Determining best practice in corporatestakeholder relations using data envelopment analysis: An industry-level study

Authors: Catherine Lerme Bendheim, Sandra A. Waddock, Samuel B. Graves

Persistent link: http://hdl.handle.net/2345/2563

This work is posted on eScholarship@BC, Boston College University Libraries.

Post-print version of an article published in Business & Society 37(3): 306-338. doi:10.1177/000765039803700304.

These materials are made available for use in research, teaching and private study, pursuant to U.S. Copyright Law. The user must assume full responsibility for any use of the materials, including but not limited to, infringement of copyright and publication rights of reproduced materials. Any materials used for academic research or otherwise should be fully credited with the source. The publisher or original authors may retain copyright to the materials.

Determining Best Practice in Corporate-Stakeholder Relations Using Data Envelopment Analysis: An Industry Level Study

> Catherine Lerme Bendheim Carroll School of Management Boston College Chestnut Hill, MA 02167 617-552-0468 Fax: 617-552-0433 e-mail: catherine.bendheim@bc.edu

Sandra A. Waddock Carroll School of Management Boston College Chestnut Hill, MA 02167 617-552-0477 Fax: 617-552-0433 e-mail: waddock@bc.edu

Samuel B. Graves Carroll School of Management Boston College Chestnut Hill, MA 02167 617-552-0464 Fax: 617-552-0433 e-mail: samuel.graves@bc.edu

Appeared as: Determining Best Practice in Corporate-Stakeholder Relations Using Data Envelopment Analysis: An Industry Level Study. Catherine Lerme Bendheim, Sandra Waddock, and Samuel B. Graves. *Business and Society*, 37 (3), September 1998, 306-338.

Determining Best Practice in Corporate-Stakeholder Relations Using Data Envelopment Analysis: An Industry Level Study

#### ABSTRACT

This paper presents a study of corporate-stakeholder relationships using an empirical technique called Data Envelopment Analysis (DEA) to assess company "best practices" with respect to five primary stakeholders at an industry level of analysis. Five key stakeholder domains are considered: community relations, employee relations, environment, customer (product category), and stockholders (financial performance). These data reflect the relationships between companies and these five primary stakeholders; these relationships are considered to be important elements of corporate social performance. About 15% of companies, on average, are found to be operating at the multidimensional "best practices frontier" that DEA establishes. Differences in treatment of stakeholders within industries and between industries are observed.

### Determining Best Practice in Corporate-Stakeholder Relations Using Data Envelopment Analysis: An Industry Level Study

This paper presents an empirical study of corporate-stakeholder relationships using a technique called Data Envelopment Analysis (DEA) to assess company "best practices" with respect to five primary stakeholders at an industry level of analysis. Stakeholder theory (Freeman, 1984; Evan & Freeman, 1987; Donaldson & Preston, 1995) and empirical research (Clarkson, 1995) indicate that companies do explicitly manage their relationships with different stakeholder groups. Donaldson and Preston (1995) point out that while this is descriptively true, companies appear to manage stakeholders for both instrumental--or performance based--reasons and, at the core, normative reasons. Clarkson's (1995) extensive case study-based analysis of company stakeholder relationships does indicate that companies manage specific stakeholder relationships as their fundamental way of engaging their social responsibilities.

Building on the work of others, Clarkson (1995) defines primary stakeholders as those "without whose continuing participation the corporation cannot survive as a going concern" (p. 107), suggesting that these relationships are characterized by interdependence. He includes among this group shareholders or owners, employees, customers, suppliers, as well as government and communities. Starik (1995) includes environment as well. As with the "web of life" described by Capra (1997) in this view the corporation is seen as fundamentally relational, that is as a "system of primary stakeholder groups, a complex set of relationships between and among interest groups with different rights, objectives, expectations, and responsibilities" (Clarkson, 1995, p. 107).

Clarkson's extensive case research on companies has provided insight into specific policies, practices, and outcomes with respect to corporate treatment of primary

stakeholders. There has, however, been little empirical work done to date that attempts on a broad scale to assess descriptively (or instrumentally or normatively, for that matter) whether treatment of stakeholders in different industries is consistent or differs. Further, little is known about whether--or if--companies make trade-offs among stakeholder groups. Some companies presumably perform better than others with respect to different stakeholders. Yet scholars still don't know what portion of companies in an industry are performing at the current state of the art with respect to their stakeholders. This paper will address these gaps in understanding by using externally-derived ratings of firm behavior within five stakeholder domains to explore stakeholder relationships within six broad industry groupings. Using the DEA technique, which will be explained below, we will derive not only the percentage of best-practice firms in a given industry, but also begin to look at some of the trade-offs that are made on an industry basis among stakeholders.

Assessing best practice is similar to the many "benchmarking" studies that companies undertake to determine current state-of-the-art practices. Benchmarking occurs in a range of arenas, from quality and productivity analysis to public affairs management (e.g., Rao et. al., 1996; Fleisher, 1995). As with other benchmarking types of studies, the assessment of best practice in this study does not suggest that any firm or industry is currently operating at an "ideal" state (i.e., the present study is descriptive rather than normative or even instrumental, c.f., Donaldson & Preston, 1995). Rather the study provides insight into current practices as a baseline for further, instrumentally- and normatively-oriented research.

#### Background: Stakeholders and Corporate Social Performance

Relations between companies and their primary stakeholders have emerged in recent years as a major focus of the social issues in management field (Freeman, 1984; Evan & Freeman, 1988; Brenner & Cochran, 1991; Goodpaster, 1991; Carroll, 1995; Donaldson & Preston, 1995; Jones, 1995b). Indeed, Donaldson & Preston (1995) and

Jones (1995) have separately argued that stakeholder theory should become a dominant, if not the dominant, paradigm for the field, while some scholars (e.g., Swanson, 1995; Wood, 1991a) imply that "corporate social performance" should reign supreme. Others have argued (Evan & Freeman, 1988; Clarkson, 1995; Wood & Jones, 1995; Waddock & Graves, 1997; Waddock, 1996) that a merging of these theories can be found by raising the level of analysis from that of the individual firm and its behaviors to the level of stakeholder relations. Scholars holding this perspective argue that CSP is more than a set of discretionary responsibilities (e.g., Carroll, 1979), but rather that CSP is in fact the relationships that exist between companies and their primary stakeholders. This argument thus posits that the heart of CSP itself lies in the day-to-day operational treatment by a company of its numerous stakeholders (c.f., Evan & Freeman, 1988; Clarkson, 1995; Waddock & Graves, 1997), thereby redefining the CSP construct. This definition is the one that will be used in the present research.

The rationale for exploring primary stakeholder relationships as indicators of CSP is that stakeholder relationships operationalize social performance in definable ways that go well beyond philanthropic activity (Clarkson, 1995). Thse relationships are interdependent in that each party affects the other's outcomes to some extent (Freeman, 1984). Primary stakeholders include those groups in addition to owners with a clear stake in the success or failure of the firm (Freeman, 1984; Evan & Freeman, 1988; Clarkson, 1995; Donaldson & Preston, 1995; Wood & Jones, 1995). For example, employees, who have invested time, energy, and intellectual capital in the firms, and customers with whom there is a trust that products or services will have fundamental quality, integrity, and usefulness and will cause no harm, are classified as stakeholders. Further, companies interact in important ways with their communities, who have invested in local infrastructure that supports company health and who, in turn, depend upon the company for employment opportunities. And at least one scholar has argued that the environment ought to be given primary stakeholder status because companies depend

upon it for raw materials and should treat it in such as way as to not reduce its potential for replacement and renewal (Starik, 1994).

Taking these five categories of relationships as the primary stakeholder set to be considered we can begin to consider ways of empirically addressing the quality of these relationships and drawing both theoretical and practical implications of these relationships. Ideally, of course, one would add other primary stakeholder groups, such as suppliers, government, public interest groups, and the media (e.g., Freeman, 1984; Clarkson, 1995). For the purpose of the present study, however, we are limited to the above categories because of data availability.

From the relational perspective discussed above, assessment of the performance of companies with respect to the identified set of primary stakeholders may constitute a reasonable approximation of overall corporate social performance, especially if the boundaries of the "best practices" and accompanying trade-offs among stakeholder groups can be identified empirically. If best practice boundaries can be determined, then it will ultimately be possible to identify exemplar companies on a range of stakeholder dimensions, providing benchmarks at which companies can aim. The fundamental purposes of this study therefore are to provide a preliminary descriptive mapping of stakeholder practices in a range of industries, to explore differences and similarities in the treatment of different stakeholders across different industry contexts, and to determine the relative difficulty of achieving best-practice status within those industries. This map can provide a comparative assessment for companies and scholars. It can also be used to begin pointing both scholarship and practice towards lessening any existing gaps between current practices and exemplary stakeholder treatment, potentially creating normative standards for stakeholder treatment (Donaldson and Preston, 1995). By assessing the current state of practice, we can better understand what remains to be done.

Defining the Frontiers of Company-Stakeholder Practice

Jones (1995a) recently proposed the use of an analytical technique called data envelopment analysis (DEA) as a methodology that would help develop a comprehensive and empirically testable understanding of stakeholder relations. Using DEA, a researcher can assess a range of stakeholders relations into what Goodpaster (1991) has termed a "multifiduciary" (as opposed to unitary, i.e., purely stockholder-directed) decision making process. This multidimensional assessment is possible because DEA permits empirical analysis of performance along multiple dimensions simultaneously, such as the ones identified above as primary stakeholder relations. The output of DEA analysis is a multidimensional rating that integrates best practices, i.e., the highest ratings, in the multiple dimensions studied, as well as any trade-offs made among the stakeholders that still allow companies to achieve "best-practice" status. The output creates what is termed the best practice (BP) "frontier." This frontier serves as an umbrella defined by a number of best-practice companies identified by the DEA analysis, making different choices with respect to stakeholder relations under which less than bestpractice companies are dominated with respect to their ratings in at least one dimension (see Appendix A for an explanation of the "umbrella" concept).

DEA helps to obviate many of the conceptual problems surrounding singlemeasure studies of corporate social performance undertaken in the past.<sup>1</sup> DEA, which is explained in more detail below and in Appendix A, is useful because it encompasses a range of performance categories. It allows for useful distinctions among companies, as soon as the sample size gets large enough (more precisely, the sample size ought to be at least five times the number of dimensions of evaluation). Further, using DEA we can determine the degree to which companies fail to achieve best practice status (here termed shortfall) and the "gaps" that exist between the best practice firms and the evaluated firms

<sup>&</sup>lt;sup>1</sup>We thank Reviewer #1 for some of this wording and some of these insights and helpful commentary.

in that industry group, pointing to directions where improvements in stakeholder relationships can be made.

The DEA technique allows for simultaneous comparison of firms across multiple measures of firm behavior (Seiford and Thrall, 1990). These measures are grouped into input, output and categorical measures. Input measures represent minimizing goals such as number of strike days. Output measures represent maximizing goals such as return on investment or customer satisfaction. Categorical measures represent environmental variables beyond the control of firms, such as industry membership (Banker and Morey, 1986). A variety of mathematical models have been developed that effect DEA and allow some flexibility in the assessment in terms of setting priorities for goals and relative tradeoffs across goals (Charnes et al., 1990; Ali et al., 1995). The assessment is summarized by a scalar, equivalent to an efficiency score, which gauges an individual firm's distance from the best-practice frontier.

#### **Research Questions**

This study is exploratory in nature and primarily methodologically focused. To deal with the exploratory nature of the research the following research questions are posed:

- 1. Within and across industries, does the treatment of primary stakeholders differ?
- 2. What portion of companies within industries is operating at the current state of the art with respect to stakeholder relations?
- 3. How much "gap" is there between the performance of best-practice companies and non-best practice companies with respect to treatment of different stakeholders?
- 4. Descriptively, which stakeholders overall are accorded better and worse treatment by companies?

We propose to use the DEA technique on stakeholder and financial data to identify the overall best practice frontier within broad industry categories with respect to

five key stakeholders: communities, employees, environment, customers (product), and owners (ten-year total return to shareholders). These best practice frontiers will represent those enterprises operating at the current state of the art and making relevant trade-offs among stakeholder groups as necessary to sustain their best practice CSP status among peers within their industry grouping.

#### Methodology

As noted above, this paper reports on a research attempt to meet Jones' (1995) challenge to use DEA to empirically determine the frontiers or best practices of social performance as measured by the stakeholder relationships.

#### Data and Variable Development

Data on corporate social performance (CSP) are from the social research firm of Kinder, Lydenberg, Domini (KLD). KLD rates corporate social performance of companies in the Standard & Poors 500 listing along ten dimensions, four of which are used for this study. KLD's ratings of employee relations, product (a surrogate for customer relations), community relations, and environmental responsibility were obtained for each year from 1990 to 1993. For details on the construction and empirical use of KLD data as a source of corporate social performance assessment, please refer to Waddock & Graves (1997; forthcoming), Sharfman (1993), and Ruf et al., 1993.

Each of KLD's categories is rated from "major concern" to "major strength," which is converted to a 1-5 Likert-type scale in the present research (a major concern=1, concern=2; neutral rating=3, strength=4, and major strength=5). Other categories rated by KLD, such as involvement in nuclear development or military contracting, are excluded from the present research because they do not represent primary stakeholders (Freeman, 1984; Starik, 1994). Although some of the information used by KLD is selfreported, as much as possible it is based on explicit objective measures (e.g., fines paid, moneys donated, liability suits, and the like) so that where possible, explicit quantitative

and comparable measures are used across companies in the various categories; numerous sources other than company self-reports, including press coverage, other rating sources, and governmental data where available are used to generate, verify, and cross check data. Waddock & Graves (forthcoming) provide further background information about the KLD database and Sharfman (1993) assesses the validity of KLD data as a measure of CSP.

A moving average of ten-year financial return to shareholders is used as a surrogate for treatment of owners. The tenth year is matched to the year of the stakeholder data derived from KLD. Financial data are taken from Fortune's reputational rankings. Ten-year total return is used to avoid year-to-year stock market fluctuations (see Waddock & Graves, 1997 for further rationale). These data provide a long-term rather than short-term measure of treatment of owners, i.e., to smooth out fluctuations related to the business cycle, recessions, or significant company-specific year-to-year fluctuations. To deal with scale differences that would otherwise place differential emphasis on financial returns over other stakeholder measures and yield a five point rating, ten-year total return is segmented into five performance categories one standard deviation wide around the mean ( category 3: mean  $\pm$  .5SD, category 2(4): [mean  $\pm$  .5SD; mean  $\pm$ 1.5 SD], category 1(5): [mean  $\pm$ 1.5SD; mean  $\pm$ 2.5 SD] depending on the direction). Table 1 provides ranges of financial return and company counts by year for each category of financial performance.

KLD screens and rates the entire Standard & Poors 500 plus a range of smaller firms. For purposes of the present research, we used companies in the S&P 500 companies that were also included in the Fortune reputational data is used. In fact, although the limitations of KLD's data need to be recognized, these data do represent the only currently-available externally-based assessment of the S&P 500 corporations over a consistent range of stakeholder arenas, over time, by a set of observers with no immediate

"stake" in any given company (see Wood & Jones, 1995; Waddock & Graves, forthcoming, for further discussions of the data and their limits and advantages).

Results are reported by industry grouping. Earlier research (Waddock & Graves, 1994) has demonstrated the importance of using industry controls in research assessing CSP. Control for industry is especially important in CSP research, where the nature of the industry itself, as well as the historical context, may influence stakeholder relationships (Graves & Waddock, 1994). For example, by the nature of their business, extraction industries bear a heavier environmental burden than do service industries.

Initially, there were a total of 37 industries represented in the data based on Fortune industry groupings. To reduce the data analysis to manageable proportions, these industries were classified into six groupings of related industries with similar general characteristics. For example, companies in industries with a dominant consumer products orientation were grouped into a category called consumer products; similar judgments were made for each broad industry grouping by the researchers. The consolidated groupings of industries are listed in Table 2: 1) assembly/light manufacturing (n=136); 2) consumer products (n=135); 3) extraction/ primary industries (n=166); 4) heavy industry (n=146); 5) service (n=204); and 6) transport (n=30).

Companies included in this study are all of those for which full KLD and Fortune data are available in the five-year period from 1990-1991; companies are included in each industry as many times in that period as they made the Fortune index. Data Envelopment Analysis

Data Envelopment Analysis (DEA) is a mathematical programming technique developed by Charnes, Cooper and Rhodes (1978) for assessing the efficiency of a number (n) of decision-making units (DMUs), with respect to a variety of inputs (m) and outputs (s). A more complete explanation of DEA is included as Appendix A. The technique identifies a best-practice frontier, which is made up of a) units that are nondominated with respect to their outputs and their inputs, and b) convex combinations of

observed non-dominated units. The scope of applications, as reported in the extensive bibliography of DEA compiled by Seiford (1990) transcends disciplines. Jones (1995) has indicated that DEA may be a useful technique for determining the cutting edge practices in social performance as they apply to specific stakeholder groups. Moreover, the expansion to new fields prompts new developments of the methodology as models to perform DEA are customized to fit the specific circumstances of applications. Ali and Seiford (1993) present the fundamentals of the methodology in detail.

Definition of outputs and inputs

In this study firms are the decision-making units. Each firm is characterized by the five CSP scores for each of the primary stakeholders: community, employees, environment, customers (product), and stockholders. Since it is desirable for the firm and all stakeholders to have firms score as high as possible for all of these dimensions, these stakeholder scores are designated as outputs for the analysis.

The selection of inputs proves more difficult. The scope and amount of resources that firms engage in the attainment of these CSP (output) scores is difficult to ascertain and certainly varies across industries. Within an industry the question remains whether financial success and more resources lead to better CSP or whether better management, independent of size or resources, leads to better CSP (see Wood & Jones, 1995, for a comprehensive review). It follows that using size, measured either by book value of assets or number of employees, as an input to the analysis is tantamount to assuming the first hypothesis that more resources ought to lead to better social performance. Given that this position has not been so far substantiated in the literature we elect to not include any differentiating resource-based input measure in the analysis. Further, since the model being tested is including owners as one of the primary stakeholders and since the predominant measure of treatment of owners is financial performance, we cannot use financial performance as an input measure without redundancy. Since DEA calls for at least one input, we resort to a "dummy" input, assigning a score of 1 to all firms. This

situation is equivalent to studying an isoquant, a situation familiar to economists, and to evaluating firms exclusively with respect to their output shortfalls. Consequently, the DEA models used in this analysis are "output-oriented" models and the DEA-produced measures are measures of output efficiency.

The specific DEA models used in this analysis are detailed in Appendix A.

#### DEA measure of overall CSP

DEA identifies best-practice (BP) firms and, for firms not operating on the bestpractice (NBP) frontier, it identifies the areas and degrees of performance shortfall. We define the DEA measure of overall social performance as the ratio of a firm's aggregated scores on all dimensions of performance to the aggregated score of the best-practice firm to which the firm is compared. This score is somewhat equivalent to an efficiency score and serves to measure the distance of a firm to the best-practice frontier. For instance, a score of 1 indicates that the firm is a BP unit while a score of .85 indicates that the firm is only achieving 85% of best-practice performance.

In the results to be reported below, we will be able to make a determination of the relative proportion of companies operating at the BP frontiers within each industry grouping noted above. We will also be able to assess the overall shortfall of general practice within each industry grouping with respect to each stakeholder category. For this initial reporting of results, we will focus on the BP frontier by industry. In addition to the proportions noted above, we report mean stakeholder ratings for each BP group within industries, the mean score for NBP companies within the industry, and the mean shortfall, a score that indicates the relative concentration or dispersion of practices among firms in an industry.

**Results and Discussion** 

#### Results

Table 1 reports four year data for the classification of firms into the five financial performance categories for ten-year total return to shareholders (1990-1993, consistent with KLD data availability). As noted, this rescaling was necessary because the scale differences would otherwise have overwhelmed other data categories in the DEA analysis. As can be seen in the table, a rough approximation of a normal curve exists for performance categories within each yearly grouping. Financial performance clusters around the mid-range (class 3), with fewer companies performing one standard deviation away from the mean (classes 2 and 4) and still fewer two standard deviations from the mean (classes 1 and 5). Table 2 presents the consolidated industries so that the reader can see that companies with roughly similar characteristics have been grouped together.

The DEA programs separate best-practice (BP) companies from those not achieving best-practice (NBP) status. Table 3A presents both descriptive statistics and DEA classification data for purposes of establishing the BP frontier and assessing, from an industry-wide perspective, the relative proportion of companies achieving BP status. As well, the table provides industry-averaged KLD scores within each stakeholder category so that differences in DEA rankings can be assessed by looking at the specific trade-offs that are being made within industry groupings. As a note for future research, it is desirable and perhaps necessary to look at the DEA data on a company-by-company basis within specific industries as well to determine more of the content of BP companies' actual policies, procedure, and practices with respect to specific stakeholders. This initial study, however, takes an industry perspective because the complexity of assessing on a company basis would make this paper prohibitively long.

The percentage of firms achieving BP status indicates the extent to which more or fewer companies are performing at current BP status for their entire set of stakeholders. It can be seen that there are differences in the relative proportion of companies that attain best practice status in different industries. At the low end, with few companies with BP status are services (8.8%), extraction/primary industries (10.8%), and consumer products

(11.9%). This finding indicates that it is either relatively more difficult to achieve BP status in these industries (as is probably the case for extraction/primary industries), or that there are a few star firms in that industry that consistently achieve BP status (e.g., consumer products). Assembly/light manufacturing, (16.2%) stands in the midrange while transportation (20%) and heavy industries (25.3%) show somewhat higher proportions of best practice firms. In the case of heavy industries this situation could stem from the intense global competition which makes the diffusion of best-practice an imperative.

This percentage of BP firms in an industry can be analyzed further and in conjunction with the next column in Table 3A which gives the range of best-practice scores aggregated over the five stakeholder groups. The range is one indicator of the extent to which trade-offs among stakeholders are being made by companies that nonetheless achieve BP status. A wider range of BP scores indicates a broader variety of CSP strategies within that industry with respect to different stakeholders and possibly a larger set of best-practice companies. The high and narrow range obtained for consumer products points to the presence of star companies that do not sacrifice any stakeholder group. The company level results reveal that only seven distinct corporations constitute the best-practice frontier for this industry. These companies are Coca-Cola (93), General Mills (90, 91, 93), Gillette (91, 92, 93), Heinz (90), Merck (92, 93), P&G (93), and Rubbermaid (90, 91, 92, 93). The ranges for assembly and for services, on the other hand, is relatively broad, suggesting the existence of a relatively larger sets of BP companies according different treatment to stakeholders, i.e., demonstrating a broader array of CSP strategies. The company level results show that, respectively, the BP frontier for assembly and services is made up of 13 and 11 distinct corporations.

The mean DEA score listed in Table 3A is an overall industry average over NBP companies only. Including the BP companies whose DEA score is 1 would bias the average upward for the industries with a larger proportion of BP companies. For each

firm this DEA score is the ratio of the unweighted average score of the firm across all five CSP categories to the same unweighted average score of the BP company against which the firm is compared. The mean DEA score of the NBP companies within an industry gauges the distance of these firms from their industry best-practice frontier. Firms within the assembly group, heavy industries, and services, are clustered closer to their best-practice frontier (.79 mean DEA score) than firms within the transportation group (.74 mean DEA score).

The other columns of Table 3A list average CSP scores for the five stakeholder groups by industry as well as industry averages for all stakeholders (industry means) and stakeholder averages for all industries combined (stakeholder means). A Bonferroni Ttest for differences in means shows no significant differences for overall CSP scores across industries, giving the false impression that firms independently of industries behave alike with respect to CSP. The differences in stakeholder means reported in Table 3A indicate that some stakeholders, in general, receive more attention than others (with environment and product being scored notably lower than others in most industries and with community receiving the most positive ratings overall). Perhaps it is simply easier to do the "visible" community-related activities that bring attention and positive recognition to companies, while actually making the operational, product (and, by extension, customer) changes that would improve ratings in these latter categories may be intrinsically more difficult. This finding points to arenas in which proactive attention may provide some degree of positive gain for firms in comparison to their competitors. These average scores afford the assessment of tradeoffs across stakeholder groups by industry and the comparison of these trade-offs across industry groups.

Table 3B summarizes the results of Bonferroni T-tests for differences of means across stakeholder groups by industry and for all industries combined. For each industry there are significant differences in the treatment of different stakeholders. The most differentiation is found for the extraction group which shows four distinct clusters of

stakeholders. Specifically, environment is scored significantly lower than all other categories, with product and 10-year return to shareholders significantly lower than both employee and community relations and community higher than employee relations. The least differentiation is found for the transportation group, where scores cluster together and the only significant difference is that between return to shareholder and community relations. Community relations figure consistently as the stakeholder group rated highest and environment as the group rated lowest. Employee relations is rated higher than customer relations for all but two industries: heavy industries and transportation, where the difference is not statistically significant. The treatment of owners exhibits the most variability across industries, being a strength of the consumer products industry, ranking second for heavy industries, third for extraction industries, and last for assembly, services and transportation.

For all industries combined, the consistent rankings of stakeholder treatments are confirmed by testing the difference of mean scores across stakeholder groups. Total return falls into all three Bonferroni groups and thus is not significantly different from any of the other values. In contrast, community relations is significantly higher rated than environment and product/customer. Environment is rated significantly lower than employee relations and community relations, but is statistically the same as product/customer relations, and treatment of owners (return).

The sections below will assess each stakeholder group individually, using data from Tables 3B, 4, 5, and Figure 1. Further analysis of these mean scores broken down further by BP and NBP groups within each industry will indicate whether BP firms prioritize their relations to stakeholders differently.

Table 4 presents the mean BP scores, NBP scores, and mean shortfall of non-best practice firms by stakeholder group and industry. These data are shown graphically in Figure 1. The mean BP score (shown as a diamond in Figure 1) is the average KLD

score in a particular stakeholder category for all of the companies achieving best-practice status (not the ideal practice, simply what is currently best practice).

The mean NBP score is the average score for that stakeholder category for all of the companies not achieving best practice status (shown as a square in the figures). This score and its placement on the line indicate the distance that exists with respect to that stakeholder between the practices of companies achieving BP status and the rest of the group on average. A wide gap suggests that BP firms have greatly outdistanced competitors on that stakeholder dimension, while a smaller gap suggests that most companies' treatment of that stakeholder is similar.

The mean shortfall (shown as the triangle in Figure 1) is computed over NBP firms only since best practice firms do not have shortfalls by definition. Shortfalls are computed for each stakeholder group. For a specific NBP firm and a specific performance area, the shortfall is measured as the difference between the score of the BP firm against which the firm is compared and the score of the firm in that performance area. Mean shortfall is read by looking at the gap between 0 and where the triangle falls. It is important to note that the mean shortfall is not equal to the difference between the mean BP score and the mean NBP score. Indeed, it may happen, for instance, that NBP firms are evaluated against a subset of BP firms that happen to score relatively high in a particular dimension, resulting in an average shortfall in that dimension that is bigger than the difference between the mean BP score and the mean NBP score in that dimension. This situation is illustrated by the consumer products industry with respect to community relations.

Table 5 summarizes the results of Bonferroni T-tests for differences of means across stakeholder groups by industry for BP firms only. As expected, the differences in the treatment of different stakeholders becomes more blurred within an industry as BP scores tend to be high on most dimensions.

For the assembly grouping the only significant difference that remains is the better treatment accorded the community than that given the environment; the mean scores on these two dimensions represent the extremes of the range of mean scores for that industry group.

For the consumer products grouping, the notable difference is that customer relations is given a better standing among BP firms than among all firms together. Shareholders still fare significantly better than the environment and the community.

Regarding the extraction/primary industries groupings, the marked difference is for employee relations, which is an area of strength for BP firms. Finally, shareholders of BP firms fare better than they do on average over all firms.

In the case of the heavy industries grouping, shareholders again come out on top. BP firms put them ahead of all other stakeholders but community.

For services, employee relations are better among BP firms than over all firms on average and join community relations as the prime area of attention. Finally, with respect to the transportation grouping, all stakeholders are treated similarly by BP firms, however, the small size of the BP set for this industry (only six firms) warrants caution with respect to this result.

The sections below will assess each stakeholder group individually using data from Tables 4, 6A, 6B, and Figure 1.

#### Community Relations

Tables 6A, 6B, and Figure 1 highlight differences among industries in their relations with their communities. Over all firms, transportation, heavy industries, and extraction/primary have the poorest community relations. When looking at BP firms only (Table 6B), however, heavy industries and extraction appear as the worst performers for these industries. The mean shortfall is much larger than the gap between BP and NBP mean scores indicating that NBP firms are compared to BP firms, which score among the highest in that dimension. This finding may suggest that companies are attempting to

give back in visible ways to the communities that might otherwise perceive them as having negative environmental impacts. With respect to the transportation industry, it appears that most NBP firms are evaluated against BP firms that score relatively low on that dimension indicating a tendency to a satisficing strategy rather than a proactive stance in that dimension of performance.

On the other hand, services, consumer products, and assembly rank highest. They arguably make less direct negative impacts on communities and have reason to be more proactive with respect to potential customers and employees within communities in which they are located. This is confirmed by the mean shortfall for consumer products, services, and, to a lesser extent, assembly, which indicates that NBP firms tend to be evaluated with respect to BP firms that score on the high end of the range for that dimension. Services may lead in their attention to communities simply because they are services, which require strong community support if they are to be successful because of the face-to-face elements involved in delivering effective services.

#### Employee Relations

In terms of overall mean CSP scores, employee relations ranks second to community relations (mean=3.24) from Table 3A. Turning to Table 6A, over all firms, assembly, consumer products, and services do best in employee relations, performing statistically better than extraction and heavy industries. Heavy industries perform statistically worse than extraction industries.

Among BP firms, the only significant difference remaining is that related to heavy industries, where employee relations scores significantly lower than all other industry groups except transportation (Tables 4 and 6B). Again, the imperatives of global competition for this industry group often lead firms to extract wage and other concessions from their employees in order to maintain some cost competitiveness. The mean shortfall, however, for heavy industries is much higher than the difference between BP and NBP scores, indicating a strong recommendation to NBP firms to improve in that

area. Indeed, the risk of strikes and their damaging effect on competitive position ought to be well-known to firms in that industry.

The mean shortfall in employee relations is also high relative to other industries for the transportation and extraction/primary industries, indicating that employee relations ought to be a major concern area for these industries as well. It is entirely possible<sup>1</sup> that some of these differences in employee relations scores, especially those in the old-line manufacturing and extraction industries as compared to more service and consumer oriented industries, are related to the presence or absence of unions in those industries. Current data, however, do not permit further investigation of this hypothesis.

The consumer products and assembly industries exhibit similar behaviors. The average NBP and average BP employee relations scores are close, indicating little variation in performance along that dimension and the recommendation emanating from the mean shortfall is that, nevertheless, the better performances ought to be emulated.

With respect to services, the large gap between mean BP and mean NBP employee relations scores stands out, indicating a broad array of behavior on the part of the firms with respect to employees. Moreover, this industry group exhibits the smallest average shortfall indicating that recommendations to firms would not generally be to emulate the highest scoring BP firms.

#### Environment

As noted above, overall CSP scores for environment are the lowest on average (mean=2.61), perhaps highlighting the fact that there is no direct "voice" for the environment (as there tends to be for other stakeholders), and environmental groups that do exist tend to lack power to effect change in private corporations.<sup>2</sup> Perhaps this finding also reflects fairly large differences with respect to environmental impact among the industry groups. Combined industry rankings indicate that environmental scores are

<sup>&</sup>lt;sup>1</sup>We are grateful to one of the reviewers for this hypothesis.

<sup>&</sup>lt;sup>2</sup>We are grateful to one of the reviewers for this hypothesis.

significantly lower than employee relations and community relations, and at the same level as product/customer relations and return to owners (Table 3B). Looking at Table 6A, across industries the extraction group scores significantly lower on environment than all other groups, followed by heavy industries and consumer products. Services score highest and significantly higher than all groups but transportation for environment. Such differentiation disappears when comparisons are made for BP firms only, perhaps due to the fact that some firms in all industries responded early to the marketing appeal of green/environmentally friendly products and policies.

The mean shortfall information indicates that NBP in the heavy industries group is not evaluated on average against BP firms that score on the high end of the BP range on environment. Again, from a cost competitiveness point-of-view, firms in that group are somewhat constrained to comply with minimum regulatory requirements. Benefits from additional friendliness toward the environment would not outweigh the costs associated with them and might eventually jeopardize the survival of the firm. Product/Customer Relations

Over all firms consumer products and extraction industries have significantly lower scores in customer relations than services, assembly, and transportation industries. Heavy industries have significantly lower scores than assembly.

With respect to BP firms only, however, the rankings are substantially different. Consumer product firms hold the high end of scores on customer relations, while service firms drop to the low end. The evaluation of NBP firms shows that customer relations is not of utmost importance for consumer product firms, since the mean shortfall, even though large in absolute value, is small relative to the size of the gap between mean BP and NBP scores. Surprisingly, this gap is the largest of all industry/stakeholder combinations, indicating that a wide range of product/customer practices exists in consumer products industries.

Regarding services, the opposite situation prevails: the gap between mean BP and NBP customer scores is the smallest of all industry/stakeholder combinations, and the relatively large mean shortfall indicates that NBP firms are evaluated against BP firms that score on the high end of the BP range for customer relations. Company level detail is necessary to explain why the mean BP score is so low in an area that, intuitively, is key to the survival of service firms.

#### Treatment of Shareholders

Over all firms, consumer products stands out as the industry group treating shareholders the best (Table 6A). Another significant difference is services, which scores higher in treatment of owners than extraction/primary industries.

Over BP firms only, consumer products is still the kindest to shareholders, but shares that distinction with extraction/primary industries. Services does not perform better than other industry groups with respect to owners. It is worth noting that services' shareholder relations is the only industry stakeholder combination where the mean NBP score is higher than the mean BP score and the mean shortfall is the largest. This points to a few star BP firms achieving the highest score on that dimension and relatively high scores in other dimensions that are used in the evaluation of a large number of NBP firms. For interest sake, we note that the star firms are Home Depot and FNMA (Fannie Mae). The finding also points to the existence of BP firms that do not excel with respect to shareholders, hence bringing down the average BP score, but distinguish themselves in their treatment of other stakeholders, thus earning a BP status. This type of reversal may happen because BP is determined by assessing multiple dimensions simultaneously. With respect to heavy industries, the average shortfall is smaller than the gap between BP

and NBP scores indicating that the NBP firms do not point to shareholders as their main area of concern.

#### Conclusion

The DEA technique was used in this study to assess best practice performance on an industry basis by stakeholder category. The study demonstrates that wide differences exist among industries in dealing with the five primary stakeholders studied. Some of these differences in treatment are statistically significant. The study also finds that in some industries a greater portion of companies is operating at the best-practice frontier than in others and that in some industries there is a wide dispersion of practices with respect to primary stakeholders, while in others companies cluster together in their practices with respect to most stakeholders. Industry appears to matter with respect to stakeholder treatment, and it is clear that trade-offs among stakeholders are being made in practice.

Further, overall differences exist in the best practices of companies with respect to specific stakeholders and those not yet achieving best practice status. It is harder in the services, extraction, and consumer products industries to achieve BP status than in the other industries studied. In the other industries, differences are less, suggesting more similarity among company stakeholder practices. In the former industries, where this is a significant gap between BP and NBP, achieving state-of-the art practice may be more difficult, perhaps because of the diversity of companies represented in consumer products and services. Alternatively, the gap may exist because of the relative difficulty of achieving BP in extraction/primary (old-line) industries, where some firms have modernized and others may hold onto long-standing, less stakeholder-friendly policies.

For some industries and companies (e.g., assembly, services, heavy industry), there is a relatively short distance between firms operating generally at the state of the art and others, while in other industries (consumer products, extraction, transportation), the gap is wider. While we can conclude in general that some stakeholders overall are

treated better than others (e.g., environment and product/customer relations are consistently lowest ranked, and community generally receives highest rankings), to fully understand the ratings, we must now begin looking within industries to understand how similar companies deal with a given stakeholder or stakeholder set.

Finally, there are variations between best practice performance and the average (mean) performance of companies by industry with respect to each stakeholder. While our findings represent a first exploratory effort to use DEA to assess stakeholder practices, there is certainly more work to be done both on an industry and individual company level to decompose these relationships.

#### Implications for Future Research

It can readily be seen that the DEA analysis provides a good descriptive assessment of differences within stakeholder categories on a within-industry basis. Using DEA, we have been able to differentiate best-practice and non-best practice firm performance for five stakeholders within industry groupings and we also note differences across industries. This technique can also be used in future research to assess specific company performance and, supplemented by qualitative data, to examine more detailed trade-offs among stakeholders at the firm-specific level of analysis. Clearly, much of this work needs to be done at the industry and individual company level, rather than across several industries where this first attempt to apply DEA to stakeholder treatment has focused. Such a detailed focus would permit attention to the firm-specific factors that result in best or non-best practice and allow for the highlighting of specific firm behaviors, policies, and procedures that make for better social performance. Other factors, such as the relative unionization of various industries should also be considered in such research.

As Jones (1995) indicated, this type of research can potentially continue to shed significant theoretical and empirical light on CSP in new and empirically powerful ways. We believe that one possibility for the use of this method is to help managers define current state-of-the-art practices in stakeholder arenas such as those addressed here and to begin pushing the boundaries of such practices. Also, as more data become available, it would be possible to push understanding of resources used to gain certain advantages and to address whether or not companies treating different stakeholders well or poorly achieve better or worse performance outcomes. DEA is a complex methodological advance over simpler methods of assessing performance, one that permits simultaneous multidimensional assessment. As such, it provides a significant advantage for researchers using single dimensional assessment techniques in arenas such as corporate social performance where the nature of activity and data are inherently multidimensional.

#### References

- Ali, A. I., & Seiford L. The mathematical approach to efficiency analysis. In H.O. Fried,
   C.A. K. Lovell, S.S. Schmidt (Eds.), The measurement of productive efficiency:
   techniques and applications. New York, Oxford, 1993, 120-159.
- Ali, Agha I., Catherine S. Lerme, and Lawrence M. Seiford (1995) "Components of Efficiency Evaluation in Data Envelopment Analysis" European Journal of Operational Research, 80: 462-473.
- Banker, R.D., Charnes, A., and Cooper, W.W. Some models for estimating technical and scale inefficiency in Data Envelopment Analysis. Management Science, 1984, 30(9), 1078-1092.
- Banker, Rajiv D., and Richard C. Morey (1986) " The Use of Categorical Variables in Data Envelopment Analysis." Management Science, 32: 12, 1613-1626.
- Brenner, S. & Cochran, P. 1991. A Stakeholder Theory of the Firm. Proceedings of the International Association of Business and Society, Sundance, UT, March.

Capra, Fritjof (1996). The Web of Life. New York: Anchor Books.

- Carroll, Archie B. (1979) "A Three-Dimensional Conceptual Model of Corporate Social Performance." Academy of Management Review, 4: 497-505
- Carroll, Archie B. (1995). Stakeholder Thinking in Three Models of Management Morality: A Perspective with Strategic Implications. in Juha Nasi (ed.),

Understanding Stakeholder Thinking. Helsinki, Finland: LSR-Publications, 1995, 47-74.

- Charnes, A, Cooper, W. W., & Rhodes, E. Measuring the efficiency of decision making units. European Journal of Operational Research, 1978, 2(6), 429-444.
- Charnes, A, Cooper, W. W., Golany, B., Seiford, L., & Stutz, J. Foundations of Data Envelopment Analysis for Pareto-Koopmans efficient empirical production functions. Journal of Econometrics, 1985, 30(1/2), 91-107.
- Charnes, Abel, William W. Cooper, Z. M. Huang, and D.B. Sun (1990) "Polyhedral cone-ratio DEA models with an illustrative application to large commercial banks", Journal of Econometrics, 30: 12, 73-91.
- Clarkson, Max B.E. (1995). A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. Academy of Management Review. 20: 1, 92-117.
- Donaldson, Thomas, and Lee E. Preston (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. Academy of Management Review, January, 20: 1, 65-91.
- Evan, William M., and R. Edward Freeman (1988). A Stakeholder Theory of the Modern Corporation: Kantian Capitalism. In Ethical Theory and Business, edited by T.Beauchamp and N. Bowie. Englewood Cliffs, NJ: Prentice-Hall.

- Fleisher, Craig S., Sara Burton, Annette Regier, and Peter Shafer (1995). Public Affairs Benchmarking: A Comprehensive Guide. Washington, DC: Public Affairs Council.
- Freeman, R. Edward (1984). Strategic Management: A Stakeholder Approach. New York: Basic Books.
- Goodpaster, Kenneth E. (1991). Business Ethics and Stakeholder Analysis. Business Ethics Quarterly, 1: January, 3-73.
- Jones, Thomas M. (1995b). Instrumental Stakeholder Theory: A Synthesis of Ethics and Economics. Academy of Management Review, April, 20 (1): 404-437.
- Jones, Thomas. (1995a). Instrumental Stakeholder Theory and Paradigm Consensus in Business and Society: Advances on the Methodological Front. Proceedings of the Annual Meeting of the International Association for Business and Society. Vienna, Austria.
- Rao, Ashok, Lawrence P. Carr, Ismael Dambolena, Robert J. Kopp, John Martin, Farshad
   Rafii, and Phyllis Fineman Schlesinger (1996). Total Quality Management: A
   Cros Functional Perspective. New York: John Wiley & Sons.
- Ruf, B., K Muralidhar, and K. Paul. (1993) Eight Dimensions of Corporate Social Performance: Determination of Relative Importance Using the Analytic Hierarchy Process. Academy of Management best Paper Proceedings, 326--330.

- Seiford, Lawrence M. (1990) "A bibliography of data envelopment analysis (1978-1990)", Version 5.0, The University of Massachusetts at Amherst.
- Seiford, Lawrence M., and Robert M. Thrall (1990) "Recent Development in DEA: The mathematical programming approach to frontier analysis", Journal of Econometrics, 46: 7-38.
- Sharfman, M. (1993) A Construct Validity Study of the KLD Social Performance Data in Dennis Collins (ed.) Proceedings of the International Association of Business and Society. 4: 551-- 556.
- Starik, Mark (1994). Essay on The Toronto Conference: Reflections on Stakeholder Theory. Business and Society, April, 33: 1, 89-95.
- Starik, Mark (1995). Should trees have managerial standing? Toward stakeholder status for non-human nature. Journal of Business-Ethics. March, 14 (3): 207-217.
- Swanson, Diane L. (1995). Addressing A Theoretical Problem by Reorienting the Corporate Social Performance Model. Academy of Management Review, 20: 1, 43-64.
- Waddock, Sandra (forthcoming). Strategy, Structure, and Social Performance: Implications of the W-Form Enterprise. Business and the Contemporary World.
- Waddock, Sandra A. and Samuel B. Graves (1994). Industry Performance and Investment in R&D and Capital Goods. The Journal of High Technology Management Research, Vol. 5, No. 1, 1-17.

Wood, D. J. (1991b). Social Issues in Management: Theory and Research in Corporate Social Performance. Journal of Management, 17 (2): 383-406.

Wood, D. J. (1994). Business and Society. New York: HarperCollins.

Wood, Donna J. (1991a). Corporate Social Performance Revisited. Academy of Management Review, 16: 691-718.

Class	1990	1991	1992	1993
1	< -0.02	< 0.03	< 0.04	< 0.03
	n = 20	n = 11	n = 12	n = 14
2	[-0.02, 0.08[	[0.03, 0.12[	[0.04, 0.11[	[0.03, 0.10[
	n= 35	n = 43	n = 40	n = 36
3	[0.08, 0.18[	[0.12, 0.22[	[0.11, 0.19[	[0.10, 0.18[
	n = 76	n = 84	n = 80	n = 106
4	[0.18, 0.28[	[0.22, 0.31[	[0.19, 0.27[	[0.18, 0.26[
	n = 46	n = 43	n = 45	n = 67
5	$\geq 0.28$	$\geq 0.31$	$\geq 0.27$	$\geq 0.26$
	n = 15	n = 15	n = 13	n = 16

 Table 1: Counts by Financial performance (10-year total return to shareholders) class and year

Assembly/Light Manufacturing (n = 136) Apparel Computer Electronics Furniture Scientific/PhotoEquipment Textiles	Consumer Products (n = 135) Beverages Food/Tobacco Pharmaceutical Soap/Cosmetics
Extraction/Primary Industries (n = 166) Building Materials Chemicals Forest/Paper Metals Mining/Oil Products Petro-Refining Pipeline/Utility Rubber Plastic	Heavy Industry (n = 146) Aerospace Utilities Industrial/Farm Equipment Metal Products Motor Vehicles/Parts Transportation Equipment
Service (n = 204) Entertainment/Publishing Commercial Bank Div. Financial Div. Services Engineering/Construction Food/Drug Stores Health Care Retail Savings Bank Specialist Retail Wholesalers	Transportation (n = 30) Airlines Rail/Trucking Transport

### Table 2: Industry Groupings

		# Best	Range	Mean	Aver	age (	CSP			
		Practice	BP	DEA	Rati	ng (ca	ategoi	ry)		Ind.
Industry	Ν	Firms (%)	Score	Score	CR	ĒR	EŇ	PR	Ret	Mean
Assembly/ light mfg	136	22 (16.2%)	14.5-20	0.79	3.67	3.44	2.76	2.99	2.87	<u>3.14</u>
Consumer products	135	16 (11.9%)	19-20.5	0.76	3.62	3.40	2.72	2.50	3.90	<u>3.23</u>
Extraction/ primary industries	166	18 (10.8%)	15.5-18.5	0.75	3.42	3.13	1.98	2.56	2.80	<u>2.78</u>
Heavy industries	146	37 (25.3%)	14.5-18	0.79	3.27	2.90	2.47	2.66	2.83	<u>2.82</u>
Services	204	18 (8.8%)	16-21	0.79	3.84	3.37	3.04	2.91	3.09	<u>3.25</u>
Transport- ation	30	6 (20%)	17-19	0.74	3.20	2.98	2.70	3.13	2.57	<u>2.92</u>
			Stakehold	er Mean	3.56	3.24	2.61	2.75	3.06	

Table 3A.	Sample and Summa	rv Descrintive S	Statistics of DEA	Analysis
	Sample and Summa	i j Desemptive L	statistics of DLI	1 <b>1 1 1 a</b> 1 <b>y</b> 51 5

BP Score: Best practice score computed as sum of scores on all five stakeholder categories for a best practice company.

 Table 3B. Significant Differences within Industries in Stakeholder Means:

(Bonferroni [Dunn)] T tests for differences in means [95% confidence level])

Assembly/light manufacturing:	$\{EN, Ret, PR\} < \{ER, CR\}$
Consumer products:	$\{PR, EN\} \le \{ER, CR\} \le \{CR, Ret\}$
Extraction/primary industries:	$\{EN\} \le \{PR, Ret\} \le \{ER\} \le \{CR\}$
Heavy industries:	$\{EN, PR\} \le \{PR, Ret, ER\} \le \{CR\}$
Services:	$\{PR, EN, Ret\} < \{ER\} < \{CR\}$
Transportation:	$\{\text{Ret, EN, ER, PR}\} \le \{\text{EN, ER, PR, CR}\}$
For All industries combined:	$\{EN, PR, Ret\} \le \{PR, ER, Ret\} \le \{CR, ER, Ret\}$
CR: community relations	PR: product/customer relations

ER: employee relations EN: environment Ret: 10-year total return to shareholders

			CSP C	ategor	y	
Industry		CR	ER	EN	PR	Ret
Assembly	mean BP	4.05	3.93	3.23	3.64	3.36
light mfg	mean NBP	3.65	3.40	2.69	2.90	2.85
	mean shortfall	0.82	0.67	0.79	0.79	0.59
Consumer	mean BP	4.19	3.78	3.25	3.94	4.63
products	mean NBP	3.56	3.35	2.65	2.32	3.82
1	mean shortfall	1.32	0.86	0.73	1.12	0.81
Extraction/	mean BP	3.72	4.00	2.72	3.11	3.78
primary	mean NBP	3.38	3.04	1.93	2.51	2.74
industry	mean shortfall	0.77	1.12	0.95	0.80	0.82
Heavy	mean BP	3.41	3.09	3.02	3.11	3.70
industry	mean NBP	3.27	2.85	2.34	2.54	2.53
5	mean shortfall	0.89	0.89	0.54	0.61	0.56
Services	mean BP	4 61	4 39	3 39	2 94	3 06
	mean NBP	3 76	3 27	3 01	2 90	3 10
	mean shortfall	0.98	0.71	0.44	0.79	1.30
Transport-	mean BP	3.83	3.83	3.67	3.83	2.83
ation	mean NBP	3.08	2.82	2.52	3.00	2.48
-	mean shortfall	0.51	1.20	1.14	0.99	0.68

# Table 4. Mean Best Practice Score, Non-Best-Practice Score and Mean Non-Best-Practice Firms Shortfall by Stakeholder and Industry

CR: community relations

ER: employee relations

EN: environment

PR: product/customer relations

Ret: 10-year total return to shareholders

### Table 5. Significant Differences within Industries in Stakeholder Means for Best-Practice Firms only:

(Bonferroni [Dunn)] T tests for differences in means [95% confidence level])

Assembly/light manufacturing:	$\{EN, ER, PR, Ret\} \le \{ER, PR, Ret, CR\}$
Consumer products:	$\{EN, ER, PR,\} \leq \{ER, PR, CR\} \leq \{PR, CR, Ret\}$
Extraction/primary industries:	$\{EN, PR\} \leq \{PR, CR, Ret\} \leq \{CR, Ret, ER\}$
Heavy industries:	$\{EN, ER, PR, CR\} \le \{CR, Ret\}$
Services:	$\{EN, PR, Ret\} \leq \{ER, CR\}$
Transportation:	{EN, ER, PR, Ret, CR}
CR: community relations ER: employee relations EN: environment	PR: product/customer relations Ret: 10-year total return to shareholders

## **Table 6A. Significant Differences within Stakeholder Groups in Industry Means:**(Bonferroni [Dunn)] T tests for differences in means [95% confidence level])

E: extraction/primary industrie	es T: transportation
C: consumer products	S: services
A: assembly	H: heavy industries
Stockholder Relations:	$\{T, E, H, A\} \le \{T, H, A, S\} \le \{C\}$
Customer Relations:	$\{C, E, H\} \le \{H, S, T\} \le \{S, A, T\}$
Environment:	$\{E\} < \{H, T, C\} \le \{T, C, A\} \le \{T, S\}$
Employee Relations:	$\{H, T\} \leq \{T, E\} \leq \{T, S\} \leq \{S, C, A\}$
Community Relations:	$\{T, H, E\} \le \{T, E, C\} \le \{E, C, A\} \le \{C, A, S\}$

# Table 6B. Significant Differences within Stakeholder Groups in Industry Means for Best-Practice Firms only:

(Bonferroni [Dunn)] T tests for differences in means [95% confidence level])

Community Relations:	$\{H, E, T\} \le \{E, T, A, C\} \le \{T, A, C, S\}$
Employee Relations:	$\{H, T\} \leq \{C, T, A, E, S\}$
Environment:	{E, H, A, C, S, T}
Customer Relations:	$\{S, H, E, T\} \leq \{H, E, A, T\} \leq \{A, T, C\}$
Stockholder Relations:	$\{T, S, A, H, E\} \le \{E, C\}$
A: assembly	H: heavy industries
C: consumer products	S: services
E: extraction/primary industri	es T: transportation