0.0000)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Sales/Contract</td>
<td>0.0365</td>
<td>0.9321</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>(0.8253)</td>
<td>(0.0001)</td>
<td>(0.0000)</td>
</tr>
<tr>
<td><strong>Non DII Firms:</strong></td>
<td>1.00</td>
<td>0.1071</td>
<td>0.1673</td>
</tr>
<tr>
<td></td>
<td>(0.0000)</td>
<td>(0.6105)</td>
<td>(0.4239)</td>
</tr>
<tr>
<td>Abnormal return</td>
<td>0.1071</td>
<td>1.00</td>
<td>0.9760</td>
</tr>
<tr>
<td></td>
<td>(0.6105)</td>
<td>(0.0000)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Sales/Contract</td>
<td>0.1673</td>
<td>0.9760</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>(0.4239)</td>
<td>(0.0001)</td>
<td>(0.0000)</td>
</tr>
</tbody>
</table>

Note: P-value in parentheses.

\[ Y_{ij} = \text{the ratio of defense contracts to net sales of firm } j; \]
\[ D_{ij} = 1 \text{ for DII firms and 0 for non-DII firms; and} \]
\[ e_{ij} \text{ and } u_{ij} = \text{random error terms.} \]

The results summarized in Table 4 reveal that estimated coefficients of the interaction variable (between the DII membership and the size of defense contract) are negative. This is noteworthy since it indicates that the combination of large government contracts and DII membership caused abnormal returns to drop. Although the magnitude of defense contracts shows a positive effect on the change in CARs (not significant), it is dominated by the negative impact of the interaction variable. These results are consistent with the earlier observations of significant decline in CARs for the DII-signers\(^12\).

**Conclusion and Discussion**

In the wake of the Packard Commission’s findings, 32 major defense contractors signed the DII to stem growing criticism of industry practices. The purpose of this agreement was to formally and publicly commit their organizations to high standards of ethical conduct. This research study sought to utilize an investor decision framework to measure the stock market’s reaction to this ethical initiative. *A priori*, we believed that the DII firms would experience a favorable movement in their stock prices. However, our results indicate that the market reacted negatively to both the signers and non-signers of this initiative. In addition, we found that there was a significant difference between the negative abnormal returns of the signers and those of the non-signers with the negative effect being greater for the former. Consistent with the IDF framework set forth in Figure 1, our results indicate
that the market perceived the establishment of the DII as either a form of regulation (i.e. as a precursor to governmental regulation) or as a form of punishment by socially conscious investors. However, it is also possible that the market might have interpreted the formation of this initiative as an acknowledgement by the signers of unethical defense industry practices, and that more vigilant oversight would henceforth reduce the opportunity for defense firms to earn abnormal profits from unethical activities. Chomsky (1979, 1982) and other critical observers of the defense appropriation system may view these results as a confirmation of their economic motive theories. Specifically, they believe that the prominent driver of defense policy is economic survival of private contractors and to a lesser extent national security. In other words, the actions of prominent firms to formally correct unethical industry practices and establish public accountability for unscrupulous behavior is perceived by the marketplace as an impediment not only for the signing firms but for the industry as a whole to generate abnormal cash flows from unethical acts.

In conclusion, the findings suggest that the market prices of firms which signed the DII were negatively affected due to their affiliation with this organization, which in turn raises an interesting question. In a culture where ethics is sometimes viewed as the quintessential characteristic of organizational behavior will firms now be less likely to publicly ascribe to an ethical initiative?

Acknowledgements

We are indebted to Tony Tinker and three anonymous referees for their constructive comments and suggestions. We are also grateful to Richard Vangermeersch, Marshall Geiger, and Jeff Power for their valuable inputs.

Notes

1. A 1992 Accounting Review forum on accounting for defense contracts examined the unique and questionable pricing practices of these firms. In particular, Rogerson (1992) theoretically demonstrated how the regulatory process creates incentives for contractors to shift their commercial overhead costs to defense-related activities. For defense contractors with non-defense business, Thomas and Tung (1992) empirically noted an overfunding of pension plans where costs were shifted to the government for employees who worked on defense contracts. Reichelstein (1992) highlighted substantive doubts concerning the resultant incentives derived from the conventional types of government contracts. These articles, complemented by further perspectives on the defense contracting industry (Demske & Magee 1992; Lichtenberg, 1991) highlight further the unfavorable perception of defense industry practices and their ability to accrue abnormal profits.

2. The build up of the military arsenal during the 1980s has been associated with Cold War fears of the American public, coupled with growing concerns for national security, individual freedom and democracy throughout the world. However, Noam Chomsky and other observers of the defense proliferation of the past decade offer an alternative set of explanations (Chomsky, 1979, 1981, 1982; Salkie, 1980).

"That the Soviet government is a major threat to anyone within the reach of power—including its own citizens—is hardly debatable. But this reach is far more restricted than Western ideologists have alleged over the years. The historical record is quite plain: The Soviet threat has been manipulated over and over again, to justify the exercise of U.S. force against threats to U.S. dominance that are indigenous.” (Chomsky, 1982, p. 4).
In *Turning the Tide: US Intervention in Central America and the Struggle for Peace*, Chomsky (1979, p. 208) argues that economic reasons, not national security, fuel the development of new weapons systems.

“In a modern industrial society, there is one primary idea as to how to deal with (economic crisis); state intervention to stimulate the economy... For a variety of reasons, the device that best serves the needs of existing power and privilege is what is sometimes called ‘military Keynesianism’: the creation of a state-guaranteed market for high technology rapidly-obsolescing waste production, meaning armaments.”

Reagan’s foreign policy, Chomsky (1981, p. 292) believes, was linked to this economic strategy. In particular, his foreign program was embodied in his dual structured domestic program, “first, transfer of resources from the poor to the rich by reducing welfare, fiscal measures, etc. and second, a vast increase in the state sector of the economy.”

In a critique of Chomsky’s work, Coker (1987) discusses the reluctance of intellectuals to engage in independent, rigorous analysis of American foreign and military policy and the deterioration of its moral status internationally. As intellectuals are more fully absorbed into the center of power, they lose their objectivity and thus their ability to reveal the breakdown in core cultural morality. “The American academic community,” he cites, “challenged the use of military force in Vietnam without challenging American’s right to intervene in the first place.” (p. 272)

3. The writers of the DII drew primarily from the work of Reverend Leon H. Sullivan who, in 1977, spearheaded the formulation of the “Statement of Principles for South Africa.” These principles, which became known as the Sullivan Principles, established a set of moral and ethical standards to guide organizations that do business in South Africa. See Patten (1990).

4. This presumes that the benefits derived from the information exceed the cost of the information.

5. From a survey of 115 institutional investors, Longstreth and Rosenbloom (1973), reported that 57% of the respondents considered social issues in the selection and retention of investments, with 43% reviewing the social aspects of their investment policies when they make an investment. In a sample of 102 mutual fund presidents, Busby and Falk (1978) concluded that a significant number of their funds considered social issues in investment decisions including organizational involvement in improper or illegal practices, pollution control, and the sale of potentially hazardous products. Belkaoui (1980) conducted a field experiment to measure the impact of social-economic accounting statements on investment decisions. Overall, he found that the accounting treatment of pollution control information influenced the investment decisions of the participants.

6. Research on information asymmetry continues to utilize a blend of theory (e.g. deMeza & Webb, 1990; Baiman & Sivaramakrishnan, 1991, Harris & Raviv, 1991; Oliver & Verrecchia 1991; Cremer & Fahad, 1992; Korajczyk, Lucas & McDonald, 1992 and/or empirical data (e.g. Dierkens, 1991; Menon & Williams, 1991), the context of government contracting (e.g. within Laffont & Tirole, 1992; Baron & Besanko, 1988). However, no research has sought to apply information asymmetry theory to describe, explain and predict the role of social responsibility within capital market behavior(s).

7. In creating the control group, the non-signers were not matched by firm size and industry because the initial DOD list of 100 firms included all major firms in the defense industry. Thus, we opted to use the natural grouping of signers and non-signers among the DOD listed firms. Matching by firm size became unnecessary because the two groups did not differ in their firm size as measured by total assets.

8. Titman (1984) demonstrates that uniqueness of a firm is expected to be negatively related to its debt ratio due to the high liquidation costs associated with unique products. The results of our study found that the correlation between R&D expenses to assets (i.e. uniqueness) and total debt to equity is negatively correlated.

9. We also examined mean adjusted returns and market adjusted returns. The results are not significantly different from what is reported in the paper. In addition, we used Scholes and William’s (1977) and Dimson’s (1979) beta estimates to account for the problem of non-synchronous data. The results obtained using these procedures also did not change the overall conclusions of the paper.

10. Following an anonymous referee’s suggestion, we identified two possible event dates: February 28, 1986 and June 18, 1986. On February 28, the Packard Commission issued its first of two reports and on June 18, top management executives from 18 large defense contractors met to draft and finalize six principles of ethics. Very little market reaction was shown to these two events.

11. We would like to thank an anonymous referee for forcing us to examine this issue.
12. Rank correlations between the change in CARs and the magnitude of defense contracts relative to total assets are positive 0.0589 for the whole sample, 0.0365 for DII firms, and 0.1673 for Non-DII firms. Similar pattern of rank correlations are observed for the change in CARs and the defense contracts deflated by net sales.

REFERENCES


Stock market reaction to ethical initiatives of defense contractors

559


Friedman, M., Capitalism and freedom (Chicago, IL: University of Chicago Press, 1962).


E. J. Boyle et al.


Appendix 1: Original Signers of DII

1. AT&T Company
2. Aeronca Incorporated
3. Allied-Signal Incorporated
4. The Boeing Company
5. Burroughs Corporation*
6. E-Systems Incorporated
7. Eaton Corporation
8. FMC Corporation
9. Ford Corporation
10. General Dynamics Corporation
11. General Electric Company
12. Goodyear Corporation
13. Grumman Corporation
14. Hercules Incorporated
15. Hewlett-Packard Company
16. Honeywell Incorporated
17. Hughes Aircraft company*
18. IBM Corporation
19. Lockheed Corporation
20. Martin Marietta Corporation
21. McDonnell Douglas Corporation
22. Northrop Corporation
23. Parker Hannifan Corporation
24. Pneumo Abex Corporation
25. Raytheon Company
26. Rockwell International
27. The Singer Company
28. Sperry Corporation*
29. TRW Incorporated
30. Textron Incorporated
31. United Technologies
32. Westinghouse Electric

Notes:
* Burroughs and Sperry merged to form Unisys.
* The Hughes Corporation subsequently merged with General Motors Corporation.

Appendix 2: Defense Industries Initiatives on Business Ethics and Conduct

1. Each company will have and adhere to a written code of business ethics and conduct.
2. The company’s code establishes the high values expected of its employees and the standard by which they must judge their own conduct and that of their organization; each company will train its employees concerning their personal responsibilities under the code.
3. Each company will create a free and open atmosphere that allows and encourages employees to report violations of its code to the company without fear of retribution for such reporting.
4. Each company has the obligation to self-govern by monitoring compliance with federal procurement laws and adopting procedures for voluntary disclosure of violations of federal procurement laws and corrective actions taken.
5. Each company has a responsibility to each of the other companies in the industry to live by standards of conduct that preserve the integrity of the defense industry.
6. Each company must have public accountability for its commitment to these principles.

Appendix 3: List of DII-Signing and Non-Signing Firms

DII-signing firms
1. AT&T Company
2. Allied-Signal Incorporated
3. The Boeing Company
4. E-Systems Incorporated
5. Eaton Corporation
6. Ford Corporation
7. General Dynamics Corporation
8. General Electric Company
9. Goodyear Corporation
10. Grumman Corporation
11. Hercules Incorporated
12. Hewlett-Packard Company
13. Honeywell Incorporated
14. IBM Corporation
15. Lockheed Corporation
16. Martin Marietta Corporation
17. McDonnell Douglas Corporation
18. Northrop Corporation
19. Raytheon Company
20. Rockwell International
21. TRW Incorporated
22. Textron Incorporated
23. Unisys Corporation
24. United Technologies
25. Westinghouse Electric

Non-signing firms
1. Amerada Hess
2. Amoco
3. Ashland Oil
4. Atlantic Richfield
5. Brunswick Corporation
6. Chevron
7. Chrysler Corporation
8. Coastal Corporation
9. Computer Science Corporation
10. Control Data Corporation
11. Digital Equipment Corporation
12. Electrospace Systems
13. Eastman Kodak
14. Emerson Electric
15. Exxon Corporation
16. GTE Corporation
17. Gates Learjet Corporation
18. General Motors
19. General Motors
20. Gould Inc.
21. Harsco
22. Harris Corporation
23. Holly Corp.
24. ITT Corporation
25. Litton Industries
26. Mobil Oil
27. Morrison Knudson Corporation
28. Motorola Inc.
29. Olin Corporation
30. Penn Central Corporation
31. Sundstrand Corporation
32. Teledyne Inc.
33. Tenneco Inc.
34. Texaco Inc.
35. Texas Instruments
36. Todd Shipyards
37. Transamerica
38. United Industrial Corporation
39. Zenith Electric Corporation