



***CORPORATE SOCIAL RESPONSIBILITY:
A CROSS SECTIONAL EXAMINATION OF INCENTIVIZATION***

THESIS

Jennifer A. Block, B.S.
First Lieutenant, USAF

AFIT/GCM/LAS/95S-3

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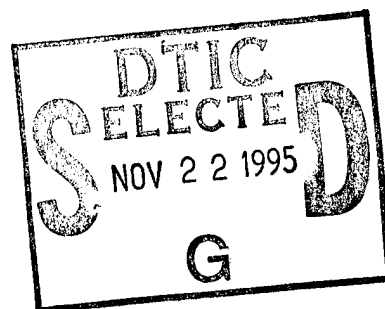
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and Acquisition Management of the Air Force Institute of Technology
Air University
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Master of Science in Logistics Management

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Abstract

This study examined corporate social responsibility and the most effective ways to incentivize environmentally proactive behavior among federal production contractors. The goal was to isolate factors which have the greatest potential for encouraging corporate environmental responsibility and to use the knowledge gained to construct incentives which can be incorporated into federal contracts. Relying on the concepts developed in organizational theory, four theories were presented to provide support that organizational behavior can be influenced. Previous incentive techniques used by the government were also investigated. From the initial research, a model was developed to describe the relationship between incentives and environmental responsibility. Personal interviews with individuals involved in the acquisition process and review of various contract documents were conducted. An informal interview guide was used to interview government contracting officers, environmental engineers, and contractors associated with two System Project Offices. Interviews with high level policy makers were also conducted. Analysis of the data suggest that incentives do work; however, based on the theories of Transaction Cost Economics, policy incentives appear to be more effective than contract incentives at producing the kind of organizational environmental awareness the government is looking for from its contractors.

**CORPORATE SOCIAL RESPONSIBILITY:
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I. Introduction

Statement of Purpose

Basin F, a phosphorescent toxic lake located on the outskirts of Denver, Colorado, is a 100-acre basin of toxic sludge. This man-made disaster contains some of the most deadly known chemicals. Basin F was hidden within the confines of Denver's Rocky Mountain Arsenal, a US. Army installation that covers over 17,000 acres. Originally, Basin F housed a large factory complex. From World War II through the Vietnam era, the buildings were the major site for US. Army production of chemical weapons. Next to the boarded up condemned complex was the facility's dumping grounds. The grounds were black and burnt with visible evidence of wells where millions of gallons of waste had been injected into the ground. Basin F was 93 acres of deadly aquamarine sludge possessing toxic chemicals which threatened the health of many thousands of Denver's citizens. The Rocky Mountain Arsenal is a tragic symbol of the nation's military toxic waste problem (Shulman, 1992). Who is responsible for such a deadly destructive feat?

On June 1, 1992, a federal judge imposed the largest fine ever imposed in a hazardous waste case against Rockwell International Corporation. Rockwell was ordered to pay a fine of \$18.5 million dollar for its part in the problem at the Rocky Mountain nuclear weapons plant. Rockwell was convicted of four felony violations of the Resource Conservation and Recovery Act (RCRA) and six violations of the Clean Water Act (CWA). They were also charged with illegally storing and discharging hazardous waste

and negligently failing to prevent or minimize the release of toxic and hazardous waste substances. ("Restoring America")

An information memorandum released from SAF/AQC in January of 1994 states the Federal government is determined to promote and encourage sound environmental practices. This will include all acquisitions of products and services. Incentivizing contractor environmental performance and affirmative procurement programs is now a stated objective of the Department of the Air Force (SAF/AQC, 1994). Current acquisition guidelines encourage incentivizing contractor environmental performance through several administrative procedures. Such procedures include, an evaluation of the contractor's past record of complying with federal, state, and local environmental regulations, encouraging contractors to incorporate recycled material when possible and ensuring the purchase description specifies environmental characteristics as part of the requirement.

Along with a new commitment to be environmentally aware, the government has promised to be efficient and effective in all of its Federal programs. The Government Performance and Results Act of 1993 (GPRA) was developed to ensure both efficient and effective programs were obtained by establishing a system that set goals for program performance and was capable of measuring the results. These two programs suggest that government seek contractors that are both socially responsible and cost efficient. Government contracting personnel are now charged with the responsibility of developing a method to ensure both environmental safety and efficiency. Determining where to start is the major problem facing all of the DOD.

The most logical place to start is to clean-up all of DoD's past mistakes. Unfortunately, the Rocky Mountain Arsenal, mentioned earlier, is not an isolated incident. There are hundreds of examples where the Government has attempted to contract out an acquisition or service and the contractor has only made the problem worse. A hazardous

waste transporter and the owner of an oil spill clean up firm were fined \$3.88 million dollars in penalties and damages for not cleaning up a New Jersey superfund site as directed by the EPA. The Dexter Corporation, a paper manufacturing company, was found guilty of CWA violations for its National Pollution Discharge Elimination System and other RCRA violations. The company was forced to pay \$7.2 million dollars for the penalties and an additional \$4 million dollars for criminal violations. The DoD faces similar problems at most of its installations (Shulman, 1992). For instance, McClellan Air Force Base, which once served as major point of departure for Air Force personnel and the only depot on the West Coast, is now an environmental problem. More importantly, the Air Force is not the only service that suffers from environmental problems; the Army and the Navy share similar problems. Army Posts and ammunition plants, such as the one in Grand Island, Nebraska, are now known to be seeping toxic chemicals. The Navy estimates that the workers at Lakehurst Naval Air Engineering Center in New Jersey have dumped more than 3 billion gallons of cancer-causing aviation fuel and other deadly substances (Shulman 1992).

There are over 15,000 waste sites at approximately 1,800 military installations. It is estimated to take over 20 years and in excess of \$25 billion dollars to cleanup these sites. (This does not include future environmental contracts required under the DOD Base Realignment and Closure Programs) (Shulman, 1992). As the Government of the United States prepares to enter the 21st century, it will face many environmental challenges. With more regulatory controls and advances in cleanup technologies, new and creative contracting techniques must be adapted to avoid situations like Basin F. Can these environmental disasters be avoided? Is it possible to significantly reduce future environmental hazards by using contractual incentives as means of encouraging corporate social responsibility?

Summary

As the federal budget shrinks and it becomes more difficult to find the revenues needed to "clean-up" past mistakes, the need to find a "proactive" response which encourages corporate environmental responsibility becomes critical. There have been volumes written identifying the problem. Unfortunately, there has been almost nothing written on how to avoid the problem. This study is intended to help correct this oversight.

This study has two goals. First, it hopes to isolate those factors which have the greatest potential for encouraging corporate environmental responsibility in defense contractors. Second, it hopes to use the knowledge gained on "proactive" responsibility factors to construct a set of contract incentives which can be incorporated into federal contracts. If successful, this study can be used as a model for further research on corporate environmental responsibility. The implications for both Government acquisition and commercial business are significant. Not only could Government officials use the model as a means of implementing environmental policy, it could use it as a mechanism for encouraging any corporate behavior that it deems to be in the public's best interest.

In Chapter II, we look at four different theories to see how organizational behavior can be affected or influenced. Then we will look at ways the government has been successful in incentivizing contractor behavior. Drawing from these two sections, we develop a model that establishes the relationship between incentives and environmental responsibility.

Chapter III introduces and explains the methodology we used. Since this is a new topic without any prior formal research, we performed an exploratory case study method. All of our research was obtained from personal interviews from knowledgeable people in the field of acquisitions and from document reviews from the two System Project Offices we included in our population. We interviewed thirteen people, all participants in the

acquisition process, and found many similar themes throughout the interviews. The majority of the interviewees felt that in general incentives do work, but they have not been effectively applied to solve environmental issues. Their thoughts and ideas are reported in Chapter IV along with what was found in the document review.

Chapter V, explains what the data means to our research and future research. We tie the results of the data back to the model we introduced in Chapter II and suggest why we think incentives can work to encourage social responsibility. We will also introduce a revamped version of our original model that illustrates policy incentives are more effective than contract incentives. With the discovery that policy incentives are more effective at influencing contractor's behavior than contract incentives, we introduce new programs that might be more effective in incentivizing corporate social responsibility and areas for future research.

II. Theoretical Development and Propositions

Chapter Overview

This chapter is designed to develop a theoretical foundation for the concept of corporate environmental responsibility. Borrowing from concepts developed in organizational theory on corporate social responsibility, this study maintains that organizational behavior can be influenced by external forces. Further, the study argues that environmental conscience can be raised and maintained by using a combination of policy and contractual incentives. To support these general propositions, the chapter will begin with a review of the relevant organizational theory on corporate social responsibility. Next, it will review the literature on incentivizing contractor performance. Finally, it will conclude by presenting a series of propositions that it will use as the bases of its investigation. In Chapter 3, there will be specific discussion of what methods will be used to test the propositions developed at the end of this chapter.

Affecting Corporate Social Responsibility: A Theoretical Perspective

Before we can have any meaningful discussion on incentivizing environmental responsibility, we must first understand how to affect organizational behavior. Many theories suggest that organizational behavior can be affected (Cochran and Wood, 1984). This study will focus on four theories which address organizational behavior: Corporate Social Responsibility (CSR), Expense Preference Approach (EPA), Resource Dependency Theory (RDT), and Transaction Cost Economics (TCE). These theories help to explain how organizations can be influenced to encourage some type of desired behavior.

Corporate Social Responsibility. The theory of Corporate Social Responsibility suggests that there is a relationship between financial performance and social responsiveness. For instance, if social responsibility tends to have a negative affect on

financial performance, then social responsibility is considered to be negatively correlated with the financial performance of the firm. On the other hand, if a positive relationship can be established, then corporate managers might be encouraged to pursue these socially responsible acts with new dedication. Once this relationship is established, then the question of causation may be addressed (Cochran and Wood, 1984).

Defining social responsibility is almost impossible because no two organizations agree on what constitutes social responsibility. Making matters worse, every corporation measures financial performance differently. Consequently, it has been difficult for researchers to establish a correlation between corporate social responsibility and financial performance. To date, the most accepted means of evaluating a firm's social responsibility and responsiveness has been to use content analysis and reputation indices.

Developing meaningful content analyses and reputation indices depends to some degree on how one measures financial performance. While the specific methods of measuring financial performance may vary, most researchers rely on either investor returns or accounting returns to determine the quality of their firm's responsiveness. Basically, investor returns are measured from the perspective of the shareholders. This can be accomplished by monitoring the price per share, evaluating change in price plus dividends, and tracking the risk of holding the assets against the covariance of the expected return on the asset. Regardless of what method is used, none are completely adequate for measuring investor returns, but they give researchers a starting point from which to make comparisons.

The other primary method of measuring firm performance is to use the firm's internal accounting data. The purpose of using accounting returns is to focus on how a firm's earnings react to different managerial policies. Earnings per share (EPS) and price/earnings (P/E) ratios are the most common measures. The major problems associated with both of these methods is they are influenced by the rate and accounting

practices of the firm. Also it is difficult to accurately compare financial performance without considering financial leverage factors and risk differences (Cochran and Wood, 1984). Excluding these problems, it is possible to evaluate internal environmental policies and the relationship they have with the accounting data.

Even though the two major categories used to measure social responsibility (reputation indexes and content analyses) are not completely adequate, some variations are better than others. For instance, the combined Moskowitz list is the most extensive reputation index available and is used in the majority of studies. It also avoids another mentioned problem, inadequate sample size, because its study compares two time periods over five years.

The basic methods stated above has produced a variety of opposing results. Herremans, Akathaporn, and McInnes (1993) strive to answer the question of a relationship between corporate social responsibility and economic performance. They state "large US. manufacturing companies with better reputations for social responsibility outperformed companies with poorer reputations during the six-year period 1982-1987, and provided investors better stock market returns and lower risk" (1993: 587) In order to avoid pitfalls of past research, they concentrate on how to measure corporate social responsibility in three areas: reputation and accounting profitability, reputation and company risk, and reputation and stock market performance. They hypothesized the following:

H1. Companies' reputations for corporate social responsibility and their performance, as reflected by accounting measures of profitability, are expected to be positively associated.

H2. Companies' reputations for corporate social responsibility and their total risk are expected to be negatively associated.

H3. Companies' reputations for corporate social responsibility and their risk-adjusted stock market returns are expected to be positively associated. (1993: 589-590)

Herremans, Akathaporn, and McInnes' empirical research suggests that there is a positive relationship between corporate social responsibility and accounting measures of performance (1993).

Recall the major problems of CSR. Davidson and Worrell (1991: 8) state the primary flaws with the theory are:

1. the use of questionable indexes of social responsibility
2. inadequate sampling techniques, and
3. poor measures of financial performance

Because of all the uncertainty involved with CSR and the lack of consistency, this is not the most effective tool for government contacting personnel. The world of federal contracting is so large and diverse, a broader more generic theory is needed.

Expense Preference Approach. As previously mentioned, not all studies agree there is a positive correlation between social responsibility and performance. Another approach that can be used to understand incentivizing social responsibility is Williamson's (1964) Expense Preference Approach. This model explains the tradeoff between profit and social responsibility and three ways in which greater social responsibility can be achieved. The only assumptions the model makes are the rather obvious ones that executives view profit as a desirable outcome and executives have different tastes concerning certain amenities which lead to various levels of profit (1994).

The model deals with two main components: 1) executives are willing to forego profit for a certain amenity; and, 2) the effect of the amenity has on profit (O'Hare and Wood, 1994). Using this model, the executive can determine the optimal amount of money to spend on the amenity item, Williamson, adapted the same model to reflect the amount of money that should be spent on socially responsible acts. Therefore, a

relationship can be formed between forgoing profit and money spent on socially responsible acts.

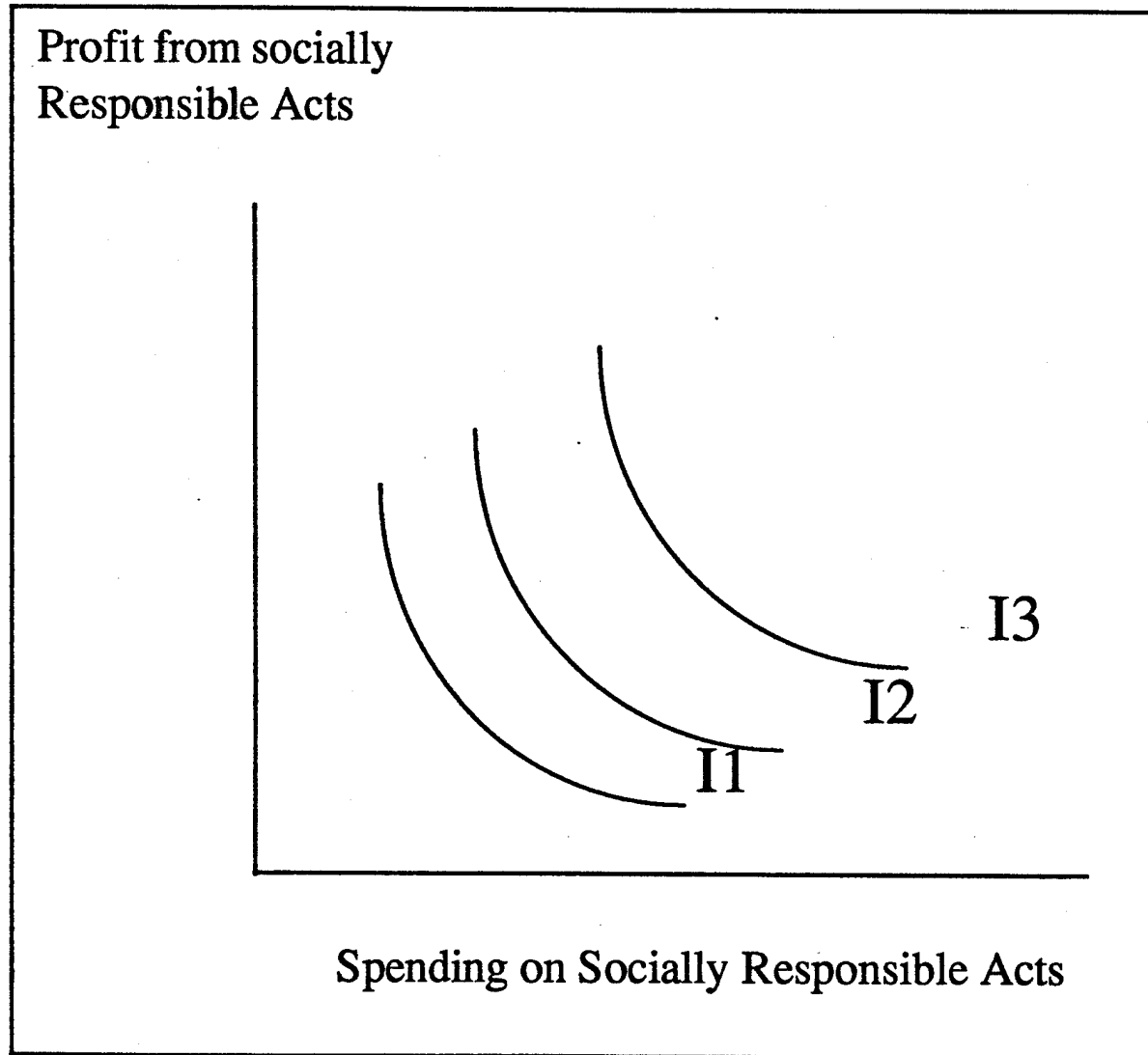


Figure 2-1. Executive's Preferences

Executive preferences are denoted by the dish-shaped curves seen in Figure 1. Each curve represents a set of equally valued possibilities (known in economics as a standard indifference curve). The negative slope explains a willingness to reduce profit in

order to obtain socially responsible acts. Also the fact that the curve reaches an asymptote (i.e. the curve becomes flat) shows that the executive has a limited amount of profit they are willing to give up. At the flat portion of the curve, the executive begins to fear giving up too much profit, thereby upsetting the shareholders and financial markets (O'Hare and Wood, 1994).

Ideally, the executive would like the firm to experience increasing profit and higher levels of social responsibility. Curve I-2 shows higher levels of profit and more social responsibility and is more desirable than I-1 (see Figure 2-1). Even the higher curve has a tradeoff between profit and social responsibility. Each of the executives would have their own preference curve representing their own personal willingness to forgo a certain amount of profit.

The relationship between profit in accordance with social responsibility and the level of spending on social responsibility is illustrated in Figure 2-2. The concave curve created is known as the "profit hill." This shows how profit first increases with an increase of social responsibility. The highest profit is obtained by Point A, the curve to the right of this point symbolizes increased social responsibility at a price that reduces profit. In other words, the cost of the socially responsible acts outweighs the amount of profit they generate for the firm. Executives who enjoy performing socially responsible acts would prefer to be at Point B, and give up a little profit in exchange for greater socially responsible acts.

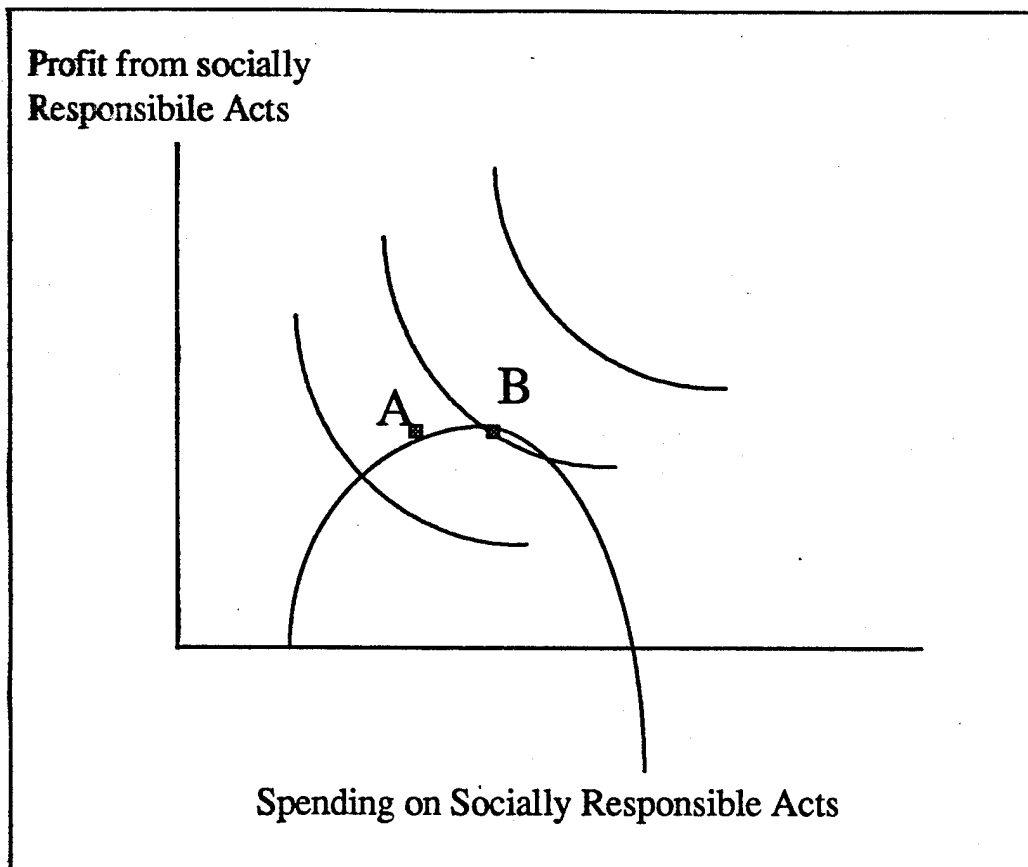


Figure 2-2. The "Profit Hill" And Executive's Preferences

The next two figures, Figures 2-3 and 2-4, apply to the Expense Preference model and illustrate three ways of promoting socially responsible acts. Changes in managerial behavior, consumer demand, or corporate tax policy can all lead to increased spending on socially responsible acts (O'Hare and Wood, 1994).

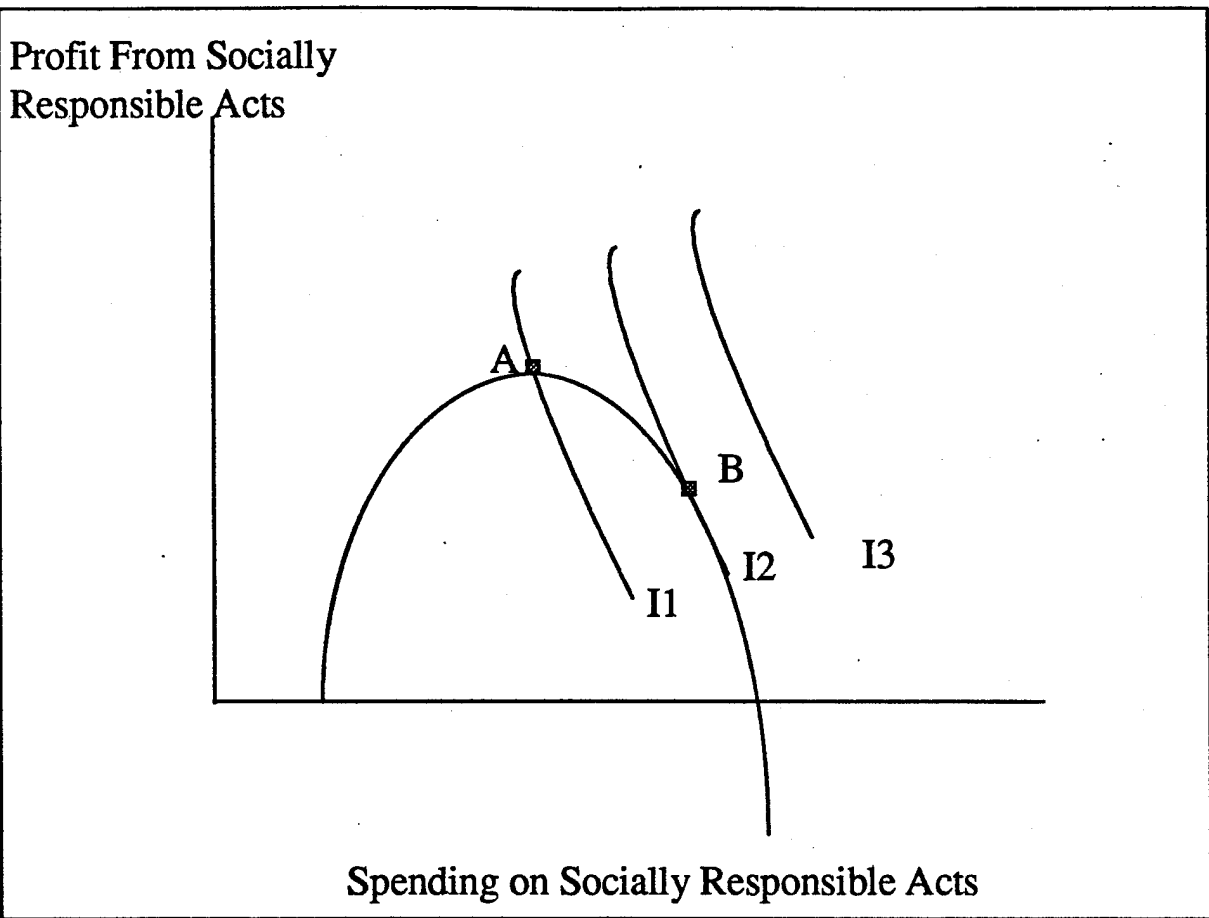


Figure 2-3. Increased Preference For Socially Responsible Acts

The first way to promote social responsibility is to educate management. It is important to educate managers about business ethics. In regards to the expense preference model, the education makes the executive's preference curves steeper as opposed to altering the profit hill. As the curve becomes steeper, a greater desire for social responsibility is seen. For the approach to be successful, the executive will decide to move from Point A to Point B, as seen in Figure 2-3. This movement will encourage the executives to spend more on socially responsible acts (O'Hare and Wood, 1994).

Second, the more consumers reward firms for being socially responsible by purchasing their products over the products of firms who do not value social responsibility, the more the profit hill will shift upward and to the right. Therefore, all the

levels of social responsibility will be more profitable and some level of social responsibility that were previously unacceptable will be acceptable at the new higher profit level. This is depicted in Figure 2-4 where the profit hill to the right is a result of higher consumer valuation of socially responsible acts. With the new hill, the executive concerned about losing profit is able to chose Point B' at a higher level of social responsible spending and still have higher profits than the previous Point A (O'Hare and Wood, 1994).

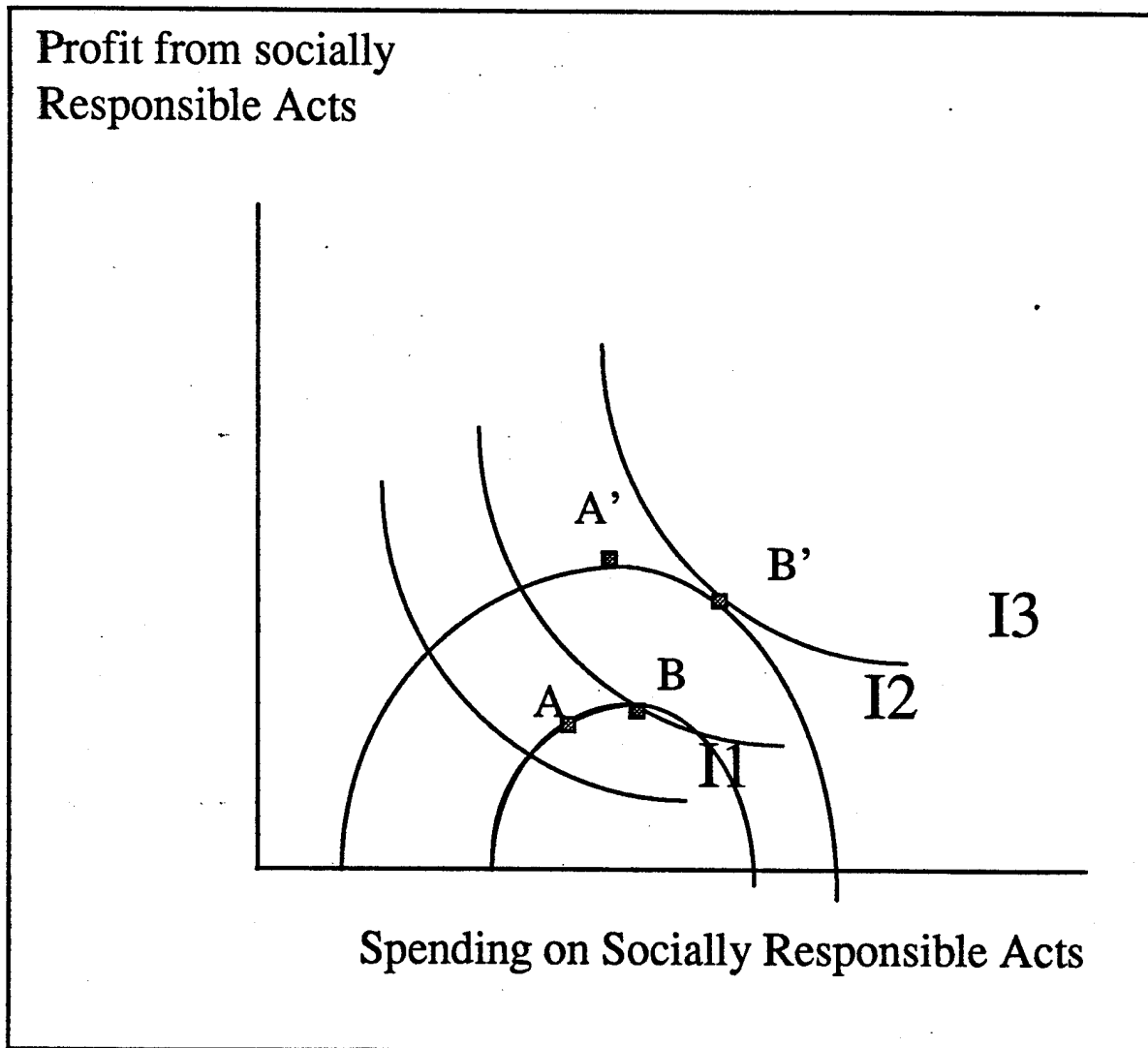


Figure 2-4. Increased Customer Preference For S.R. Acts

The final way to promote socially responsible acts is to institute a corporate tax policy. A new tax policy can influence the profit hill in the same way the consumer's action did. For instance, expenditures on certain socially responsible acts could be tax-deductible, increasing the profit associated with the act similar to what is seen in Figure 2-4. This method would ensure more socially responsible acts, regardless of how the executive personally felt about particular amenities. A purely profit-maximizing executive would move to Point A' and an executive also concerned with social welfare would move even farther to Point B' (O'Hare and Wood, 1994).

This theory improves on CSR because it demonstrates that regardless of a positive or negative correlation, there are ways to incentives corporations to be more socially responsible. However, such suggestions as educating corporate management and controlling consumer preference to promote social responsibility are not easily achieved through either policies or contract incentives. Consequently, we have to continue to look for a way to understand organizational incentives, but within the context of federal limitations.

Resource Dependency Theory. Resource Dependency Theory (RDT) explores the way organizational environments affect and constrain organizations and then in turn how the organization responds to the external constraint. There are three main concepts to discuss that outline the meaning of RDT. They can be explained as the effectiveness of the organization, the environment in which the organization is living, and the constraints that are placed upon the organization (Pfeffer and Salancik, 1978).

The first concept is organizational effectiveness. Do not confuse organizational effectiveness with organizational efficiency. "The effectiveness of an organization is its ability to create acceptable outcomes and actions. . . . Organizational effectiveness is an external standard of how well an organization is meeting the demands of the various groups and organizations that are concerned with its activities" (Pfeffer and Salancik,

1978: 11). Pfeffer and Salancik, also maintain that "organizational efficiency is an internal standard of performance" (1978: 11). Organizational efficiency is not concerned with whether a task is done or not, but only with how well it is being done. "Efficiency is measured by the ratio of resources utilized to output produced. Efficiency is relatively value free and independent of the particular criteria used to evaluate input and output" (Pfeffer and Salancik, 1978: 11). This pertains to improving upon what the organization is already doing. The desire to improve efficiency is usually generated from internal pressures brought upon by an external factor. Organizations survive only to the extent that they are effective (Hannan and Freeman, 1977). Even when an organization produces a high quality product (i.e. are highly efficient), if they are unable to meet their customer's demands (poor effectiveness), they will not survive for very long. Therefore, the key to organizational survival is its ability to acquire and maintain resources (Maitland and DeFillippi, 1986). This is easy if organizations are in control of all of their resources necessary for their operation. However, no organization is completely self-contained as addressed by the second concept.

"Organizations are inescapably bound up with the conditions of their environment" (Pfeffer and Salancik, 1978). To completely understand the behavior of an organization, the environment in which it is contained must also be understood. In order for an organization to maintain within its environment, organization must 1) have the ability to learn from its environment; 2) know how to reacts to its environment; and 3) know how to digests the information it receives from the environment (Pfeffer and Salancik, 1978; Maitland and DeFillippi, 1986).

The third concept deals with the constraints placed upon the organization. "Actions can be said to be constrained whenever one response to a given situation is more problem than any other response to the situation, regardless of the actor responding" (Pfeffer and Salancik, 1978). Constraints are usually restricting on the organizations

behavior and are considered undesirable because they hamper creativity and adaptation. However, in the majority of cases, it would be impossible to perform any type of action without constraints. Constraints eliminate randomness from the decision, and help direct the organization to the most productive outcome. To illustrate this point, take a college student preparing to register at a large university. If there were no constraints, there would be millions of options for the student to consider. Now if a few constraints are defined, such as the student's class, degree, and area of study, plus the university requirements, such as prerequisites, class time and class size, the decision becomes easier to make (Pfeffer and Salancik, 1978).

Pfeffer and Salancik (1978) contend that behavior is constrained by physical realities, social influence, information, cognitive capacity and personal preferences. If enough constraints are imposed, it is possible to get a certain desired behavior. Constraints are not always concrete and stable; they can be seen in social norms, values and political outcomes, which are always changing. Organizations are concerned with survival, growth, and enhancement. In order to achieve these goals, they must constantly be aware of all of their constraints.

As defined above, all organizations are dependent to various degrees; therefore, the RDT can be used to illustrate how certain behavior can be incentivized. In Wernet and Austin's study of nonprofit Human Service Organizations, they concluded that a "change in the financial support stimulates change in the program/service structure and, frequently, turnover in the executive staff." (1991: 15-16). By merely altering the amount of profit a contractor receives for an environmental contract, one can affect the contractor's behavior.

This theory also has limited use. The government is able to influence the external environment by increasing defense spending, or by placing constraints on the contractors through strict contract provisions and higher taxes, but will this accomplish social responsibility? Organizational effectiveness is an external standard that is controlled

internally. By increasing spending or increasing compliance regulations and costs the government is not directly affecting the organizations effectiveness, but only generating feedback to the organization. This theory does not allow for policies that can influence future behavior of the contractor and does not allow for enhancing the relationship between the contractor and the government. Since this theory is also incomplete, we turn to the final and most comprehensive theory, Transaction Cost Economics, which focuses on the relationship between the parties involved along with measuring transaction costs.

Transaction Cost Economics. Transaction Cost Economics (TCE) is another theory that can be used to help explain how organizations behave. TCE addresses economic organizations, more specifically it addresses the transactions of the organization as its foundation for analysis. The theory is based on understanding and manipulating the costs of transacting (Williamson, 1981). According to Williamson (1981), a front runner in TCE, to accomplish this, the transactions must be dimensionalized and alternate governance structures must be described. The most efficient way of economizing is to discriminately assign transactions to governance structures. This method discusses both determining efficient boundaries, between firms and markets, and the organization of internal transactions, including the design of employment relations. A major theme in TCE is to give more guidance to firms concerning how to be more efficient and in turn profitable. For example, it establishes guidance for firms on when to produce internally, opposed to purchasing it in the market. Telling a firm their objective is to maximize profit is self-limiting and useless. Instead, TCE focuses on the transaction, instead of the commodity, as the basic unit of analysis. Once the transaction is identified, TCE concentrates on establishing the most accurate governance structure.

More specifically, Williamson (1981, 1987) defines a transaction as a good or service transferred across a technologically separable interface. All of the environmental contracts would fall within this definition. The type of contract the federal government

issues creates the governance structure. Now the specific factors need to be identified and then classified to determine what governance structure is best for each transaction. This study will explain the methods used by TCE to determine the best contract governance structure to use. A better suited governance structure will allow the firm to be more efficient and possibly encourage social responsibility (Williamson, 1981).

To determine what governance structure should be used given a set of transaction characteristics, TCE evaluates economic, behavioral, and organizational factors. The most appropriate governance structure will minimize transaction costs while emphasizing any natural production economies. When selecting the best governance structure TCE considers two behavioral assumptions and three transaction characteristics (Williamson, 1981, 1987).

The two behavioral assumptions addressed by TCE are bounded rationality and opportunistic behavior. Bounded rationality explains why individuals make certain decisions. People desire to act rationally but are limited in their analytical and data processing capacity to solve complex problems (Williamson, 1987). For instance, a contractor is unable to foresee or plan for all possible contingencies that may occur during the solicitation portion of the contract or after award (Templin, 1994). An example of such a contingency in environmental contracting would be a new federal regulations concerning a method for toxic cleanup that significantly increases the cost of the contract. The second behavioral assumption deals with opportunistic behavior. Simply stated, opportunistic behavior means that some people are willing to cheat or perform fraudulent acts in order to make more money. This is a major concern in environmental contracts because incomplete or inaccurate disclosure of information could be dangerous or even deadly. Therefore in some cases a stricter governance must be used to protect the government and the environment from such behavior (Templin, 1994).

Along with the behavioral assumptions, TCE looks at three dimensions that characterize transactions. The first is asset specificity, which defines the degree special purpose investments are required (Williamson, 1987). The more specific the assets are, the more risk the firm is undertaking because it cannot use the asset for other purposes. In other words, if there is high asset specificity and the contract is terminated the contractor will be unable to reassign assets elsewhere and will lose a great deal of money (Templin, 1994).

The second dimension is uncertainty, which explains unanticipated disturbances found in the market place (Williamson, 1981). Examples of this would be volatile prices for certain raw materials or one contractor receiving privileged information at the expense of another contractor. The magnitude of uncertainty increase as asset specialty increases (Templin, 1994).

The third and final dimension is related to the value of the contract awarded. The cost associated with a more formal governance structure are easier to justify with reoccurring requirements as opposed to a one time requirement (Williamson, 1981). To illustrate this, consider the costs associated with a one-time cleanup contract versus annual maintenance of a flight line. The volume of work associated with an annual maintenance contract justifies higher administrative costs. However, for one-time or short duration contracts lower administrative costs are sought out.

The five categories discussed above provide the needed information to select the best governance structure. What makes one structure better than another is its ability to adapt to changes brought about from bounded rationality while still protecting the parties against unnecessary risk and excessive opportunistic behavior (Templin, 1994). For simplicity reasons, assume uncertainty, bounded rationality, and opportunistic behavior are always present. Therefore to pick the best governance structure depends only on the level of asset specificity and the frequency of the transaction. (See Figure 2-5.)

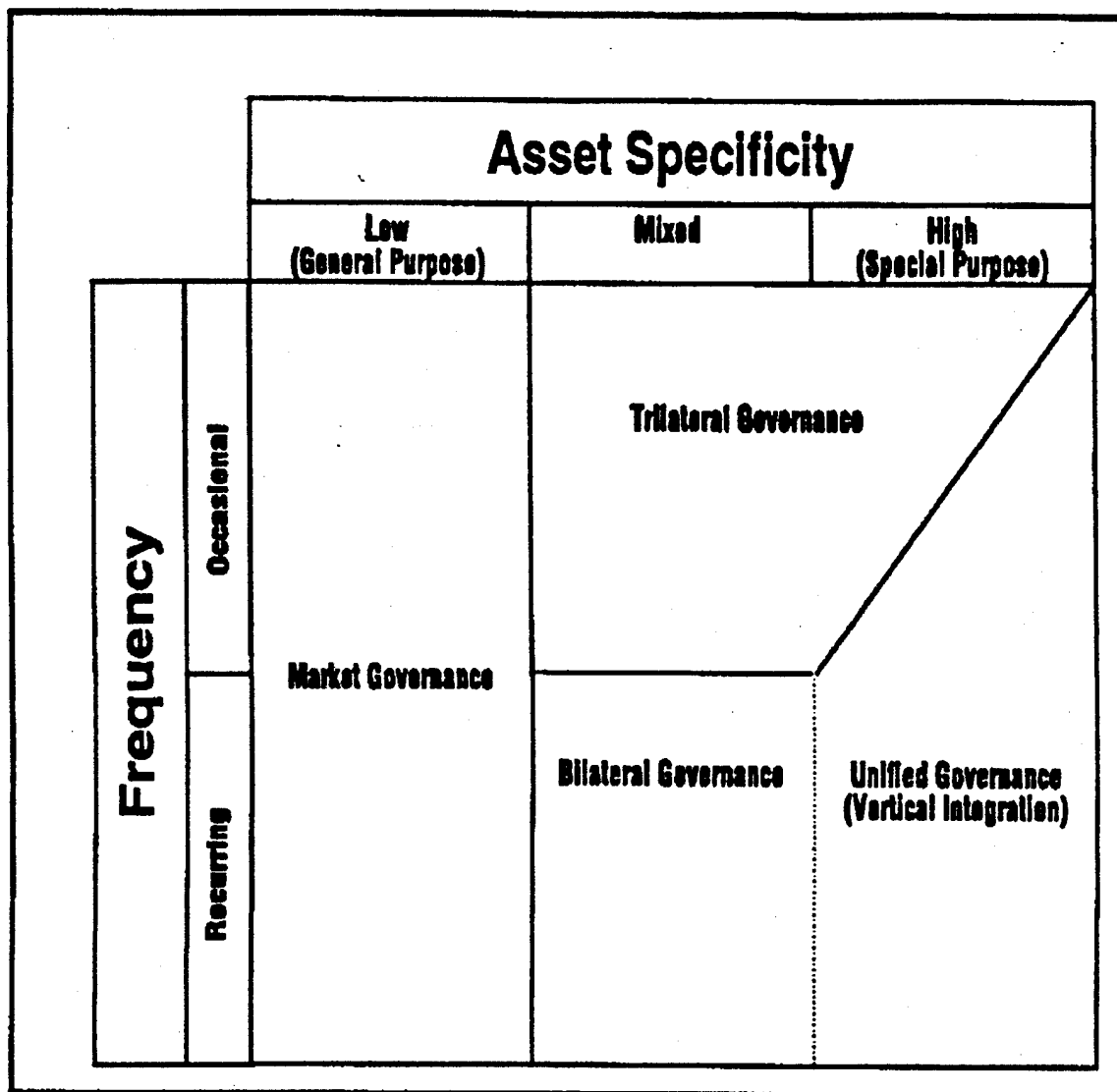


Figure 2-5. Appropriate Governance. Adapted from Williamson, *Economics Institutions*, p. 79.

When dealing with low asset specificity or general purpose assets, the competitive market is the best form of governance structure, no matter what the frequency of use is. The basic structure of market governance will protect individual parties against

opportunism, because if one member of the contract is not upholding it's end of the bargain, the other member of the contract may opt to terminate the contract for another supplier (Templin, 1994). Today, most environmental clean-up contracts have low asset specificity. Many base level contracting offices are issuing fixed-price contracts to the lowest bidder, to complete the work.

On the other hand, when highly specialized assets are needed, there are two feasible governance structures to use. If the asset is a recurring transaction it make sense to have a unified governance utilizing vertical integration. Vertical integration is when a company chooses to produce a product or service in house as opposed to seeking the external market. Since only the buyer's organization is involved, the buyer can benefit from the ability to make quick changes while achieving the same economies of scale of the supplier. For special use assets that are not always recurring, a trilateral governance also might be appropriate. A trilateral governance allows for third party arbitrators or mediators to settle disputes. This reduces high administrative cost while at the same time, protecting both parties from opportunism. With high asset specificity and only occasional use, both parties are greatly dependent on one another. Having trilateral governance relieves a substantial amount of risk because it allows some form of retribution for both parties. A trilateral governance would also be beneficial with a mix of asset specificity with low frequency use (Templin, 1994).

Templin states that the only time a bilateral governance structure is warranted is when the mix of asset specificity is reoccurring enough to counter the higher administrative costs. With a bilateral governance structure, problems arising from uncertainty or opportunism can be resolved through contract provisions (1994).

When the asset specificity and frequency warrant a bilateral governance structure, high administrative costs usually follow. It is possible to try and decrease the administrative costs by incorporating credible commitments into the contract. Credible

commitments could be transaction specific investments, posted bonds or reciprocal arrangements, that hold each party "hostage". This will force each party to hold up their end of the agreement. If done properly, such commitments are beneficial for both parties. First of all, the buyer might incorporate a commitment that incentives the contractor to exceed the governments requirements. Second, ensuring higher quality could allow for relaxed interaction between buyer and supplier, thereby reducing the overhead costs for the supplier (Templin, 1994).

There are many ways to apply TCE to firms who are production functions to which profit maximization has been assigned. One method of applying TCE is the unitary method. This method determines which functions should be performed within the firm and which should be performed outside the firm's "boundary efficiencies." In this instance, we will attempt to borrow from concepts of TCE rather than look for a direct application of it. Traditional research has sought to explain conflict resolution and structural development using TCE. This study attempts to explain how a secondary issue to the business relationship may encourage or discourage a desired behavior.

As mentioned earlier, production contracts are increasingly more complex and are filled with multiple contingencies. The high cost of adhering to all the federal environmental protection laws and regulations increase the potential for opportunism behavior. Uncertainty, the second transaction characteristic, will also vary depending on the type of contract. If there is little risk involved, the contract type will be some sort of fixed price contract. On the other hand, as the uncertainty increases, the type of contract used goes from a fixed price to more of a cost reimbursement contract. Historically, high asset specificity coupled with increasing uncertainty, would lead to greater government involvement and higher administrative costs for both parties. The dollar amount associated with the contract, the third transaction characteristic, is also evident in environmental contracting depending on what dollar thresholds have been met.

Contracts that exceed the \$25,000 small purchase threshold, require different consideration as opposed to one under the threshold.

TCE is a good theoretical base for understanding the buyer-seller relationship in environmental contracts in regards to the level of governmental control that should be incorporated into the contracting relationship (Templin, 1994). The key question is to determine which governance system is best suited to produce a particular outcome. The governance system from firm (hierarchical) to market (a type of hierarchical arrangement). If members of the contract were not subject to opportunism, then the actual contract itself would be sufficient as the sole governance system. Since parties of the contract are subject to opportunism, additional governance is required to maintain the desired outcome. Therefore we turn to the market. This form of governance system relies on competition and can be effective when trying to influence relationships between parties. Non marketability problems arise when the specific identity of the parties has important cost-bearing consequences. Transactions of this kind may be referred to as idiosyncratic. Relations between the federal government and federal contractors, particularly in the area of defense, have these idiosyncratic characteristics.

TCE provides a useful theory for defining the most appropriate contracting relationship between the government and the supplier. The principles of TCE leave the contractor with this decision: Is it more cost effective to comply with environmental standards, or are there possibilities for a firm to exhibit opportunistic behaviors? The government must accomplish more in its business exchanges that would influence a contractor to make a decision that is socially responsible. The government also has a lot working against it. In addition to the requirement to purchase many unique supplies and services, the government must attempt to accomplish socio-economic goals that may or may not be easily recognized in the exchange. Also, compliance with environmental requirements and stopping further destruction of the environment are secondary issues

which are addressed in every federal contract. The government must also be sensitive to the cost of compliance. If the cost of complying with government policies is excessively high that contractors attempt to either avoid compliance through non-compliance or avoid additional present expense by not developing a proactive compliance policy.

Incentivizing Contractor Performance

In the past, the Federal government has been successful in influencing contractor behavior through contract incentives and special programs like and value engineering. This section will examine how the Government has influenced contractor performance to illustrate that it is capable of affecting the way a contractor behaves.

Research shows organizational behavior can be affected contractually. The government has encouraged cost control and innovation using incentives. In innovative incentive contracts, the buyer (in federal contracts, the government) pays for achievement of the contract goals and the seller (the contractor) has an opportunity to earn more fee or profit by exceeding the government's minimum requirements. A perfect example of this is the contractual method the government used with the Wright Brothers and the first airplane. At that time, a government engineer could not have written specifications for a flying machine, but wrote the contract so the contractors would be encouraged and rewarded for exceeding the minimum requirements. The flexibility of the contract allowed the contractors to experiment with new ideas and produce a better end item. Indeed, both parties greatly benefited with this innovated incentive contract.

Another form of incentive is given when the contractor performs the requirements in the contract at a price below the estimated price. When this occurs, the contractor is rewarded with more profit and the government pays less than originally expected for the acquisition. The Colorado Springs airport is an example of this type of incentive. The prime contractor finished the job early and under budget. As a result, Colorado Springs

received a beautiful new airport under budget and the contractor was rewarded with a percentage of the savings. In these situations both parties again benefit, because the total purchase price for the airport was under budget and the contractor earned a larger profit. The DoD also has experienced favorable outcomes from both innovative and cost related incentive contracts.

More specific research shows how the software development process is affected by award fee incentives. The type of contract used, is a key management tool available to influence a contractor's performance. In the software development process, an award fee was found to be the most useful incentive. By using the flexibility of award fee and the common milestones used for major weapon systems, the government possesses a workable means to influence the software development process and provide feedback to the contractor (Hunter, 1991). The benefits of award fee are summarized by the following:

The award fee contract provides not only profit or fee motivation, but also the motivation resulting from periodic evaluations by one's professional peers. In addition, it offers evaluation flexibility, in two forms:

- (i) the flexibility to evaluate on a judgmental basis taking into consideration both contractor performance levels and the conditions under which such levels were achieved; and
- (ii) the flexibility to adjust evaluation plans quickly to reflect changes in government management emphasis or concern. (NASA, 1989:1)

For software acquisition, especially during the development phase, award fees were successful for achieving a certain behavior in the contractor.

The other method the Federal government uses to influence contractor behavior is value engineering. Value engineering (VE) is the scientific method of analyzing and redesigning a product or service so that its function is achieved at a lower overall cost.

The Department of Defense (DoD), views VE as a systematic and creative approach for increasing the "return on investment" in components, weapon systems, facilities, and in other products acquired by the DoD.

The objective on VE is to provide equivalent performance at a lower cost. This means to reduce the government cost of acquisition and ownership without decreasing the functional capabilities of these items. The scope of VE ranges from system assemblies and parts to various non-hardware, cost-contributing elements.

The DoD uses two types of VE efforts.

1. Value Engineering Proposal (VEP) is the method used by Government personnel to submit cost saving recommendations resulting from their use of VE methodology. The Government retains all of the savings.
2. Value Engineering Change Proposal (VECP) is the method used by contractors to submit cost saving ideas to the Government which will: (1) change their contracts with the Government (Specifications, Scope of Work, Drawings), and (2) will save the Government money. The contractor shares in these savings. A successful VECP provides lower costs for the Government and increases profitability for the contractor.

There are numerous benefits associated with value engineering both for the government and the contractor. Excluding the monetary benefits of VE, the government benefits include improved reliability, maintainability, producibility, production lead times, quality, weight, logistics, and performance. The contractor benefits with a share of the cost savings and improve their competitive position by producing products of equal or better quality and performance at lower costs (Horst, 1989).

Specific to this study, VE is applied to the production phase to evaluate manufacturing processes, methods, and materials. Other related areas dealing with production phase contracts, include support and test equipment, supply, transportation and handling, technical data, facilities, maintenance, and training.

The US Army Material Command (AMC) is one of the biggest and most successful users of value engineering. In Fiscal Year 1993, AMC achieved substantial savings by the application of VE to all aspects of operations. They achieved over \$374 million in VE savings by detecting and improving areas of high cost plus more reliable, easier to maintain weapon systems.

We can see the government has been successful at incentivizing contractors with the type of contract it administers (contract incentives) and through special programs (policy incentives) such as value engineering. The next step for the DoD is to convert these successes into methods capable of incentives applicable to current and future environmental related contracts. (Failing, 1994). The next section introduces the model that establishes the relationship between environmental responsibility and contract and policy incentives.

The Model and Propositions

After briefly explaining Corporate Social Responsibility, Expense Preference Approach, Resource Dependency Theory, and Transaction Cost Economics, it is apparent that many factors affect organizational behavior. Value engineering and different contract types also show how the Government has been successful in incentivizing contractor's behavior. All of these can be viewed as external or internal factors placed upon the contractor. Therefore, it is plausible to say that external and internal factors can affect a contractor behavior, as seen in the two pervious sections. Because the government is better at affecting a contractor's behavior through external methods, the scope of this study will focus on only external factors that influence organizational behavior. As the model illustrates, We will attempt to prove that contract incentives and policy incentives can be used to affect a contractor's environmental responsibility.

Model for Corporate Environmental Responsibility

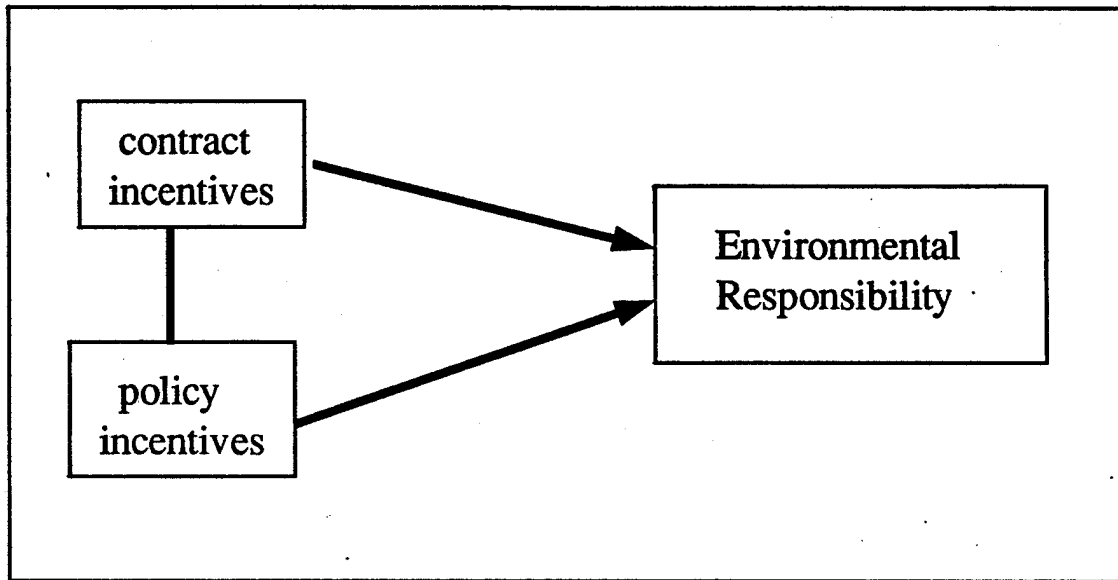


Figure 2-6. Model For Corporate Environmental Responsibility

Conclusion

Organizational behavior can be influenced, as seen through all four of the discussed theories and in several different types of incentive contracts. TCE does the best job of completely representing how the government can influence behavior. It shows that corporations do what they do because it is economically beneficial for them. The government must determine the best way to create profitable situations for the contractor, while encouraging social responsibility.

The next step is to determine what specific external factors are affective in influencing the type of behavior which emphasizes social responsibility. The three propositions that will be examined are:

1. What policy tools are available to encourage a more proactive corporate environmental attitude?
2. What contractual tools can be employed to promote future social responsibility?
3. How can the government reward social responsibility to firms in order to commit environmental contractors to continue to be socially responsible?

Summary

The literature review illustrates how different theories can affect organizational behavior. The research was taken from professional journals and text books to establish the relationship of influencing organizational behavior. Next the literature review lists specific examples within the DoD when organizational behavior is influenced and what tools were used to obtain the desired behavior. A model is developed to show the area of interest, which is externally influencing organizations through contract and policy incentives. Finally, the literature review concludes with what propositions will be investigated. In Chapter III, we will look at what methodologies will be used to answer the propositions.

III. Methodology

Chapter Overview

This chapter explains what methodologies were used to investigate the proposed relationship between incentives and environmental social responsibility. First, the chapter describes the research design used. The next section, describes the selection of each case and the reasoning behind it. The chapter concludes with description of how the information was collected and how it was analyzed.

Methodology

Study's Focus. This study investigated how to influence contractor's behavior in production contracts. The thesis focused on the different methods available to federal contracting personnel to incentive contractors to be socially responsible. In Chapter I, we looked at several instances where the Government has encountered some problems with contractors and environmental issues to illustrate the importance of this research. Next, Chapter II examined how different theories can affect organizational behavior. We also addressed how the government has successfully influenced behavior of contractors in various situations. The model we developed suggested a relationship between contract and incentives and contractor behavior. Using an exploratory study we relied on anecdotal and archival data to establish the content validity of the model. Specifically, we look at production contracts and conducted personal interviews to identify any patterns concerning contractors and social responsibility.

Research Design. This report used a case study design. We choose this method for several reasons. First, since we have no foundational data available on the relationship between corporate social responsibility and federal production contracts. Second, government contracting represents an unique situation. Unlike commercial entities,

government agencies must seek to obtain goods and services, while promoting the public good. By definition, that makes this study "exploratory" rather than confirmatory (Cohen, 1975). Case study's are widely accepted as useful for doing early-stage exploratory research. This method is also preferred when examining contemporary events and when the relevant behavior can not be manipulated (Yin, 1994).

The research method used for this case study is classified as descriptive research. We selected a descriptive methodology which consists of a combination of basic and applied research. The basic research was performed during the literature review which helped develop our model. The applied research portion will occur during in-depth interviews with various government employees, contractors, and environmental protection agents. We conducted personal interviews with personnel from both parties involved in the acquisition. Next, we examined current contracts to see what incentives we used, and if so, to determine their effectiveness. The next section describes the importance of selecting appropriate cases and review of Section H, Special Contract Provisions on two production contracts.

Selecting an Appropriate Case to Study. Before determining what is an appropriate case, we first defined the population of interest. For this case study, the population of interest was all federal contracts which have as a major feature the production of goods. This was our population of interest for three reasons. One, this population will supply us with a good source for observing environmental responsibility. Two, production contracts are also a major source of contract activity throughout the Federal government. Three, the Air Force has a special interest in these types of contracts, especially Air Force Material Command (AFMC).

The first case we studied was the F-16 contract. This was an appropriate case for a variety of reasons. It is from the population of interest, since the F-16 contract is in the production phase of the acquisition life cycle and addresses many environmental concerns.

The F-16 contract is a mature program, which has undergone several production runs over a long period of time. The age and sheer volume of the contract gave us different avenues to examine and compare, such as various modifications and foreign military sales. Since it is a established contract that is still active today the data will be current and available. The System Project Office (SPO) for the F-16 is located at Wright-Patterson AFB, so we will have access to the data.

The second contract we studied was the F-22. Since the F-22 program is also a production effort, and is also conveniently located at Wright-Patterson AFB, it was an excellent point of contrast. It shares many of the same characteristics found in the F-16 contract, but being a newer program is more likely to reflect current attitudes about environmental responsibility. Consequently, it gave us an opportunity to study the latest environmental policies endorsed by the Air Force.

Information of Interest. We reviewed the contract clauses and special provisions looking for instances when the government tried to incentive or failed to incentivize the contractor and what the outcomes were. We also looked for evidence of any environmental issues brought to the attention of the contractor through contract modifications or reports of environmental violations. We noted recently changed environmental standards which have affected the current production process. Finally, we evaluated any technical consideration that reflect a change in environmental compliance.

As we studied the two contracts, we looked for the following situations. The first situation we looked for dealt with incidents when the contract lacks any type of incentives and then later there is an environmental violation. Another situation was when the production process is incentivized and the contractor complied with the terms of the contract, but there still was an environmental violation. We also investigated what incentives are present, if they are adequate, and also properly administered. If we do encounter environmental violations, we will check to see what was available to the

contracting personnel that could have help avoided the problem or even corrected the problem (i.e. value-engineering).

In addition to the specific areas mentioned above, we also studied the programs the government agency employees to help reduce environmental violations. Do these Federal agencies have offices the contractor can access to report environmental problems or violations? Are there easily assessable suggestion programs that encourage suggestions to try and reduce environmental violations and hazards? We also looked at what the government was doing internally to try and externally influence the contractor's behavior.

Method of Collection. Before we began with the collection of our data, we made two decisions. First we decided the appropriate methodology necessary to answer our propositions. Second, we developed the appropriate measuring instruments. There are three types of data collection methods used in evaluation research: quantitative, qualitative, and combined (quantitative-qualitative) methods. For this study, we instituted qualitative methods which focused on the depth of coverage. There are usually three kinds of measuring instruments associated with qualitative research: 1) in-depth, open-ended interviews; 2) direct observation; and 3) written documents (Patton, 1990).

We collected the data from documents, personal interviews, and reviewing changing environmental policies. The documents we looked were from Section H, Special Provisions of the actual contract. The interviews were conducted with government acquisition personnel, contractor personnel and environmental oversight agency personnel. We also interviewed policy makers to get their perspective of the entire.

The documentation and archival records were Section H of the actual contracts from the F-16 and F-22 SPOs. This was useful because these contracts tended to be stable, unobtrusive, exact, and covered a broad time frame. We first looked at the actual

contract, reviewing the clauses and special provisions. We hoped to find specific clauses or provisions related to environmental issues that might incentivize contractors. We also looked for instances when clauses or provisions are absent and how they could be incorporated to influence the contractor's behavior.

There are three styles of qualitative interviews: informal conversation, interview guide, and the standardized open-ended interview (Patton, 1990). The informal interview is conducted through a normal conversation. This approach is popular because of its flexibility. A drawback of this method is it is time intensive and usually requires follow-up conversations. The interview guide is a little more structured than the informal conversation. This type is more structured in that it calls for a general outline of questions to be asked but still allows the interviewer flexibility to pursue a particular subject in greater depth. The strength of this method is it limits the number of questions and time required on each interview compared to the informal conversation. The last style, is the standardized interview. This is a structured interview which details the number of questions, the wording of the questions, and the order in which the questions will be asked even before the first interview occurs. This helps eliminate any bias typically associated with interviews because of the standardization of wording and sequencing, however, this method loses the spontaneity and flexibility associated with the other two methods. It is recommended to use a combination of the different approaches or to use each approach during different stages of an investigation (Patton, 1990).

This study used different approaches through out the data collection phase. Initially, it was more appropriate to conduct informal interviews to get an initial picture of the situation. Once the situation is more clearly defined, we transition into an interview guide. Attached is a copy of the interview guide used in all of the interviews (See Appendix B).

As mentioned earlier, we conducted several interviews with both government employees and contractors. This method is beneficial because it is targeted, contextual and insightful and allows us to focus directly on the case study topic. We were aware that we might run into perceived bias in the personnel we choose to interview and there might be bias in their responses in the interviews.

On the government's side, we interviewed several people from the F-16 and F-22 SPO. In the F-16 SPO we interviewed one contracting officer and two contracting officers in the and F-22 SPO. We interviewed these contracting officers about how the contract was written and what incentives were incorporated. Individuals in the environmental office from each SPO were interviewed. From AFMC, we interviewed key personnel involved in the pollution prevention arena. We hoped this gave us a command wide view of the Air Force focus concerning environmental issues. We also interviewed the Director of Environmental Management at Brooks AFB to see how the Human Systems Center is handling their environmental issues.

From the contractor's side of the procurement we interviewed several civilian contractors specifically involved in production related to the F-16 and F-22. We discussed with them what steps the government undertakes regarding encouraging environmentally sound production. They were also questioned on what would incentive them to be more socially responsible.

Analysis of Data. For this study, data analysis was primarily broken down into interpretation of the interview results and the data from the documents. The two more popular forms used with reporting the information from the interviews are case analysis and cross-case analysis (Patton, 1990). Pattern-matching, explanation-building, and modeling were used for the data from the documents.

A case analysis approach deals with only one person, one group, one program, or one unit of the study at a time. This allows for the a more focused area of study. Once a

thorough study has been accomplished, then cross-case can be used. The second method lets the researcher look at different perspectives and group them together. The information is then compared and contrasted to other cases or interviews. We followed this sequences with the interviews we conduct and also with the contracts we studied.

To analyze the data found in the documents we used three primary methods: Pattern-matching, Explanation-building, and Modeling. Pattern-matching compares an empirically based pattern with a predicted. In exploratory studies, the patterns may be related to the dependent or independent variables. We tried to isolate a relationships that tend to repeat itself. An example of this might be that the use of a certain incentive leads to a the desired compliant behavior. In explanation-building, we hoped to "explain" an phenomenon through a series of facts. We linked certain factors found in the data to the use of the different incentives effectiveness. The final method was modeling which is similar to pattern-matching. We attempted to prove a key cause-effect pattern between the dependent and independent variables and from this examined our model (Yin, 1994).

Summary

This chapter discussed the methodology research approach we used for this thesis. We began by defining the focus of the study and then explained what research design we used and why. Next, we outlined how we will selected the most appropriate cases. Once we had selected the cases, we then showed what we were interested in finding and how we planned on collecting the information. Finally, we presented the ways we analyzed the data. The methodologies described were chosen to best answer the propositions stated in the literature review. Results from study, including findings, conclusion, and recommendations will be presented in Chapters IV (Findings and Analysis) and V (Conclusions and Recommendations).

IV. Findings and Analysis

Chapter Overview

This chapter will present the findings and analysis as we tried to determine the best way to incentive corporate social responsibility in federal production contracts. Using the methodology described in chapter III, we set out to answer the proposition questions presented in chapter II. We conducted personal interviews with thirteen people associated with the interview process using an interview guide and also allowing for general comments after the structured portion of the interview. A document review of Section H: Special Contract Requirements was done for both the F-22 and F-16 contracts to identify the amount of emphasis place upon environmental issues within the actual contract document. The findings of the interviews and comments from reviewing the documents are reported in the first section of the chapter. This section also includes the overall results and general comments brought to light in the informal portion of the interview. The next section is the analysis of the data. We look at how the three research questions are answered and how best to interpret the results. Finally, we conclude with how our results relate to the conclusion and recommendations for further research.

Findings

Interview Results. Interviews were conducted with government contracting personnel, government environmental engineers, and their civilian counterparts. Specific to the F-16 SPO, one government contracting officer, two environmental engineers and one individual contractor associated with the F-16 contract were interviewed. From the F-22 SPO, two government contracting officers, one environmental engineer, and four contractors working with the F-22 were interviewed. Two individuals from headquarters

positions were also interviewed to obtain their perspective on incentivizing contractors. The following results are a cross-sectional compilation from the thirteen interviews.

Question 1. The overall consensus from the thirteen people interviewed was that incentives do work. All but one of the interviewees thought that the incentive should be in a positive form, like an award or incentive fee. Only one person felt that penalties worked as effective negative incentives. A few of the environmental engineers did not feel they could accurately answer both parts of this question.

TABLE 4-1. APPROVAL RATE OF INCENTIVES

DO YOU THINK INCENTIVES WORK?

YES	NO
10	2

TABLE 4-2. MOST EFFECTIVE INCENTIVES

TYPE OF INCENTIVE THAT IS MOST EFFECTIVE?

AWARD FEE	PENALTIES
10	1

Question 2. For this question, the responses were unanimous, all of the subjects interviewed felt that an increase in environmental compliance had not hurt the

government's ability to find sources for contracts or had discouraged contractors from bidding on contracts. See the general comments sections for more discussion on this topic.

Question 3. Most of the people interviewed could not think of a recent (last five years) instance when a environmental violation had stopped or inhibited performance that effected the delivery of a product or service. Only one person thought of an incident, but it was more related to a procedural problem which caused a slow down with asbestos abatement, not an actual environmental violation. See the General Comments section.

TABLE 4-3. STOPPED PERFORMANCE

INCIDENT OF STOPPED OR INHIBITED PERFORMANCE?

YES	NO
1	12

Question 4. This two part question focused on when and in what form incentives should come. The majority of responses felt that incentives should be present during source selection. One person felt that it needs to occur at time of award and one person was adamant the only feasible place for the incentive was post award. Half of the people who picked the time for incentives should be during the source selection, felt strongly that it should also be present at award and post award too. The general comments section will explain the rationale behind each answer. The second part of the question, asked what form the incentive should come in. Again the majority of the

answers followed up the initial response of in the selection criteria during the source selection. However, two interviewees felt the best form would be in the way of an award fee.

TABLE 4-4. TIMING OF INCENTIVES

WHEN SHOULD INCENTIVES COME?

SOURCE SELECTION	AWARD	POST-AWARD
11	1	1

TABLE 4-5. FORM OF INCENTIVE

IN WHAT FORM SHOULD INCENTIVES COME?

SELECTION CRITERIA	AWARD FEE	INCENTIVE FEE
11	2	0

Question 5. There were various answers and ideas generated when asked what they thought was the best way to encourage or reward corporate environmental responsibility. However, the majority of the answers where tied to economic and financial incentives. Excluding a few suggestions, all the ideas could be boiled down to paying the contractor more money to be more environmentally aware. All of the ideas mentioned will be discussed in detail in the general comments section.

General Comments. This section will cover some of the specific responses heard during the interviews. This section does not represent all of the responses but is a good cross section of the common responses and the uncommon responses mentioned by the thirteen individuals interviewed.

Question 1. Because the nature of this question was relatively contract specific, one of the environmental engineers did not feel confident in responding to this question. Another environmental engineer felt that assessing penalties was an adequate method of incentivizing the contractor. The remaining people were against any form of penalty, favoring award and incentive fee as methods of incentivizing the contractor.

Question 2. With the increase in environmental compliance standards one might expect that competition to perform these projects would decrease. According to all the people interviewed, this was not the case. For example, last year the F-16 could not require the use of any ozone depleting chemicals (ODCs) in any of its contracts. However, on a recent solicitation, the SPO decided to experiment and raised the level of compliance from not requiring ODCs to restricting the use of any ODCs. The response was favorable. The contracting office received over 15 proposals all complying to the higher standard of no ODCs. This is an example of how competition did not suffer because of a higher environmental standard.

Another comment made was that the Air Force and the DoD were not the only organizations who were increasing their environmental standards. All local and state standards were also increasing, so as they were raised the contractor was also raising their standards and changing their processes to meet the local and state standards. Therefore, the increase in DoD standards would not make future contracts unattractive to defense contractors.

One negative comments was mentioned as an aside. One person felt that the contracts that were too difficult to comply with were moved to foreign countries with lower environmental standards.

Question 3. Concerning the asbestos abatement, the individual who commented on this said it happened several years ago when asbestos clean-up was relatively new and dealt with more of the proper procedure for the clean-up not an actual violation. He also commented on the distinct possibility of future slowed or stopped work caused by the milestone review process. He has noticed tougher and more thorough looks at milestone reviews coupled with complete environmental assessment of performance.

The F-22 flight testing program was almost stopped when the local community said the flights were generating too much noise and was disturbing some of the native owls in the area. However, the complaint was overturned and did not affect the testing.

Question 4. Most of the respondents felt that the time for incentives was during the source selection phase. It was also emphasized that this needs to be done as early as possible and needs to relate the product and process to the environment.

One person was totally against incentivizing during the source selection. This individual felt that when the incentive is done too early in the process, the government and contractor both end up paying too much for the change. Instead the cost should be spread out across several contracts through overhead after the award has been made. This is one of the major concepts behind the Joint Group Acquisition Pollution Prevention which will be discussed in more detail in chapter V.

Four of the people interviewed had a difficult time choosing when the incentive should come. They chose the source selection time frame, but also noted that they felt at the time of award and during the post award phase were also acceptable time frames for incentives.

The general consensus behind what form the incentive should come in was either in selection criteria in the form of requirements or as an award fee that was detailed up front in the proposal. One individual felt the only time to present the incentive was after award, and that it should be in the form of an award fee.

Question 5. This question was more open-ended resulting in a variety of ideas. As mentioned earlier, most of the ideas were driven by economic incentives but in varying forms and degrees. There were four general themes that seemed to keep surfacing during this question. The four major themes dealt with: limiting government constraints; direct dollar incentives; National Aerospace Standard's creation of NAS 411; and pollution prevention and partnering.

Many of the people interviewed felt that the government already had too many constraints on the contractors. In today's environmentally aware community, all major companies are environmentally conscious and additional rules and regulations just inhibit the contractor's day to day operations. Many people commented on notion that organizations were striving for more environmentally sound processes without federal interference. Several people suggested decreasing the number of required military specifications and continue to switch from design to performance specification to help free the contractor from government regulations.

Two specific types of direct dollar incentives were suggested in the form of pollution credits and tax incentives. The pollution credits are issued to companies that exceed EPA standards. The credits are cashed in at another time or traded to other companies for cash. The other direct dollar incentive is through tax incentives. More environmentally aware companies could be eligible for special tax incentives, which would help increase their profits.

The third incentive that was mentioned several times was a new program referred to as NAS 411. It was created by the Aerospace Industries Association to be applied to

all phases of the government's acquisition system. The Hazardous Material Management Program (HMMP), a major program implemented by NAS 411, is the contractor's plan to assure consideration is given to the elimination/reduction of hazardous materials and the proper control of those hazardous materials that are not eliminated. The intent of HMMP is to influence the system and product design process to eliminate, reduce or minimize hazardous materials while minimizing system cost and risk to system performance.

Incorporating such a plan would force additional incentives and emphasis to the contractor to design and develop a more environmentally sound product. Many of the interviewees felt this plan should be incorporated into all new contracts and added to current contracts when appropriate. The major drawback associated with NAS 411 was trying to incorporate the program into older contracts. Some of the older contracts are not capable of efficiently handling such programs.

The remaining ideas deal with pollution prevention and a new partnering program developed by the Joint Logistics Commanders chartered as JG-APP. According to its charter:

The group will coordinate joint service activities affecting pollution prevention issues identified during the weapons system's acquisition process. The JG-APP will support reduction/elimination of hazardous material by fostering joint service cooperation at contractor design, manufacturing, and remanufacturing process locations. (Defense Logistics Agency)

The mission of this organization is to promote consistency in application of acquisition pollution prevention policies affecting identification of pollution prevention opportunities at defense contractors and establishing joint criteria for prioritizing environmental problems. The objective is to look for ways of partnering with other government agencies and defense contractors to reduce pollution. The program looks at multi-service multi-contract joint efforts and ensures that improved efforts will be accepted across all the using activities. Therefore, all incurred costs can be put into overhead and shared by the

contractor and all the using services. How this program might be incorporated with Industrial Modernization Incentive Program (IMIP) will be further discussed in chapter V.

Document Review. Section H: Special Contract Requirements were reviewed for both the F-16 and F-22. After reviewing both contracts, it was evident that neither the F-16 nor the F-22 contracts had any special provisions for incentivizing environmental compliance. Standard regulations and laws are addressed in the contract, but any type of incentives for going beyond the standard level were not seen in either contract. This was also confirmed from the contracting officers interviewed.

Summary

This chapter first discussed the data found from the interviews and contract document review. Next this chapter focuses on explaining the results in context with the research format discussed in Chapter II and Chapter III. Our goal was to answer the three propositions stated in the literature review. Since our results differ somewhat from our model, we must now revisit theory for a more accurate explanation of the relationship. This, along with recommendations for future research, are presented in Chapter V, Conclusions and Recommendations.

V. Conclusions and Recommendations

Chapter Overview

This chapter ties the results found in Chapter IV back to the theories presented in Chapter II. We will first review the propositions we were testing and revisit the focus of this study. We will also review Transaction Cost Economics and show how it relates to our study. Then, we will analyze the data and discuss the results. Next, we will recommend some ideas that will provide better incentives to increase corporate social responsibility. Finally we will identify possible avenues for future research and limitations of this study.

Analysis

Proposition questions. The need to incentivize corporate attitudes was clearly illustrated in Chapter I. Theory suggested that if properly incentivized defense contractors could be encouraged to be “environmentally responsible.” Specifically, theory raised several research questions concerning which are most likely to influence corporate social responsibility. The three propositions stated in Chapter II were:

1. What tools are available to encourage a more proactive corporate environmental attitude?
2. What contractual tools can be employed to promote future social responsibility?
3. How can the government reward social responsibility to firms in order to commit environmental contractors to continue to be socially responsible?

Through the interviews and review of contract documents, we were able to answer these three questions. The majority of people interviewed are convinced that an award fee

type of incentive is the most effective tool available to the government for incentivizing environmental responsibility. However, they did not feel that this was an effective tool for incentivizing the persistent proactive corporate attitude desired.

Again the majority of responses felt that selection criteria during source selection was the best time to utilize incentives. Although, they did not feel that this incentive effectively promotes future social responsibility.

Finally, 92% felt that the government would have a difficult time rewarding socially responsible acts and that without rewards, it might be difficult to affect long-term corporate behavior. The notion of paying more for a "greener" product would be hard to explain to taxpayers. If the customer would not pay more, then contractors are less likely to continue. Below, we will examine these findings in light of TCE. It is believed these trends and the model they suggest can be best understood using this theoretical foundation.

TCE Explanation. As stated in Chapter II, TCE provides the most comprehensive explanation of why incentives will or will not be useful to encourage social responsibility. TCE is based on understanding of transaction costs and explains organizational behavior in terms of exchange. It provides the framework for determining the most appropriate type of governance system based upon transaction characteristics to use for encouraging behavior (Templin, 1994).

One way to look at these affects is to examine them along a governance continuum. This system can be thought of as a spectrum ranging from hierarchical influences (where relationships are controlled by formal, structured terms) to market forces (where informal, transparent market forces control the relationship of two organizations.) Hierarchical usually deals with formal control defined by one of the parties. An example found in the hierarchical region could be a special provision on a

contract. Policy incentives, which affect many contracts and contractors, seem to fall near the market forces area. An example of this would be a policy that included a new environmental awareness section to the source selection. The whole continuum allows us to view both contract incentives and policy incentives as introduced in our model.

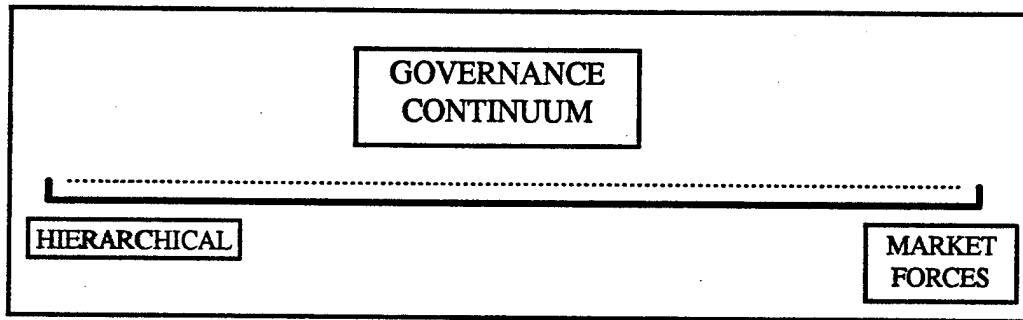


Figure 5-1. Governance Continuum

Discussion of Results

Using the data we collected from the interviews and document review and applying the principles of TCE we are able to support four findings.

Finding 1. The first finding the data supports is that incentives do work. Over 80% of the people interviewed felt that incentives do work. How we define "work" can be seen looking at the model from Chapter II (see Figure 5-2). We find the data from the interviews supports the notion that both contract incentives and policy incentives influence environmental responsibility. According to the data, these incentives seem to be most affective in the form of economic compensation. An award fee is an example of a contract mechanism for economic reward. Further, our research suggest that the incentive should be present during source selection as a selection criteria. Consequently, our

research suggest incentives have the potential to produce the kind of environmental responsibility desired.

Model for Corporate Environmental Responsibility

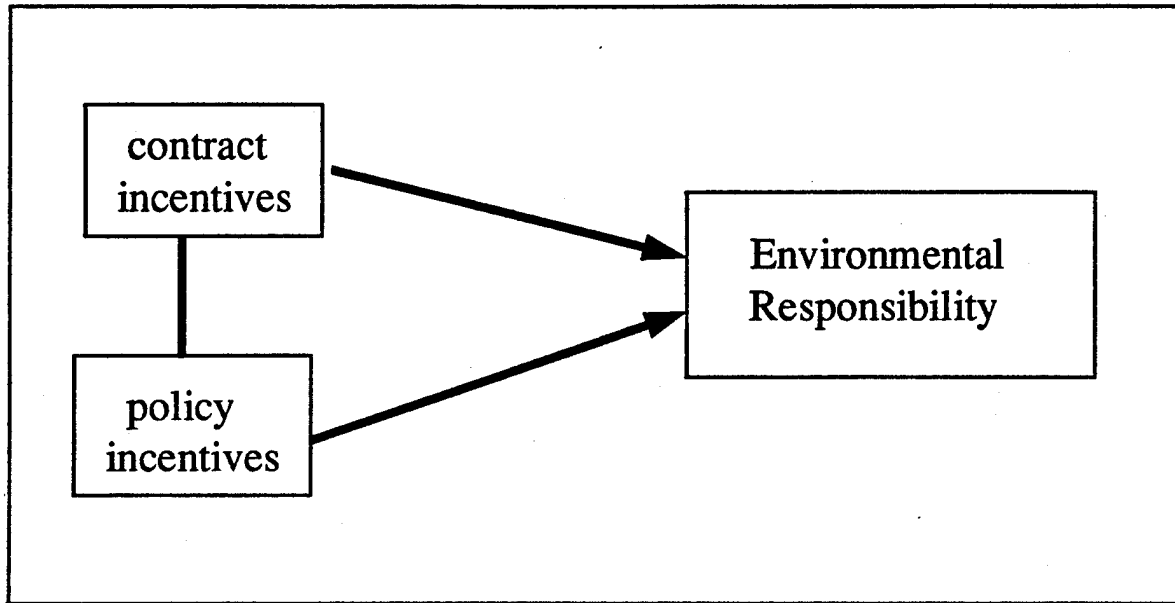


Figure 5-2. Model of Corporate Environmental Responsibility

Finding 2. Next our data suggest that contract incentives are less useful than policy incentives. Again we go back to TCE to explain this idea. According to TCE, long term relationships are only minimally affected by single transactions. Because of the minimal number of defense contractors, the relationship the DoD established with these contractors is usually long term. There are approximately 25 major defense contractors providing the majority of all goods and services. This suggests most contractors are used repeatedly. A contract incentive which pertains to only that particular contract or a single aspect of the relationship. TCE states that single transactions are less affective at

influencing long term organizational behavior. This helps explain why many of the people interviewed were in favor of incentives, but felt they were unable to contractually incentivize environmental responsibility.

Referring to the governance continuum, we suggest that the policy incentives the government implements should not strictly fall under market forces. Because of this unique relationship between the contractor and the government, federal policy incentives can not rely completely on market forces. They need to incorporate some hierarchical tendencies to be effective. However, completely hierarchical incentives deal with only one particular contract. These type of incentives can and do work; although, the data indicates they are less likely to produce persistent change.

Finding 3. Our third finding is that given adequate financial support, it is possible to encourage a proactive environmentally responsible attitude. As mentioned above, most of the people interviewed felt it is hard to incentivize environmental responsibility with a single contract provision, but almost all of them agreed that given protracted, specific financial support the government could produce a more permanent, sustained outcome. Again TCE offers an explanation for this finding. One of the behavioral assumptions related to TCE deals with opportunistic behavior. Opportunistic behavior is the tendency to cheat or perform fraudulent acts in order to either reduce transaction cost or increase profit margin. It can also be seen in the form of incomplete or distorted disclosure of information. Since the government must find ways to protect themselves from such behavior, its policy must simultaneously promote proactive behavior and reduce opportunistic behavior.

This study suggest one way to counter opportunistic behavior is through proper economic incentives, which can reduce opportunistic behavior through two forums. The first economic incentive is to pay contractors more money to have a more environmentally conscious attitude. If increased environmental compliance terms are part of the contract,

violating such terms would violate the contract and affect the contractors payments. Therefore, the government would contract for a heightened environmentally conscious attitude. The second option is to use disincentives in the form of fines for non-compliance. Both options require financial commitment. The first idea would entail additional funds for all new acquisitions. The second option's expense would be in the form of increased oversight which means stricter enforcement and fines for non-compliance.

Finding 4. Based on the third finding, our fourth finding suggests that the use policy incentives is more effective than contract incentives. This finding is supported by TCE. First, policy incentives are more conducive to long term relationships and long term use. Second, new policy incentives are not limited to a single contract, but can be service wide, DoD wide, or government wide. It is possible to incorporate new policy incentives that would effect all new federal contracts. The ability to affect more than one contract is referred to by Williamson as across transactions. Across transactions are more profitable to firms.

Finally, the data tends to confirm what Williamson suggest, that federal contracting is a unique environment. Unlike the commercial world, the federal government does establishes long term relationships with only a limited number of participants. Because of this, neither party is totally separate or independent.

Again looking at the governance continuum, we can see policy incentives throughout the entire spectrum. From the hierarchical side, we can use policy incentives to enforce restrictions on any type of government contract. For instance, restricting the use of any type of ODCs in all government contracts. Moving towards the other end of the spectrum, we look at market forces and its influence on future business. A new policy incentive could for example, change the source selection criteria. A new category could be added to the managerial portion that favorable compensated the contractor for being

environmentally sound. This would increase the contractors overall rating and help them win the contract bring more business to the company. This type of policy change will affect all new acquisitions, not just one particular contract.

Policy incentives can be thought of influencing the entire relationship between the government and the contractor, whereas contract incentives only deal with the government and the contractor on that particular contract. This is an important point when dealing with government contracts. With only a few defense contractors working with the DoD, policy incentives tend to work on the relationship between these contractors and the government more effectively than contract incentives. Our analysis of the data suggest a single contract does not tend to motivate a companies way of thinking, that the transaction costs are too high for individual contracts. The best way to reduce such costs is to spread out the costs across several contracts through policy incentives. That is why we suggest a more hierarchical solution, but not a complete hierarchical solution. We suggest the government formalizes some market concepts in the form of policy incentives to promote future business, but does not rely totally on hierarchical ideas. Completely hierarchical actions tend to involve just one relationship for a single action. Because of the government's unique situation, it needs to enhance its long term relationship with its contractors.

The research seems to indicate that our model from Chapter II needs to be revised placing more emphasis on policy incentives. Here we see the updated version of the model modified by our data (See Figure 5-3). The original model placed equal importance on contract incentives and policy incentives, while the data supports that the method of using contract incentives is not as successful as policy incentives at affecting organizational behavior. Instead of trying to incentivize contractors on each individual contract, we recommend developing more policies and programs to motivate them over a whole range of transactions.

Model for Corporate Environmental Responsibility

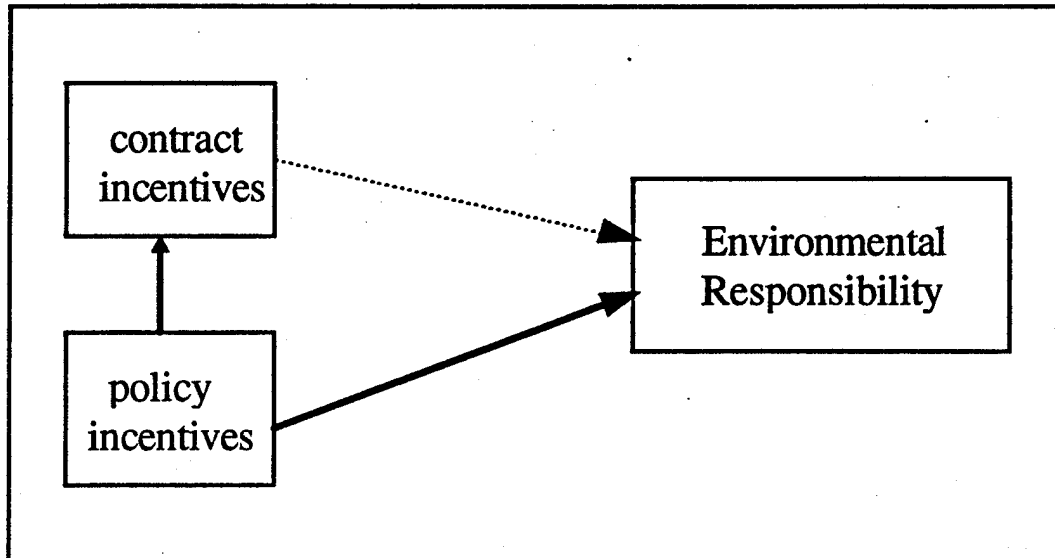


Figure 5-3. Revised Model of Corporate Environmental Responsibility

Recommendations

As stated in the fourth finding, we suggest placing more emphasis on policy incentives. We will now introduce a new type of policy program, Pollution Prevention, that seems to be extremely successful in the environmental arena. Then we will suggest incorporating two existing programs, value engineering and industrial modernization incentive program, into one new type of policy incentive.

Pollution Prevention. Pollution Prevention should be a concern of the logistician and contracting personnel in the acquisition process, not just a concern of the environmental engineering corp. The objective of Pollution Prevention is to address environmental issues early in the acquisition process. The goal is to look at issues during

concept exploration and demonstration and validation, and engineering manufacturing development phases as opposed to waiting to address such issues during production and operation and support. Executive Order #12856 defines the overall objective of the Pollution Prevention Act:

- pollution prevention/source reduction
- recycling in environmentally safe manner
- treatment in environmentally safe way
- disposal as last resort in environmentally safe manner

Source reduction is defined as "equipment or technology modifications, process or procedures modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control" (February Guidance, 1994: 4)

Pollution Prevention focuses on preventing government violations. If this is done properly, it can reduce the need for safe handling and disposal. The primary goal of Pollution Prevention is to reduce Ozone Depleting Chemical (ODC) and hazardous material (HAZMAT) use and release into the environment to as near zero as feasible. Single Managers (SMs) compare the life cycle costs of continued use of HAZMAT and ODCs to the life cycle cost of finding and implementing replacements.

As mentioned in Chapter IV, one of Pollution Prevention's biggest success stories was JG-APP. JG-APP is an overall strategy to coordinate the SM's efforts to reduce implementation costs. The strategy, lead by HQ AFMC, involves SMs working with other SMs, contractors, and military services to solve shared or similar problems and avoid parallel efforts. This new program will require identifying shared problems and developing innovative solutions by utilizing horizontal engineering and teaming with contractors and industry associations (Acquisition Policy 94A-003). The cost of this program will be placed into the contractor's overhead and will be shared by all the services and other companies that benefit from the changes.

Pollution Prevention is a new program with a great deal of promise. However, it does have some problems. The primary threat to the success of the program is people's cynicism for government programs. Many people involved in the acquisition cycle on both sides, government and contractor, are leery of any type of new government program. If this program can be streamlined and major strides concerning pollution prevention, and members on both sides can get past the feeling this is just more red tape to thrift through, the cost savings and future environmental benefits are unlimited.

A second policy incentive can be seen in NAS 411. NAS 411 was created by the Aerospace Industries Association as an industry standard to be applied in government acquisition systems throughout all the acquisition phases. NAS 411 develops a Hazardous Materials Management Program (HMMP). It is the contractor's responsibility for assuring the appropriate consideration is given to the elimination/reduction of hazardous material. Once again the emphasis is on eliminating or reducing hazardous material early in the design of processes and system products.

Both of these programs require funding, but the long term benefits and cost savings are far outweigh these initial costs. Another program that could promise environmental improvements and savings is a plan which combines aspects of Value Engineering (VE) and the Industrial Modernization Incentive Program (IMIP).

Combination of VE and IMIP. As mentioned in chapter II, the DoD has had many successful endeavors with value engineering (VE). The basic principle behind VE was to share in the development of a more efficient product or service with the contractor or compensate a contractor if they build a "better" product. This could be in the form of a faster or more efficient plane or more economical way to produce the plane. The savings would be split between the government and the contractor.

Another successful program instituted by the DoD was the Industrial Modernization Incentive Program (IMIP). IMIP was a three phase incentive program with an objective to:

1. reduce acquisition costs
2. improve product quality
3. enhance manufacturing surge capacity
4. strengthen industrial competitiveness. (IMIP Phase II Proposal Guide, 1990: 1)

The first step in the process was the proposal submitted by the contractor. The proposal details how the contractor felt they could improve on a certain process. At this phase, the government has not expended any money and the contractor has only invested the money involved with the proposal submission.

Phase II occurs after the government has approved the proposal submitted in Phase I and implementation. At this point, the government will give the contractor money to carry out their proposal. This usually is money to purchase a new production line or update their current machines. The costs of the improvements are shared between the government and contractor at a pre-agreed upon ratio.

Phase III deals with is determining the amount of savings and sharing them between the government and the contractor. Again this share ratio is predetermined. Previous IMIP programs were extremely successful and the savings far outweighed the costs incurred during the second phase.

Through the research performed for this study, a combination of these two programs might encourage the type of incentive we have been seeking. The program would be an Environmental Value Engineering/Industrial Modernization Incentive Program (EVE/IMIP). Instead of compensating a contractor for building a faster or more economical product or service, the government will reward them for producing a product or providing a service that is more environmentally sound. The government would also accept proposals that would modernize the contractors facilities to reduce pollution. This

program would only address environmental upgrades and only compensate environmental improvements.

Both of these programs incorporate policy type incentives and are expected to be more effective than using contract incentives alone. Future research efforts should concentrate on these last two efforts.

Both VE and IMIP are active programs in the DoD, although there are no new projects concerning IMIP. We think combining these two programs will allow for some significant strides in the environmental arena at significant savings.

Future Research. As a result of this research, two areas require further investigation. First, a longitudinal type case study needs to be researched. This study performed cross-sectional research of two different system project offices for one time frame. By performing a longitudinal study, one might isolate the specifics on both the type and timing of policy incentives.

Second, more research needs to be done to quantify the extent to which incentives work. We recommend taking the top 25 government contractors and compare their environmental awareness and responsibility from 1965 to 1995. Taking a "before" and "after" picture could confirm which incentives work best.

Limitations. Because of the nature of the study and availability of data, there are three limitations of the study. One is that we only looked at Air Force Material Command contracts and associated contractors and did not investigate other DoD contracts. Second, the study was only cross-sectional and may have captured an anomaly of time. Finally, we only looked at one aspect of the population, production contracts. There are several other types of contracts that need to be studied to see if incentives work equally on all types of contracts.

Conclusion

The revised model suggests two things: That incentives do work and policy incentives seem to be more effective at producing persistent positive behavior. Promising results might been seen in new programs such as Pollution Prevention and a combination of VE and IMIP but more research is needed to confirm these thoughts.

Appendix A. Letter to Interviewees

FROM: AFIT/LAS/GCM (Lt Jennifer Block, 513-436-1446)

SUBJECT: Request For Information In Support of Research

TO:

1. Request your assistance in research I am conducting as part of master's program at the Air Force Institute of Technology. I am investigating the relationship between contract incentives and corporate environmental responsibility. Research on organizational behavior suggests that specific organizational behaviors like environmental responsibility can be positively affected with the use of contract incentives. The purpose of my research is to determine if and how a contractor's attitude and behavior on environmental issues can be affected by contract incentives.
2. In order to understand the relationship between contract incentives and corporate environmental responsibility, I must confirm that such a relationship does exist. To accomplish this objective, I need your cooperation. Specifically, I would like the opportunity to interview you. Your experience in the area of Government acquisitions, along with your knowledge of incentive arrangements, will provide me with valuable data on both incentives and corporate environmental behavior. Your individual inputs will remain confidential. All data will be merged. Only trends supported by specific comments will be reported. Your name will not be reported under any circumstances. The thesis will be provided to all participants who request a copy.
3. In addition to a personal interview, I would like the opportunity to review any contract files that either include incentives or contain environmental provisions. The purpose for reviewing these files is to collect historical data (source selection, the intent of the incentive arrangement, any information on relevant environment concerns pertaining to the acquisition, details on the terms and conditions which the contractor must provide environmental services, etc.) This historical data will be useful in understanding how the parties view the relationship between contract terms and contractor performance.
4. Attached is a list of questions that I will use during the interview. Your cooperation is essential to the success of this study. If you agree, I would like to set up a time when I could conduct the interview. The interview would last approximately 30 minutes and could be conducted by telephone. I will call sometime in the next few weeks to see if your participation is possible. Thank you for your time and cooperation in this matter.

Appendix B. Interview Guide

QUESTIONS

1. Do you believe incentives (in the form of award fees/incentives or penalties) work?
Which types of incentives you are currently using seem to be the most effective?
2. Has the increase emphasis on environmental compliance helped or hurt your ability to either find sources (Government) or bid on Federal contracts (Contractor)? If so, how?
3. Are you aware of any incidents where environmental violation stopped or inhibited performance?
4. When and in what form do you believe incentives should come?

 When: Source Selection (contract, solicitation)
 Award
 Post-Award

 Form: Selection Criteria
 Award Fee
 Incentive Fee
5. What do you believe is the best way to encourage/reward "proactive" corporate environmental responsibility?

Appendix C. Interview Results

Interview 1 (two people)

1. From her perspective, environmental engineering, she was not aware of any incentives that work. He was not aware of any that were very effective.
2. Higher environmental compliance levels has not hurt competition. A recent solicitation for a 'black box' restricted the use of all ODCs (usually federal contracts stopped at just not requiring the use of any ODCs.) They got 15-17 bidders for the solicitations and improved the data modern in the process.
3. There was a slow down in production in 1991, was caused by a crack in a tank internal to the plant. They both felt the contract incentives could not of help avoid this problem.
4. They both would have liked to see incentives come during the source selection criteria phase.
5. For future contracts, award fees are probably the best way to get proactive results.

General comments:

- A new program NAS411 identifies hazardous materials and restricted hazmats. The program does a cost benefit analysis during the EMD phase that determines the cost to change from the chemical they are using currently to a non restricted hazardous material.

Interview 2

1. Yes, by far the award fee. However, it Does not work as well with the subcontractors
2. Increased environmental compliance has not hurt us at all.
3. No incidents
4. When: Award
Form: Award fee
5. We do not need to be encouraged, we do it because its the right thing to do and its a major goal of our company. We are planning on doing it regardless of what the government asks us to do or not.

Interview 3

1. Feels that award fees are too new to judge accurately. Strongly feels that penalties do not work. Negative incentives did not have the kick needed to obtain a desired behavior. His area does not use incentives, AFSEA contracts for studies and analysis and Armstrong = LOE, no incentives.

2. Not a problem now, a few years ago it was a concern.

3. Asbestos abatement. Stop work but it was a procedural problem. An award fee would not have helped in this situation. At a higher level, the DAB takes a stronger look at environmental issues at the milestone reviews. Complete environmental assessment must be done first.

4. When: Source Selection (solicitation)
Form: Selection Criteria

It needs to be built into the contract, as awarded then maybe something can be done. An example, the F-16 and hydrazine, an emergency power fuel that needs hazmat gear. The F-22 said they would not use hydrazine and contractually left it out. This gives us a few options for future contracts, but will this make the SOW or specs too restrictive? Will these restrictions limit the contractor's innovation to be creative and maybe create something better. We then need to look at three options

1. maybe something sort of hazardous is not as bad
2. an environmentally responsible/compatible system
3. need to still take in all considerations

5. Limit constraints, do not tell them what not to do

- NAS411
- Pollution Prevention programs
- use government as the review process as we did in the F-22
 - environmental programs
 - deliverables
 - follow-on contracts
- No we should not pay for a greener product, because its business' responsibility

General comments:

- too many Mil specs

Interview 4

1. Award fees work the best. In 90-93 we used some FPIF with subcontractors
2. Has not hurt us directly. But limiting ODCs in the process has just moved the process and the subcontractors down to Mexico, not solved the problem.
3. No
4. When: Source Selection and as an follow-on source
the post-award needs to be tied to the AF

Form: Selection criteria, if it not in this it just will not work
we need to put environmental standards into requirements and this needs to be
directed from the Sec of AF and Congress.

5. - Pollution credits that can be traded on the mercantile
 - positive marketing for the company
 - more money
 - give them more control in the process, a freer hand

Interview 5 (two people)

1. Yes, with award fees. Last year Lockheed got 100% of its award fee about 1 billion dollars. We see it also working in other social issues like the Small Business area. There is lots of positive press for both companies and a great deal of money available. Also the Mines Protache program, kind of a leader follower program.
2. No, but cost is a bigger factor in EMD.
3. Flight test program. The noise pollution was a problem
4. When: As early as possible, it needs to be in the budget from the beginning. It the old iron triangle: affordable, specifications and delivery

Form: Selection criteria

5. Make it a requirement. The product we ask for will direct the process we need to maintain. If we ask for some environmentally sound then upkeep will also be environmentally sound.

- Profit motivates
- make it a "mutual benefit" for everyone
- tax incentives
- further mandates in the law
- establish a program that watch and work toward achieving a completely environmentally clean program

General comments:

- They have contracts I can look at showing incentive clauses and special provisions and the Award fee. Recommended I look into composite wings and the B-2 and C-17 SPOs

Interview 6

1. Either an award fee or the "hammer" seems to work best
2. Cad plating and protests. Hill AFB had to award under the old criteria because it was ruled unfair if they didn't, then they replaced the cad plates with something more environmentally sound
3. No
4. Basically feels the incentives should be in the requirements to get the best results
5. Performance requirements so the contractor has freedom of choice
 - Separate environmental organizations so they can be questioned all the way up to the CDR
 - Direct a hazard material program
 - money, in source selection and force companies to switch their practices

General comments:

- Brooks has a variation of a VE program, its in recycling and looks at the life cycle cost estimation to see how much money can be saved using environmentally sound processes.
- AFMC is heading a joint program with Bob Hill and other major defense contractors (JG-APP) to look as common test they have to do for all the services to determine the most economical way to handle future environmental demands.
- IMP is another program that was successful that could be brought back to help this cause.

Interview 7

1. Yes. An award fee is good, much better than negotiating for the incentives.
2. The increased emphasis on compliance is helping the contractors, because they are held hostage to state and local standards anyway. They are starting to show an increased interest in pollution prevention.
3. There was a close call at a plant in St. Louis concerning the release of MEK. The plant was warned if they released any more MEK, the city of St. Louis would shut down the plant. Through the group efforts of JG-APP, the use of MEK was eliminated from all of the contracts that used to require it accelerating the entire process by 15 months.
4. The incentive should come after the award. A real incentive encourages continuous improvement through the life of the contract and at this time it helps create a better balance for the award. The form should be an award fee. Once the contract has been awarded, relative to the contract, see what other services are using the same contractor and then join with the other production lines and share the costs of any improvements or new processes. If the incentive is done before the award, the whole cost is passed to one program, after award, the cost is split between all the programs where the contract has direct benefit.
5. Partnering with contractors, similar to partnering with them. We need to investigate mutual concern issues both the government and the contractor faces and team up with them to find ways to solve the problems.

General comments:

- The hardest part of JG-APP is getting support from the various program offices and then coordinating any future efforts between the difference services and the contractor.
- All major defense contractors today are environmentally aware. Companies can not afford not to be environmentally conscious. It is part of all of the major contractor's corporate goals.
- Money does not always talk. It is not a matter of money. The key is to manipulate the overhead budgets so that they reflect the different multi-service multi-contract joint efforts so one service or program does not have to pay for all the environmental improvements.
- We need to start looking for proactive ways for partnering and pollution prevention. Other government agencies are helping towards the effort. This push has to be incorporated into each individual contract and the authority to change has to be present on

every contract. We still must go through and change each contract. If we do not, old contracts force new contracts to have a dual nature and this doubles the cost. We need to link all the different contracts and production lines together through the various DPROs. This would mean changing the current system.

- The environment does not fit form and function together yet.

- EPA is cracking down to a point, then we might start to see some slow downs or stops in operations. Now industry is paying 25 billion dollars a year in compliance costs and the Air Force is paying 30 billion dollars a year in restoration costs.

Interview 8 (four people)

This interview was conducted on the telephone on a conference line. It was too difficult to distinguish between the four gentlemen, so their responses has been complied and recorded under one interview.

1. All four responded yes. One mentioned a small business mentor program that was a form of an incentive that has been very successful. One person felt if you removed incentives you would begin to block the technological transfer process and companies would begin to be very secretive with the government. They all liked award fees and how it affect product improvement by identifying unique problems out in the field.
2. All four responded no to this question.
3. All four responded to this question also.
4. Three of the four felt the incentive should be present for the source selection and one felt at award. The form the incentive should take was again split. Three felt in the form of selection criteria and one felt in an award fee. They all felt that the government needs to back off a bit with the standards and regulations and they should know that the contractors are acting in the best interest of the environment.
5. One felt the best way to encourage environmental responsibility was through money. Another felt that the proposals should stress to the contractor that improvements are important. Another felt that the EPA and OSHA should give more rewards to companies that continue to comply with there standards. The last person felt the government needed to give contractors the opportunity to go beyond the standards and to quit enforcing so many new rules on them.

General comments:

- They felt NAS411 was not leveling the playing field and had a negative affect on different companies.
- They spoke of a double-edged sword: The government in tune to be socially responsible, while the contractor is driven by the bottom-line. If there is no money out there for the contractor to pursue environmental responsibility it is not always top priority.
- The incentives should focus on the deliverables the contractor gives to the government, not the contractor's in-house operations on how they made the end product. The government should have confidence in the contractor that the operations are acceptable.

Appendix D. Alternate Analysis

The previous four theories introduced in Chapter II, indicate there are ways to influence or encourage a particular behavior resulting in a desired outcome through some type of incentive either positive or negative. With the previous theories we assumed a conventional form of incentive would work. We looked at prior incidents when the government was successful at incentivizing defense contractors. What happens when these traditional forms of incentives either contract or policy do not work within the environmental arena? What are the affects to the market when all we can do is disincentivize the contractors? An alternate way to look at this situation is through a traditional economic theory which offers an explanation of how the market is affected through disincentives. A disincentive could be any environmental regulation, new administrative procedure or penalty. This classical economic theory illustrates the how disincentives affect the behavior in contractors.

First, we look at the supply and demand curve associated with national defense. To simplify the example, we will think of national defense in terms of airplanes.

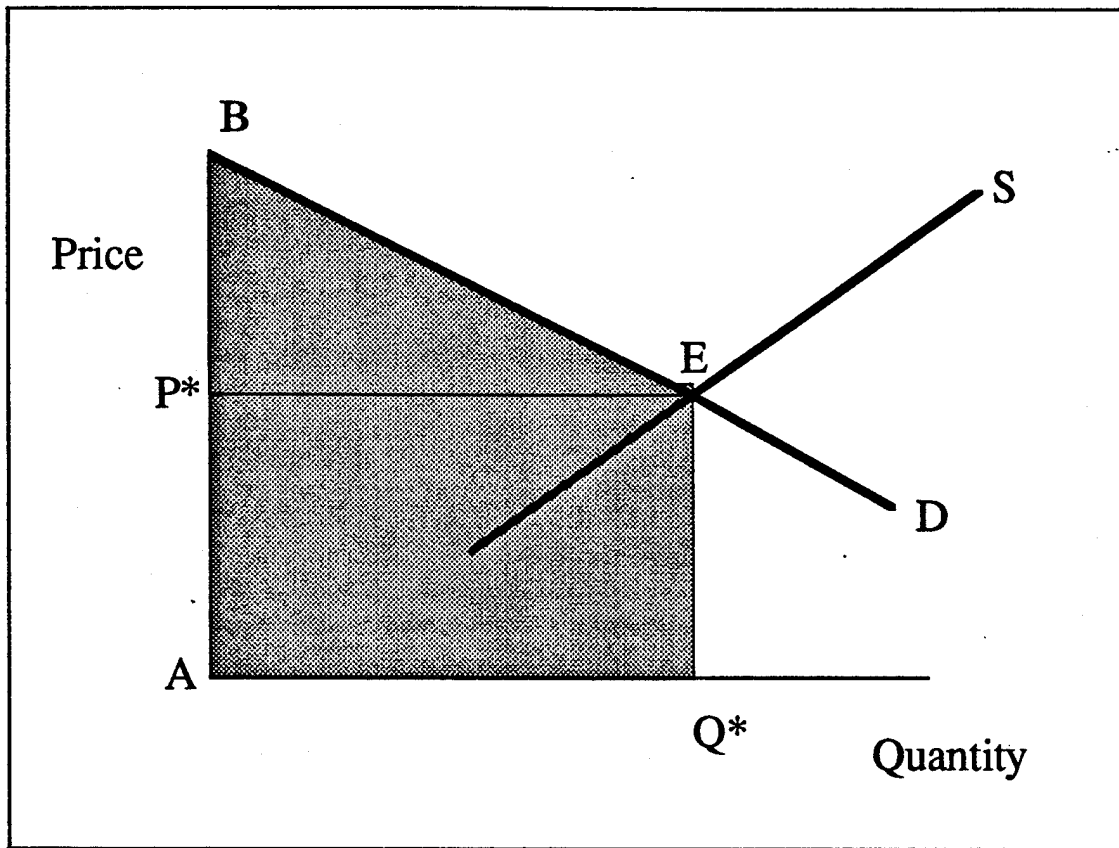


Figure D-1. Total Utility of Airplanes

Figure D-1 illustrates the natural equilibrium price and quantity the market can handle for national defense noted here as airplanes. The equilibrium price and quantity are shown at P^* and Q^* respectively. The shaded area designated as EQ^*AB represents the amount government would be willing to pay for airplanes assuming natural market conditions. This area under the demand curve represents the total utility attached to the consumption of each airplane.

By subtracting what airplanes actually costs at the equilibrium price of P^* (represented as area AP^*EQ^*), from the total area under the demand curve, area EQ^*AB , we are left with triangle P^*BE , known as the consumer's surplus. (See figure D-2.) Consumer surplus is the difference between what the consumer would be willing to pay

and what the consumer actually has to pay. "Consumer's surplus is a measure of the net benefit received by the consumer" (Mansfield, 1988: 100).

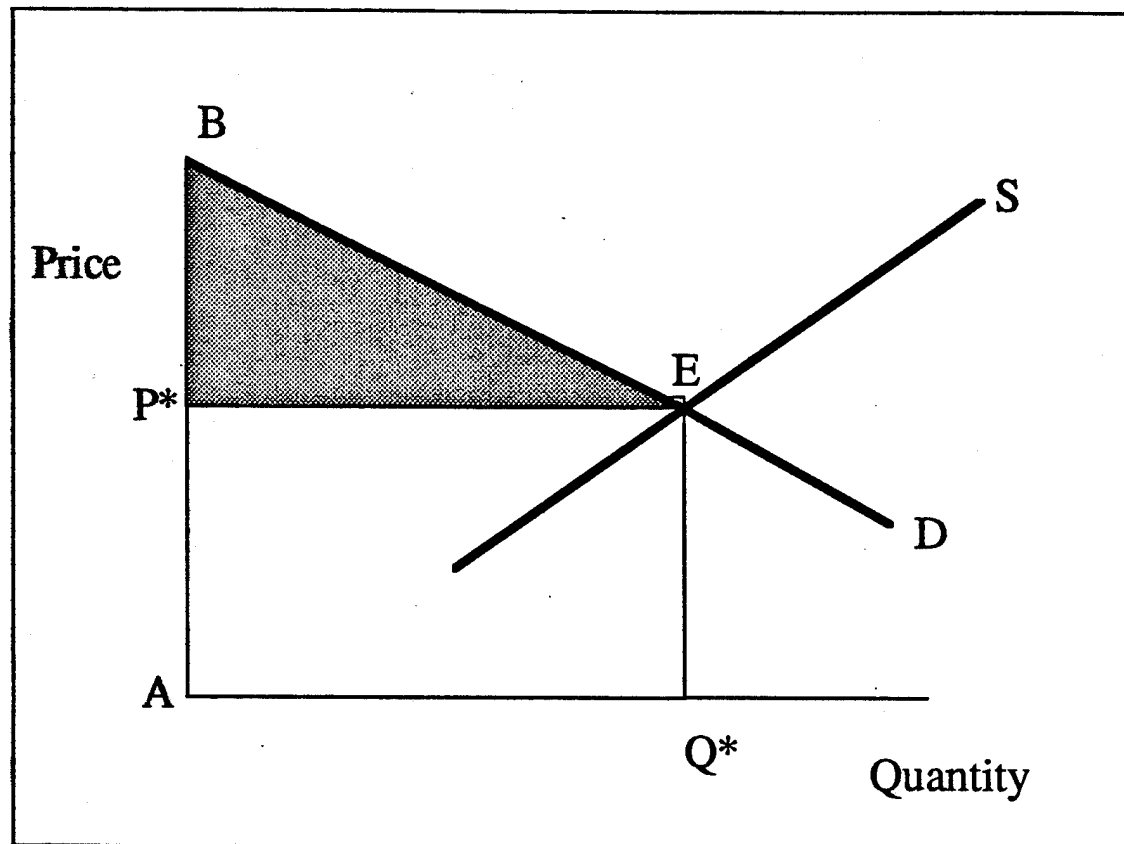


Figure D-2. Consumer's Surplus

Now we consider what happens when an outside force, for instance the federal government, imposes regulations or policies that raise the price at equilibrium to a higher level. We see this when government environmental regulations raise the price of airplanes. The increase in price can be in the form of fines, higher EPA standards, more federal regulations, or stricter clean-up procedures. The method of increase is not important, what is important is the affect the higher price level has on the entire market.

Figure D-3 illustrates what happens when the price level is increased by a disincentive, such as an environmental regulation or fine. The new equilibrium point at P'

and Q' , represents a smaller area under the demand curve (area 4) and a smaller consumer surplus (area 5).

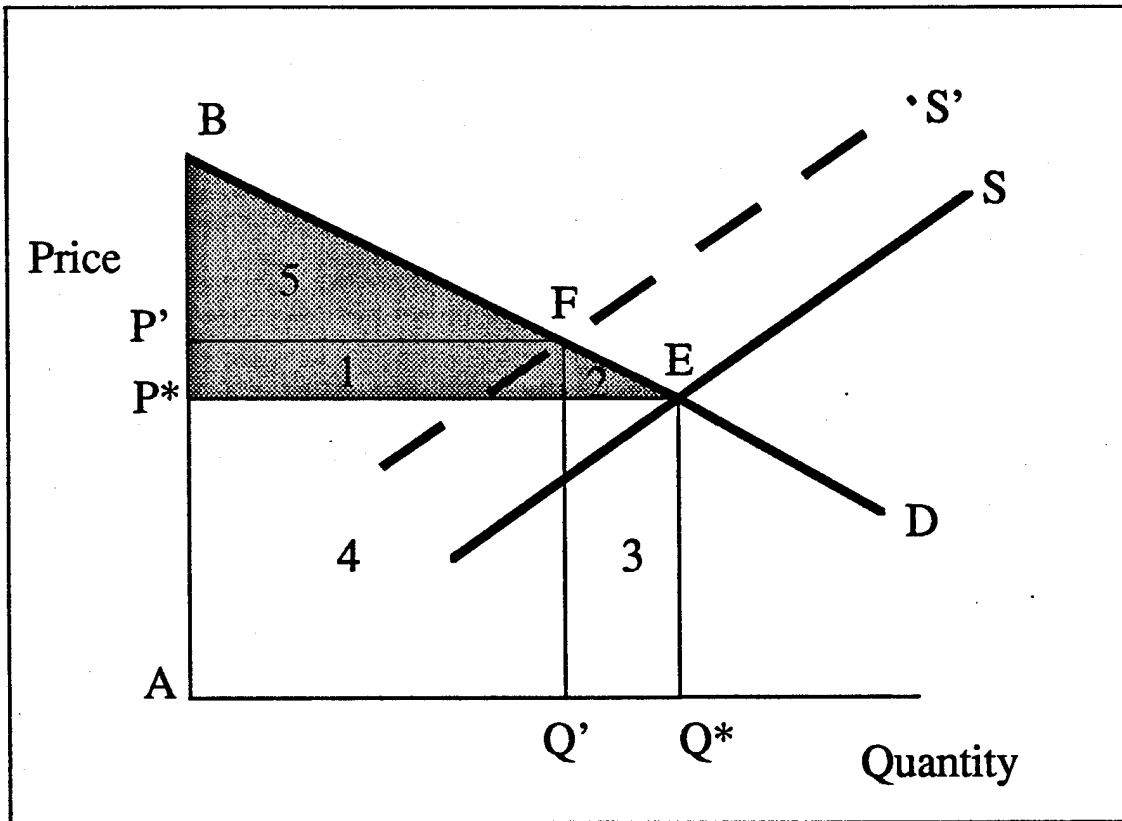


Figure D-3. Equilibrium Point With Environmental Regulations

The higher price level, caused by some type of environmental regulation, the equilibrium point has shifted from point E to point F. This indicates that the price we pay for airplanes is higher and the quantity of airplanes we are willing to buy has decreased. The graph also has a few new areas of concern.

Area 1 and 2 together represent the loss in consumer's surplus. Individually, area 1 is the gain from a cleaner environment, while area 2 is the loss due to inefficiencies. Area 3 is simply a straight loss of national defense. It

represents that $(Q^* - Q')$ fewer planes will be purchased. Fewer planes can translate into a smaller or weaker national defense.

With the original supply line, the government pays for areas 3 and 4 ($P^* \times Q^*$) for areas 1 + 2 + 3 + 4 + 5 in national defense. Using the supply line with environmental regulations, the government is paying for area 1 and 4 ($P' \times Q'$) for only 1 + 4 + 5 in national defense. Depending on the slope of the supply and demand curves, it may be possible for the government to pay close to the same amount for less defense.

What we now need to investigate is how to get back to a natural equilibrium point. Moving back to point E will increase consumer surplus, reduce inefficiencies, and add to national defense. But what about area 1 and the cleaner environment associated with it? This is where we need to begin to look more creatively at incentives and invest money into programs that are not disincentives but new forms of incentives.

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13. ABSTRACT (Maximum 200 words) This study examined corporate social responsibility and the most effective ways to incentivize environmentally proactive behavior among federal production contractors. The goal was to isolate factors which have the greatest potential for encouraging corporate environmental responsibility and to use the knowledge gained to construct incentives which can be incorporated into federal contracts. Relying on the concepts developed in organizational theory, four theories were presented to provide support that organizational behavior can be influenced. Previous incentive techniques used by the government were also investigated. From the initial research, a model was developed to describe the relationship between incentives and environmental responsibility. Personal interviews with individuals involved in the acquisition process and review of various contract documents were conducted. An informal interview guide was used to interview government contracting officers, environmental engineers, and contractors associated with two System Project Offices. Interviews with high level policy makers were also conducted. Analysis of the data suggest that incentives do work; however, based on the theories of Transaction Cost Economics, policy incentives appear to be more effective than contract incentives at producing the kind of organizational environmental awareness the government is looking for from its contractors.				
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