Social Responsibility and Firm Efficiency in the Business Services Industry

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Abstract

Assumed performance benefits are often used as motives to drive coporate social responsibility (CSR) initiatives. Is improved efficiency among these performance benefits generated by CSR initiatives? This study empirically examines the association between corporate social responsibility and the efficiency dimension of firm performance. The relationship between corporate social responsibility and financial performance has received increasing and conflicting attention in recent years. Its role in maximizing shareholder wealth is still a subject of continued debate. Turning attention to efficiency examines another dimension of performance. Specifically, we examine the association between corporate social responsibility (CSR) and efficiency in the business services industry from 2005 to 2007. We measure efficiency using the relative efficiency score calculated by Data Envelopment Analysis (DEA). CSR is measured using Kinder, Lydenberg, and Domini (KLD), Inc. data. Results document evidence to support a positive association between CSR and firm efficiency. Documenting these potential efficiency benefits from CSR has important implications for CSR activities and initiatives particularly in our current turbulent economy. It supports recent work that links CSR with dimensions of improved competitiveness (Vilanova et al., 2009) including efficiency. The documented efficiency benefits of CSR are useful to businesses and support CSR strategies focused on "doing well by doing good".

Keywords: corporate social responsibility; relative efficiency; business services firms;

Data Availability: All data used in this study are available from public sources.

Introduction

The topic of corporate social responsibility (CSR) has received increasing attention in recent years.[1] The practice of CSR is still controversial since it requires that firms undertake additional investments in CSR. These CSR investments are often examined through the economic cost-benefit analytical lens, and assumed benefits from CSR activities drive CSR decisions. Some argue that CSR activities increase costs without sufficient offsetting benefits, hurt performance and compete with value-maximizing activities. Others argue that CSR activities sufficiently benefit firm performance and contribute to value-maximizing activities. Clarifying our understanding of CSR benefits is important.

The purpose of this study is to examine the association between CSR and improved efficiency benefits. We examine how CSR is related to firm efficiency from 2005 to 2007 using Kinder, Lydenberg, and Domini (KLD), Inc. data to measure CSR and Data Envelopment Analysis (DEA) to measure efficiency. Our study significantly differs from and adds to prior CSR studies in the following ways. First, we focus on measures of efficiency, another dimension of firm performance, instead of financial performance measures. The challenges in the world's current recessively tight economic environment increase the importance of efficiency. As revenue streams dry up, businesses look to efficiency efforts to control costs, maximize productivity, and maintain performance. Also, Feroz et al. (2008) argue that accounting measures like return on assets (ROA) and return on investment (ROI) may generate inconclusive performance results since these measures are measure-specific and can be affected by non-value-

[1] CSR is a corporate objective whereby business organizations are asked to consider the interests of society in their actions. They do this by taking responsibility for the impact of their activities on stakeholders in all aspects of operations. CSR goes beyond good citizenship in that it asks businesses to voluntarily take steps to improve the quality of life of society and go beyond their statutory obligation (Martin, 2008).

added factors. Alternatively, we use DEA to measure performance efficiency. Second, similar to Griffin and Mahon (1997), we focus our study on one industry, the business services industry (SIC=73). Beurden and Gossling (2008, p. 420) recently issued a call for industry-specific studies to advance the usefulness of CSR research by stating that "in order to continue to have value for management practice and for the improvement of the business world, future studies should focus on segments of groups of firms that practice [CSR]. In this respect, research in different industries may be helpful." By focusing on the business services industry, this study answers that call. Business service firms play an important role in our economy. Corporate social responsibility is becoming an important issue for them because their success depends on the trust they build with clients and stakeholders. Business service firms with high CSR standards can enhance their corporate reputation, attract high quality employees, and thus maintain trust with clients.

Our results indicate that there is a positive association between CSR and firm efficiency. The results should be of interest to managers who contemplate engaging in socially responsible activities, investors and financial analysts who assess firm performance, and policy makers who design and implement guidelines on CSR.

Literature Review and Hypothesis Development

Recent work by Vilanova et al. (2009) model the relationship between CSR and five performance dimensions of competitiveness that include (1) financial performance, (2) quality, (3) efficiency and productivity, (4) innovation, and (5) image. CSR can be defined as "the voluntary integration of social and environmental concerns in to business operations and in to

interactions with stakeholders" (Vilanova et al., 2009, p. 58).[2] Figure 1 presents a modified and simplified version of the Vilanova et al. (2009) model.

Insert Figure 1

The model is useful to practitioners and scholars in interpreting the relationship between CSR and various dimensions of performance. Many studies have analyzed the model's primary relationship between CSR and financial performance, one dimension of competitiveness (Chand and Fraser, 2006, McWilliams and Siegel, 2001) and suggested that financial performance is indeed a key driver for adopting CSR (Bansal and Roth, 2000, Haigh and Jones, 2006, Hess et al., 2002, Juholin, 2004, Porter and Van Der Linde, 1995). Most studies hypothesize a positive association between CSR and financial performance (Griffin and Mahon, 1997, McWilliams and Siegel, 2001) although results are not unanimous (Chand and Fraser, 2006) and the nature of the relationship between CSR and multiple dimensions of performance including financial performance is still somewhat unclear (McWilliams and Siegel, 2001, Porter and Kramer, 2006, Harrison and Freeman, 1999, Smith, 2003).

The inconclusive results and lack of clarity yield competing views on the relationship between corporate social responsibility and firm performance that still exist (Martin, 2008). Some argue that CSR uses additional costs that detract from a firm's wealth maximization function. Examples of these additional costs include making charitable donations, developing

[2] Vilanova et al. (2009, p. 58-59) group CSR activities into five performance categories: (1) CSR vision and governance activities (Carter et al., 2003, Freeman, 1999, Humble et al., 1994, Joyner and Payne, 2002, Pruzan, 2001, Sison, 2000), (2) community relations activities (Hess et al., 2002, Freeman, 1999, Frooman, 1999, Grey, 1996, Jones, 1995, Jones and Wicks, 1999), (3) workplace and labor practices activities (Sum and Ngai, 2005), (4) accountability and transparency activities (Elkington, 1998), (5) marketplace activities (Fan, 2005, Schnietz and Epstein, 2005, Whetten et al., 2001).

plans for community improvement, and establishing procedures to reduce pollution. For example, consistent with this position, early work by Aupperle et al. (1985) report a significant and negative association between CSR and accounting-based performance measures and did not find a significant link between CSR and market-based performance measures.

In contrast, others have argued for a positive relationship between CSR and financial performance. They suggest that being socially responsible can bring firms economic benefits that *contribute to* wealth maximization. CSR activities improve relationships with stakeholders which can ultimately lead to improved returns. A socially-responsible firm may face fewer labor problems, fewer complaints from the community, and fewer environmental concerns from the government. In addition, socially-responsible firms may have improved relationships with their investors, bankers, and government officials. The above factors suggest that firms that care about their social responsibilities may perform well in today's society.

Research also supports this view. Early work by Cochran and Wood (1984) find a weak link between corporate social responsibility and various measures of financial performance. Cochran and Wood (1984) point out that more comprehensive measures of corporate social responsibility are needed to further research in this area. McGuire et al. (1988) document a positive association between corporate social responsibility and accounting-based and market-based financial performance measures. In particular, their results suggest that, compared to a firm's subsequent performance, its prior performance is more closely related to corporate social responsibility. Waddock and Graves (1997) report a significant and positive relationship between various firm financial performance measures and corporate social performance. Tsoutsoura (2004) uses firms selected on the S&P 500 Index from 1996 – 2000 to also measure the effect of CSR on financial performance measures. The majority of these CSR-financial performance studies document a

positive relationship between CSR and dimensions of financial performance. In fact, a recent literature review (Beurden and Gössling, 2008) and meta-analysis (Orlitzky et al., 2003) both conclude a positive relationship between CSR and financial performance.

Efficiency is another key dimension of competitiveness in addition to financial performance (Vilanova et al., 2009). We define efficiency as a measure of productivity per unit of cost. This definition is consistent with the concept of economic efficiency which refers to the production of outputs (i.e., *productivity*) from a given quantity (i.e., *cost*) of inputs (Sullivan and Sheffrin, 2003, p. 15).[3] Efficiency has become an increasingly important dimension of performance. The current global economic downturn and resulting tough economic times have captured the attention of the American public, the U.S. government and focused business attention on efficiencies. Uncertainty in the current recession has caused business activity and revenues to stagnate. Controlling costs and improving cost efficiencies become increasingly critical in such an environment. Can CSR activities be used to improve efficiencies?

There is some evidence to hypothesize a positive relationship between CSR and the efficiency dimension of competitiveness using Vilanova et al.'s (2009) modified model in Figure 2.

Insert Figure 2

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[3]This definition of efficiency is also consistent with *Merriam-Webster's* Online Dictionary definition which defines efficiency as "a comparison of production with cost" (http://www.merriam-webster.com/dictionary/efficiency). This definition of efficiency is also consistent with Data Envelopment Analysis (DEA), a nonparametric technique used in this paper that produces measures of performance efficiency by using the ratio of outputs produced to the cost of inputs (Stuebs and Sun, 2009b, Charnes et al., 1978, Cooper et al., 2000).

Research has hypothesized and established links between CSR and reputation and between reputation and performance efficiency. These established links provide a foundation for hypothesizing a positive relationship between CSR and efficiency. First, research has found a positive association between CSR and reputation (Stuebs and Sun, 2009c). Second, research (e.g., Dierickx and Cool, 1989, Fombrun and Shanley, 1990, Herremans et al., 1993, Landon and Smith, 1997) examining the relation between reputation and performance generally supports a positive relationship between reputation and various performance dimensions including efficiency. Strategic management theory suggests that good reputation can create competitive efficiency advantages for firms (Fombrun, 1996, Roberts and Dowling, 2002, Podolny, 1993). Good reputation can help create cost advantages (Podolny, 1993, pp. 838-841) and has been found to be associated with firm efficiencies (Stuebs and Sun, 2009b, Stuebs and Sun, 2009a). The hypothesized conclusion of a positive relationship between CSR and efficiency follows from the established positive relationships between CSR, reputation, and efficiency.

We extend this prior work by empirically examining and verifying the hypothesized positive relationship between CSR and firm efficiency. We also extend prior work by turning attention to another dimension of performance besides financial performance, namely efficiency. We predict a positive link between corporate social responsibility and firm efficiency.

H: Corporate social responsibility is positively associated with firm efficiency.

Research Design and Variable Description

Measurement of the Primary Dependent Variable – Firm Efficiency

We measure firm efficiency by using Data Envelopment Analysis (DEA)—a nonparametric model. Charnes et al. (1978, p. 429) describes DEA as "a mathematical programming model applied to observational data that provides a new way of obtaining empirical estimates of

relations that are cornerstones of modern economics." DEA models produce measures of performance efficiency—the production of outputs with quantities of inputs. Cooper et al. (2000) suggest that this DEA performance efficiency measure is a better, more comprehensive performance measure than other more traditional financial performance measures. First, DEA is a more general, flexible, and adaptable measure of firm performance. DEA does not require a prescribed functional form such as the Cobb-Douglas production function. DEA also does not require users to assign weights to each input and output. Second, unlike the typical parametric approach that compares each decision making unit (DMU)[4] to an average DMU, DEA compares each DMU to the 'best' DMU. For these reasons, we use DEA to measure firm performance in our study.

The term 'best' is used here to mean that the (outputs/inputs) ratio for each DMU is maximized, relative to all other DMUs. For each DMU, DEA creates weights for inputs (v_i) and outputs (u_i):

$$\text{Input} = v_1 x_{10} + \ldots + v_m x_{m0}$$

$$\text{Output} = u_1 y_{10} + \ldots + u_s y_{s0}$$

DEA determines the 'best' input and output weights that maximize the (outputs/inputs) ratio for each individual DMU by using linear programming techniques. Each DMU's 'best' set of weights may differ from other DMUs.

Figure 3 shows a simple example of DEA. Assume one input and one output and a variable-return-to-scale production function. Suppose there are only 5 DMUs, (A, B, C, D, and E).

[4] In efficiency studies, the observational unit is called a DMU (Decision Making Unit). In general, a DMU is an entity that is responsible for converting inputs into outputs. DMUs may include, for example, entities like schools, firms, banks, hospitals.

Insert Figure 3

DMUs (A, B, C, D) are on the production efficiency frontier, and thus their values of the (output/input) ratio are one. The values of the (output/input) ratio for DMUs, which operate beneath the production efficiency frontier, are between zero and one. For instance, the efficiency of DMU (point) E is GF/GE.[5]

The first step in a DEA analysis is to select a specific DEA model. This study applies the variable-return-to-scale DEA model, also known as the BCC model (Banker et al., 1984). It is recommended by Cooper et al. (2000) to use the BCC model if there are multiple inputs or outputs involved in DEA studies. The BCC model estimates the efficiency of DMUs by solving the following linear program:

Max $z = u \cdot y_0 - u_0$

Subject to $v \cdot x_0 = 1$

$-v \cdot x + u \cdot y - u_0 e \leq 0$

$v \geq 0,\ u \geq 0,\ u_0$ free in sign

Where

x, y represent vectors of inputs and outputs respectively.

z and u_0 are scalars.

u_0 may be positive or negative.

e denotes a row vector in which all elements are equal to 1.

v and u denote weights associated with a particular DMU.

Selecting input and output variables to use in the DEA model is the next task. Physical measures and monetary measures are common types of input /output variables. This study uses monetary measures for the following three reasons. First, it is difficult to obtain variable

[5] The output/input ratio of point F is FH/GF, while the output/input ratio of point E is EJ/GE. Thus, the relative efficiency of point E is (EJ/GE)/(FH/GF) = GF/GE

information in physical units. Second, Battese and Coelli (1995) suggest that it is preferable to use monetary measures to measure efficiencies at the firm level since a firm is often engaged in many different activities. Third, using monetary measures may capture more information.

Feroz et al. (2008) argue that accounting measures like ROA and ROI may generate inconclusive performance results, since these measures are measure-specific and can be affected by non-value-added factors. Instead, Feroz et al. (2008) suggest that incorporating traditional accounting variables, such as sales and cost of goods sold, into a DEA model may produce a more comprehensive measure of firm performance. Consistent with Feroz et al. (2008), we include two conventional input variables (cost of goods sold and selling, general and administrative expenses) and one conventional output variable (sales) in our DEA. Table 1 summarizes these variables.

Insert Table 1

Since DEA compares each DMU's (outputs / inputs) ratio to the 'best' DMU, DEA models produce *relative* efficiency scores. Because DEA produces relative efficiency scores, a firm's DEA score should only be calculated within an industry of similar firms. We use the business services industry (SIC = 73) in our sample. Reputation is becoming more important for business services firms in light of recent corporate scandals and crises. A key factor in the success of business service firms is the trust between the firm and its clients. Because of the importance of CSR to business services, recent work focused attention on the relationship between corporate social responsibility (CSR) and firm performance in the banking (Simpson and Kohers, 2002) industry. We extend this work by examining the relation between CSR and efficiency in the business services industries.

Measurement of the Primary Independent Variable – Corporate Social Responsibility

KLD has been actively providing rating data on corporate social responsibility since 1991. KLD provides rating data for approximately eighty variables in seven qualitative areas for each selected firm. For each qualitative variable, positive ratings indicate strengths, and negative ratings indicate concerns. In addition to these seven qualitative areas, KLD also evaluates six controversial issues that include, for example, alcohol, gambling, and tobacco activities. A KLD index aggregates this CSR information. This KLD index provides a comprehensive measure of social responsibility since the KLD index compiles a broad spectrum of CSR information. In addition, the KLD database accumulates CSR information for a larger number of firms than other CSR data sources.

We subtract total concerns from total strengths and assign equal importance/weight to each area in calculating the KLD index score. This approach is suggested by KLD[6] and used in prior CSR research (e.g., Nelling and Webb, 2009). In other words, our KLD index score is computed as follows:

KLD = (Total strengths of Community – Total concerns of Community) + (Total strengths of Corporate Governance – Total concerns of Corporate Governance) + (Total strengths of Diversity – Total concerns of Diversity) + (Total strengths of Employee Relations – Total concerns of Employee Relations) + (Total strengths of Environment – Total concerns of Environment) + (Total strengths of Human Rights – Total concerns of Human Rights) + (Total strengths of Product – Total concerns of Product) - Any concerns of Alcohol – Any concerns of Gambling – Any concerns of Firearm – Any concerns of Military – Any concerns of Nuclear Power – Any concerns of Tobacco

Empirical Specification

[6] http://www.kld.com/indexes/ssindex/faq.html

We use the DEA and KLD index score measures in the following regression model to test the association between technical efficiency and corporate social responsibility.

$$DEA_{it} = \alpha_0 + \alpha_{1*}KLD_{it} + \alpha_2*LTA_{it} + \alpha_3*LEV_{it} + \alpha_4*AGE_{it} + \alpha_5*ROA_{it} + \alpha_6*YEAR06_{it} + \alpha_7*YEAR07_{it} + \varepsilon_{it} \quad (1)$$

Where

DEA_{it} = Efficiency score for firm *i* in year *t*,
KLD_{it} = Social responsibility index score for firm *i* in year *t*;
LTA_{it} = Natural log of total assets (Compustat Item #6) for firm *i* in year *t*;
LEV_{it} = leverage ratio [total liabilities (Compustat Item #9 + Compustat Item #34) / total assets (Compustat Item #6)] of firm *i* in year *t*,
AGE_{it} = Net Property Plant and Equipment (Compustat Item #8) / Gross Property, Plant and Equipment (Compustat Item #7) of firm *i* in year *t*,
ROA_{it} = return on assets [income before extraordinary items – available for common equity (Compustat Item #237)] / total assets (Compustat Item #6) of firm *i* in year *t*,
YEAR06 = 1, if *t* = 2006, otherwise 0,
YEAR07 = 1, if *t* = 2007, otherwise 0,

The firm performance variable of interest, DEA's technical efficiency, is the regression model's dependent variable consistent with McGuire et al. (1988) and Waddock and Graves (1997). The KLD index score is the independent variable of interest. Six control variables are included to control for firm size, leverage, age of long-term assets, return on assets, and time.

Sample Selection and Descriptive Statistics

KLD contains approximately 3,000 firm observations each year because the KLD database contains firms on the Russell 3,000 Index. After confining our sample to business services firms and matching KLD observations with Compustat financial data, our final sample consists of 215 business services firms for 2005, 213 business services firms for 2006, and 228 business services firms for 2007. Our total number of sample observations is 656.

Table 2 summarizes the sample firms' descriptive statistics for each of the three years. Information including mean and median of selected variables is provided. For instance, the mean value of DEA is 0.62, 0.60 and 0.59 while the mean value of the KLD score is -0.14, -0.31 and -0.23 in 2005, 2006, and 2007 respectively.

Insert Table 2

Table 3 reports the Pearson correlation matrix for selected variables in each of the three years. For each pair of variables, the Pearson correlation coefficient and related p-value are provided. In general, the results indicate that DEA is positively correlated with KLD, total assets, LEV, AGE, ROA and ROE in each of the three years. Of particular interest to this study, DEA is significantly ($p < 0.01$) positively correlated with KLD in each of the three years of our sample (i.e., 2005, 2006, 2007). The significant correlation between DEA and KLD for each of the three years (2005 – 2007) suggests that firm efficiency is positively associated with corporate social responsibility and provides initial evidence supporting our hypothesis.

Insert Table 3

Results

We run the regression model in Equation (1) to additionally test our hypothesis of a positive relationship between efficiency and CSR.

Insert Table 4

As expected, KLD's coefficient, α_1, is positive (0.0097) and significant ($p = 0.0044$). This finding suggests that there is a positive and significant association between DEA score and KLD score supporting our hypothesis. Additional evidence reveals that DEA is also significantly positively associated with firm size (LTA), AGE and ROA. Based on the variance inflation factors (VIFs) multicollinearity is not an issue in the regression model. Our results support our hypothesis and conclusion of a positive relationship between CSR and efficiency.

Conclusion

Corporate social responsibility continues to be an area of growing importance. Our work examined the association between corporate social responsibility and a firm's efficiency. We found that corporate social responsibility is positively associated with firm performance. Our findings lend support to the conclusion that corporate social responsibility has value to the firm.

Much work, however, remains to be done. Future extensions of this work can examine how corporate social responsibility is associated with other dimensions of firm performance. For example, how does corporate social responsibility affect specific inputs and outputs in the production process? How does corporate responsibility affect production costs, labor costs, or labor productivity? How does CSR affect different dimensions of firm productivity or risk? Answers to these questions would further our understanding of corporate social responsibility.

References

Aupperle, K.E., Carroll, A.B. et al.: 1985, 'An Empirical Examination of the Relationship between Corporate Social Responsibility and Profitability', *Academy of Management Journal* **28**(2), 446-463.

Banker, R.D., Charnes, A. et al.: 1984, 'Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis', *Management Science* **30**(9), 1078-1092.

Bansal, P. and Roth, K.: 2000, 'Why Companies Go Green: A Model of Ecological Responsiveness', *Academy of Management Journal* **43**(4), 717-736.

Battese, G.E. and Coelli, T.J.: 1995, 'A Model for Technical Inefficiency Effects in a Stochastic Frontier Production Function for Panel Data', *Empirical Economics* **20**(2), 325-332.

Beurden, P. and Gössling, T.: 2008, 'The Worth of Values – A Literature Review on the Relation between Corporate Social and Financial Performance', *Journal of Business Ethics* **82**(2), 407-424.

Carter, A., Simkins, B. et al.: 2003, 'Corporate Governance, Board Diversity, and Firm Value', *The Financial Review* **38**, 33-53.

Chand, M. and Fraser, S.: 2006, 'The Relationship between Corporate Social Performance and Corporate Financial Performance: Industry Type as a Boundary Condition', *The Business Review, Cambridge* **5**(1), 240-245.

Charnes, A., Cooper, W.W. et al.: 1978, 'Measuring the Efficiency of Decision Making Units', *European Journal of Operational Research* **2**, 429-444.

Cochran, P.L. and Wood, R.A.: 1984, 'Corporate Social Responsibility and Financial Performance', *Academy of Management Journal* **27**(1), 42-56.

Cooper, W.W., Seiford, L.M. and Tone, K.: 2000, Data Envelopment Analysis: A Comprehensive Text with Models, Applications, References and DEA-Solver Software. (Boston, MA, Kulwer Academic Publishers),.

Dierickx, I. and Cool, K.: 1989, 'Asset Stock Accumulation and Sustainable Competitive Advantage', *Management Science* **35**, 1504-1511.

Elkington, J.: 1998, Cannibals with Forks: The Triple Bottom Line of 21st Century Business. New Society Publishers),.

Fan, Y.: 2005, 'Ethical Branding and Corporate Reputation', *Corporate Communications* **10**(4), 341-350.

Feroz, E.H., Goel, S. et al.: 2008, 'Performance Measurement for Accountability in Corporate Governance: A Data Envelopment Analysis Approach', *Review of Accounting and Finance* **7**(2), 121-130.

Fombrun, C.: 1996, Reputation: Realizing Value from the Corporate Image. (Boston, MA, Harvard Business School Press),.

Fombrun, C. and Shanley, M.: 1990, 'What's in a Name? Reputation Building and Corporate Strategy', *Academy of Management Journal* **33**(2), 233-258.

Freeman, R.E.: 1999, 'Divergent Stakeholder Theory', *Academy of Management Review* **24**(2), 233-236.

Frooman, J.: 1999, 'Stakeholder Influence Strategies', *Academy of Management Review* **24**(2), 191-205.

Grey, B.: 1996, "Cross-Sectoral Partners: Collaborative Alliances among Business, Government and Communities", in C. Huxham (ed.), Creating Collaborative Advantage, (London, Sage Publications),.

Griffin, J. and Mahon, J.: 1997, 'The Corporate Social Performance and Corporate Financial Performance Debate: Twenty Five Years of Incomparable Research', *Journal of Business and Society* **36**(1), 5-31.

Haigh, M. and Jones, M.T.: 2006, 'The Drivers of Corporate Social Responsibility: A Critical Review', *The Business Review, Cambridge* **5**(2), 245-251.

Harrison, J.S. and Freeman, R.E.: 1999, 'Stakeholders, Social Responsibility and Performance: Empirical Evidence and Theoretical Perspectives', *Academy of Management Journal* **42**(9), 479.

Herremans, I.M., Akathaporn, P. et al.: 1993, 'An Investigation of Corporate Social Responsibility and Economic Performance', *Accounting, Organizations & Society* **18**(7), 587-604.

Hess, D., Rogovsky, N. et al.: 2002, 'The Next Wave of Corporate Community Involvement: Corporate Social Initiatives', *California Management Review* **44**(2), 110-125.

Humble, J., Jackson, D. et al.: 1994, 'The Strategic Power of Corporate Values', *Long Range Planning* **27**(6), 28-43.

Jones, T.M.: 1995, 'Instrumental Stakeholder Theory', *The Academy of Management Review* **20**(2), 404-437.

Jones, T.M. and Wicks, A.C.: 1999, 'Convergent Stakeholder Theory', *The Academy of Management Review* **24**(2), 206-221.

Joyner, B.E. and Payne, D.: 2002, 'Evolution and Implementation: A Study of Values, Business Ethics and Corporate Social Responsibility', *Journal of Business Ethics* **41**, 297-311.

Juholin, E.: 2004, 'For Business Or the Good of all? A Finnish Approach to Corporate Social Responsibility', *Corporate Governance* **4**(3), 20-31.

Landon, S. and Smith, C.E.: 1997, 'Indicators by Consumers: The Case of Bordeaux Wine', *Journal of Consumer Policy* **20**(3), 289-323.

Martin, J.D.: 2008, 'Shareholder Value Maximization: Is there a Role for Corporate Social Responsibility?', *Working Paper* **Baylor University**.

McGuire, J.B., Sundgren, A. et al.: 1988, 'Corporate Social Responsibility and Firm Financial Performance', *Academy of Management Journal* **31**(4), 854-872.

McWilliams, A. and Siegel, D.: 2001, 'Corporate Social Responsibility: A Theory of the Firm Perspective', *Academy of Management Review* **26**(1), 117-128.

Nelling, E. and Webb, E.: 2009, 'Corporate Social Responsibility and Financial Performance: The “virtuous Circle” Revisited', *Review of Quantitative Finance & Accounting* **32**(2), 197-209.

Orlitzky, , Schmidt, F. et al.: 2003, 'Corporate Social and Financial Performance: A Meta-Analysis', *Organization Studies (01708406)* **24**(3), 403-441.

Podolny, J.M.: 1993, 'A Status-Based Model of Market Competition', *American Journal of Sociology* **98**, 829-872.

Porter, M.E. and Kramer, M.R.: 2006, 'Strategy and Society: The Link between Competitive Advantage and Corporate Social Responsibility', *Harvard Business Review* **84**(12), 78-92.

Porter, M.E. and Van Der Linde, C.: 1995, 'Green and Competitive: Ending the Stalemate', *Harvard Business Review* **73**(5), 120-134.

Pruzan, P.: 2001, 'The Question of Organizational Consciousness: Can Organizations have Values, Virtues and Visions?', *Journal of Business Ethics* **29**(3), 271-284.

Roberts, P.W. and Dowling, G.R.: 2002, 'Corporate Reputation and Sustained Superior Financial Performance', *Strategic Management Journal* **23**(12), 1077.

Schnietz, K.E. and Epstein, M.J.: 2005, 'Exploring the Financial Value of Reputation for Corporate Responsibility during a Crisis', *Corporate Reputation Review* **7**(4), 327-345.

Simpson, W. and Kohers, : 2002, 'The Link between Corporate Social and Financial Performance: Evidence from the Banking Industry', *Journal of Business Ethics* **35**(2), 97-109.

Sison, A.J.G.: 2000, 'The Culutural Dimension of Codes of Corporate Governance: A Focus on the Olivencia Report', *Journal of Business Ethics* **27**, 181-192.

Smith, N.C.: 2003, 'Corporate Social Responsibility: Whether Or how?', *California Management Review* **45**(4), 52-76.

Stuebs, M.T. and Sun, L.: 2009a, 'Business Reputation and Labor Efficiency, Productivity and Cost', *Working Paper* **Baylor University and Ball State University**.

Stuebs, M.T. and Sun, L.: 2009b, 'Corporate Reputation and Technical Efficiency: Evidence from the Chemical and Business Services Industries ', *Journal of Applied Business Research* **25**(5),.

Stuebs, M.T. and Sun, L.: 2009c, 'Corporate Social Responsibility's Relationship with Reputation ', *Working Paper* **Baylor University and Ball State University**.

Sullivan, A. and Sheffrin, S.M.: 2003, Economics: Principles in Action. (Upper Saddle River, New Jersey, Pearson Prentice Hall),.

Sum, N. and Ngai, P.: 2005, 'Globalization and Paradoxes of Ethical Transnational Production: Code of Conduct in Chinese Workplace', *Competition & Change* **9**(2), 181-200.

Tsoutsoura, M.: 2004, 'Corporate Social Responsibility and Financial Performance: The "Virtuous Circle" Revisited', *Working Paper* **University of California at Berkeley**.

Vilanova, M., Lozano, J. et al.: 2009, 'Exploring the Nature of the Relationship between CSR and Competitiveness', *Journal of Business Ethics* **87**, 57-69.

Waddock, S.A. and Graves, S.B.: 1997, 'The Corporate Social Performance- Financial Performance Link', *Strategic Management Journal* **18**(4), 303-319.

Whetten, D.A., Rands, G. and Godfrey, P.: 2001, "What are the Responsibilities of Business in Society?", in A. Pettigrew, H. Thomas and R. Whittington (eds.), Handbook of Strategy and Management, (London, Sage),.

Figure 1

Modified CSR and competitiveness framework.

Source: Vilanova et al. (2009)

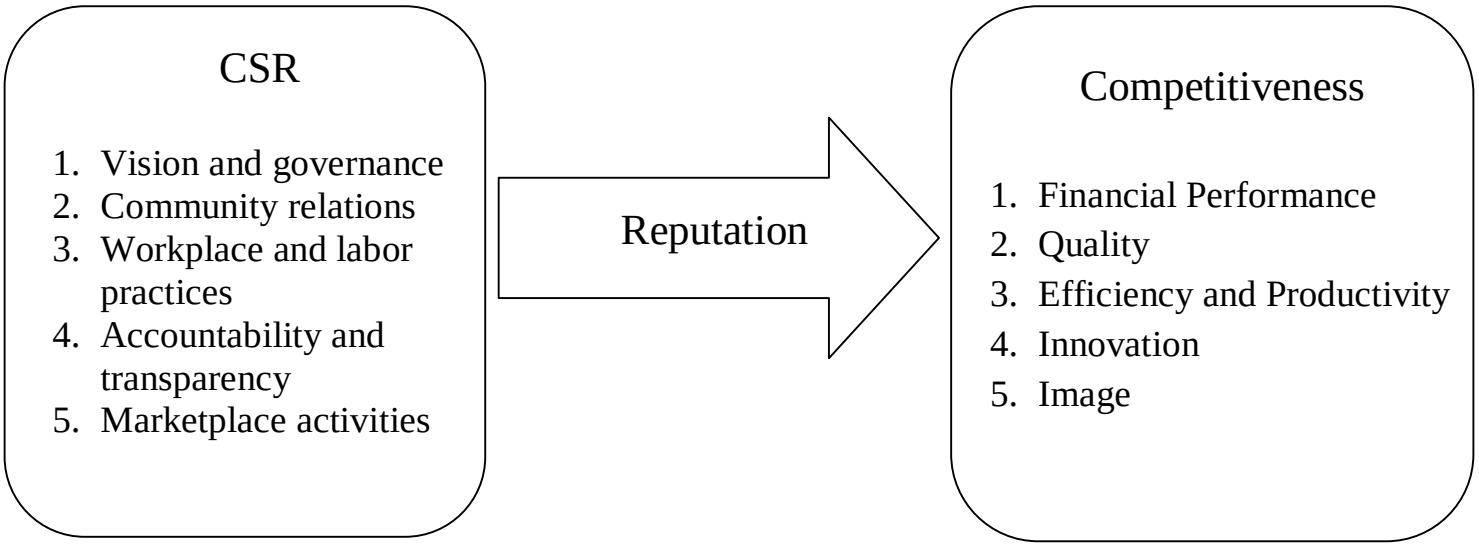

Figure 2

Modified CSR and competitiveness framework.

Source: Vilanova et al. (2009)

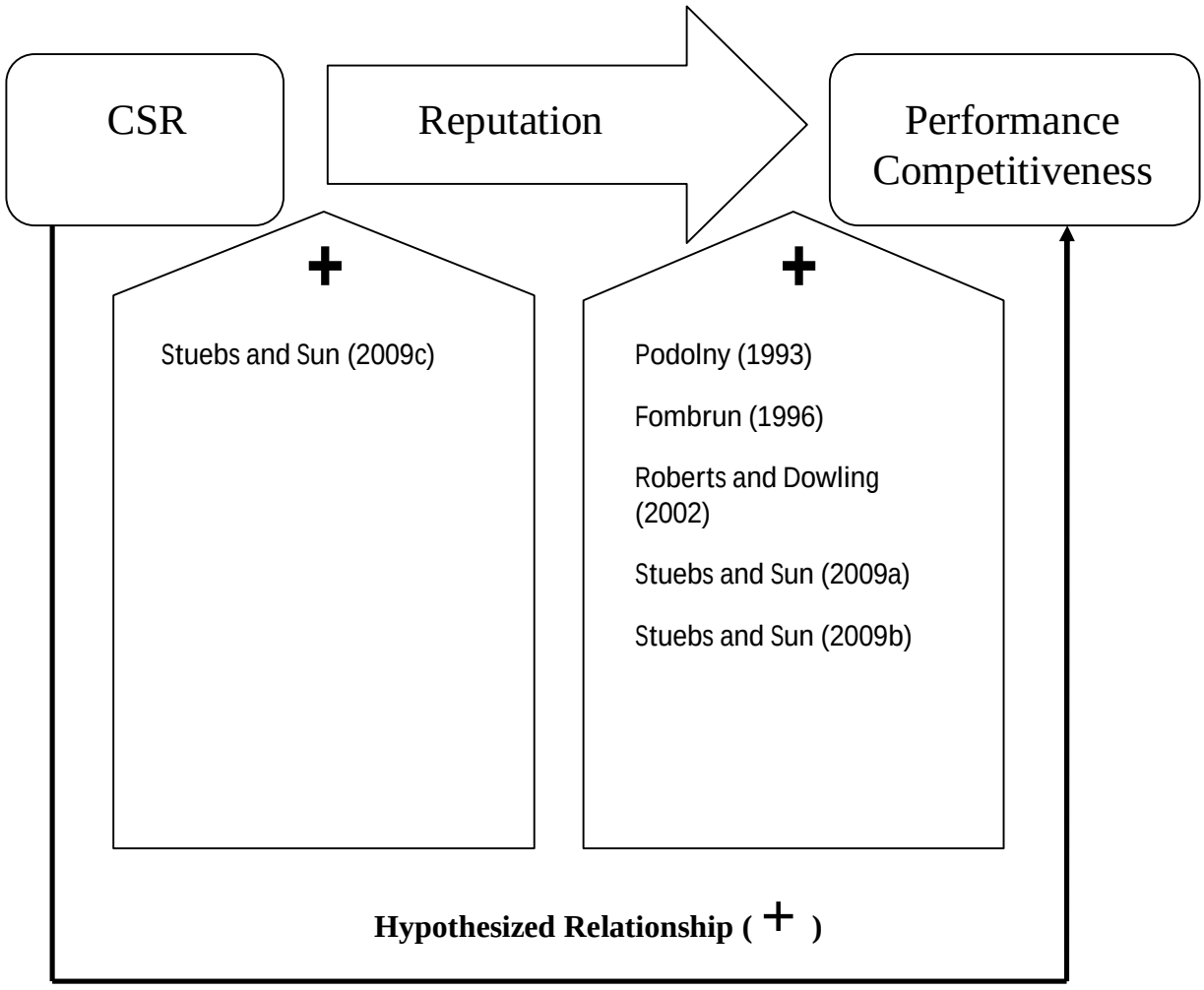

Figure 1

An Example of DEA

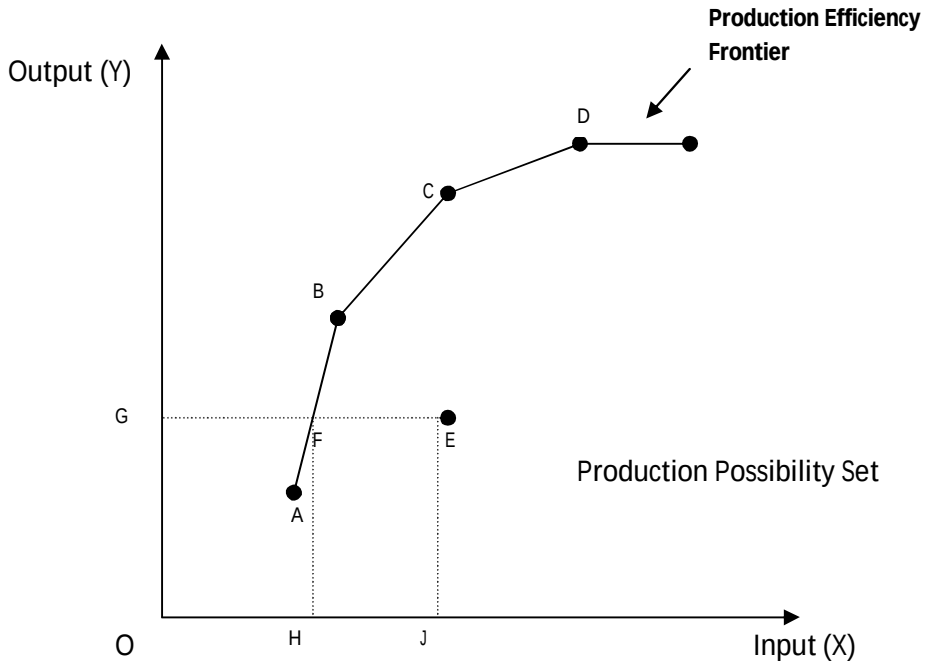

Table 1

Variable Selection for Efficiency Model

Panel A: Output Variable

Variable Name	Measurement	Description
Sales (Compustat Item #12)	in dollars	This variable represents sales after any discounts, returned sales and allowances for which credit is given to customers.

Panel B: Input Variables

Variable Name	Measurement	Description
Cost of Goods Sold (COGS) (Compustat Item # 41)	in dollars	This item represents all costs directly allocated to production, such as direct materials, direct labor and overhead.
Selling, General and Administrative Expenses (XSGA) (Compustat Item #189)	in dollars	This item represents non-production expenses incurred in the regular course of business.

Table 2

Descriptive Statistics for the Sample Firms

Industry: Business Services (SIC =73)

Panel A: 2005 (n = 215 firms)

Variables	Mean	Standard Deviation	Minimum	25th Percentile	Median	75th Percentile	Maximum
DEA	0.62	0.18	0.25	0.49	0.58	0.74	1.00
KLD	-0.14	1.81	-6.00	-1.00	0	1.00	9.00
REV	1,621.25	7,097.63	40.96	149.42	325.06	908.72	91,134.00
COGS	796.37	3,776.12	0.71	40.63	108.24	404.24	49,563.00
XSGA	480.45	2,121.72	8.58	60.39	120.81	270.87	25,343.00
TA	2,187.60	9,116.48	46.98	228.23	441.02	1,020.94	105,748.00
LEV	0.38	0.19	0.04	0.24	0.35	0.50	0.98
AGE	0.41	0.16	0.06	0.30	0.40	0.50	0.99
ROA	6.12	10.69	-7.94	2.39	5.80	10.11	38.49
ROE	10.84	36.35	-14.15	3.80	9.60	17.48	316.00

Panel B: 2006 (n = 213 firms)

Variables	Mean	Standard Deviation	Minimum	25th Percentile	Median	75th Percentile	Maximum
DEA	0.60	0.19	0.26	0.46	0.55	0.70	1.00
KLD	-0.31	1.92	-6.00	-2.00	0	1.00	11.00
REV	1,799.08	7,356.66	16.67	165.50	387.35	1,037.84	91,424.00
COGS	889.55	3,793.67	0.91	49.71	144.35	436.31	48,214.00
XSGA	535.48	2,291.50	8.38	60.51	132.96	302.83	26,366.00
TA	2,388.62	9,147.78	43.70	219.73	503.02	1,247.93	103,234.00
LEV	0.11	0.16	0	0	0.02	0.20	0.70
AGE	0.42	0.16	0.10	0.30	0.41	0.51	0.99
ROA	5.39	10.38	-75.62	2.26	5.50	8.48	50.34
ROE	10.21	35.73	-147.58	3.07	8.91	14.93	450.36

Table 2

Descriptive Statistics for the Sample Firms

Industry: Business Services (SIC =73)

Panel C: 2007 (n = 228 firms)

Variables	Mean	Standard Deviation	Minimum	25th Percentile	Median	75th Percentile	Maximum
DEA	0.59	0.18	0.13	0.47	0.55	0.67	1.00
KLD	-0.23	1.99	-5.00	-1.00	0	1.00	12.00
REV	1,954.23	7,866.31	13.24	140.64	390.39	1,170.99	98,786.00
COGS	954.56	3,999.77	1.62	47.23	132.49	473.66	52,075.00
XSGA	590.22	2,449.79	7.41	65.33	146.37	341.89	27,946.00
TA	2,645.52	9,927.23	37.29	232.11	536.53	1,398.26	120,431.00
LEV	0.12	0.17	0	0	0.01	0.18	0.69
AGE	0.43	0.16	0.10	0.31	0.43	0.53	0.99
ROA	4.87	10.53	-48.82	0.89	5.33	9.29	54.42
ROE	6.69	44.46	-378.35	1.80	9.62	16.41	263.58

Variable Definitions:

DEA_{it} = Efficiency score for firm *i* in year *t*,
KLD_{it} = Social responsibility index score for firm *i* in year *t*;
TA_{it} = total assets (Compustat Item #6) for firm *i* in year *t*;
REV_{it} = net sales (Compustat Item #12) for firm *i* in year *t*,
$COGS_{it}$ = cost of goods sold (Compustat Item #41) for firm *i* in year *t*;
$XSGA_{it}$ = selling, general and administrative expenses (Compustat Item #189) for firm *i* in year *t*;
LEV_{it} = leverage ratio [total liabilities (Compustat Item #9 + Compustat Item #34) / total assets (Compustat Item #6)] of firm *i* in year *t*,
AGE_{it} = Net Property Plant and Equipment (Compustat Item #8) / Gross Property, Plant and Equipment (Compustat Item #7) of firm *i* in year *t*,
ROA_{it} = return on assets [income before extraordinary items – available for common equity (Compustat Item #237)] / total assets (Compustat Item #6) of firm *i* in year *t*,
ROE_{it} = return on equity ratio [income before extraordinary items – available for common equity (Compustat Item #237) / common shareholders' interest in the company (Compustat Item #60)] of firm i in year t,

Table 3

Pearson Correlations among Selected Variables

Industry: Business Services (SIC =73)

Panel A: 2005 (n = 215 firms)

	DEA	KLD	TA	LEV	AGE	ROA
KLD	0.1923					
(p-value, two-tailed)	0.0047					
TA	0.3154	0.4467				
(p-value, two-tailed)	<0.0001	<0.0001				
LEV	0.1017	-0.0821	0.1289			
(p-value, two-tailed)	0.1374	0.2307	0.0591			
AGE	0.2428	0.0745	0.0407	0.1489		
(p-value, two-tailed)	0.0003	0.2771	0.5524	0.0290		
ROA	0.2222	0.1038	0.0563	-0.1582	-0.0114	
(p-value, two-tailed)	0.0010	0.1293	0.4111	0.0203	0.8685	
ROE	0.1635	0.1466	0.1094	0.0839	-0.1059	0.6201
(p-value, two-tailed)	0.0164	0.0317	0.1095	0.2204	0.1217	<0.0001

Panel B: 2006 (n = 213 firms)

	DEA	KLD	TA	LEV	AGE	ROA
KLD	0.1881					
(p-value, two-tailed)	0.0059					
TA	0.3612	0.4677				
(p-value, two-tailed)	<0.0001	<0.0001				
LEV	0.1132	-0.0833	0.0853			
(p-value, two-tailed)	0.0994	0.2258	0.2149			
AGE	0.1953	0.0941	0.0700	0.2886		
(p-value, two-tailed)	0.0042	0.1711	0.3092	<0.0001		
ROA	0.2659	0.1007	0.0747	-0.1640	-0.0263	
(p-value, two-tailed)	<0.0001	0.1431	0.2780	0.0166	0.7029	
ROE	0.2521	0.0560	0.0630	-0.0547	-0.0295	0.7003
(p-value, two-tailed)	0.0002	0.4168	0.3605	0.4269	0.6691	<0.0001

Panel C: 2007 (n = 228 firms)

	DEA	KLD	TA	LEV	AGE	ROA
KLD	0.2294					
(p-value, two-tailed)	0.0005					
TA	0.4033	0.4963				
(p-value, two-tailed)	<0.0001	<0.0001				
LEV	0.2484	-0.0521	0.1292			
(p-value, two-tailed)	0.0002	0.4335	0.0514			
AGE	0.1387	0.1397	0.0376	0.1788		
(p-value, two-tailed)	0.0364	0.0350	0.5725	0.0068		
ROA	0.2680	0.0756	0.0828	-0.1398	0.0311	
(p-value, two-tailed)	<0.0001	0.2554	0.2127	0.0349	0.6401	
ROE	0.2337	0.0468	0.0775	-0.0228	0.0135	0.8308
(p-value, two-tailed)	0.0004	0.4823	0.2436	0.7319	0.8390	<0.0001

Variable Definitions:

DEA_{it} = Efficiency score for firm *i* in year *t*,
KLD_{it} = Social responsibility index score for firm *i* in year *t*;
TA_{it} = total assets (Compustat Item #6) for firm *i* in year *t*;
LEV_{it} = leverage ratio [total liabilities (Compustat Item #9 + Compustat Item #34) / total assets (Compustat Item #6)] of firm *i* in year *t*,
AGE_{it} = Net Property Plant and Equipment (Compustat Item #8) / Gross Property, Plant and Equipment (Compustat Item #7) of firm *i* in year *t*,
ROA_{it} = return on assets [income before extraordinary items – available for common equity (Compustat Item #237)] / total assets (Compustat Item #6) of firm *i* in year *t*,
ROE_{it} = return on equity ratio [income before extraordinary items – available for common equity (Compustat Item #237) / common shareholders' interest in the company (Compustat Item #60)] of firm i in year t,

Table 4

Regression Analysis

Model: $DEA_{it} = \alpha_0 + \alpha_1 * KLD_{it} + \alpha_2 * LTA_{it} + \alpha_3 * LEV_{it} + \alpha_4 * AGE_{it} + \alpha_5 * ROA_{it} + \alpha_6 * YEAR06_{it} + \alpha_7 * YEAR07_{it} + \varepsilon_{it}$ (1)

Observation = 656; Adjusted $R^2 = 0.2527$

Variable	Parameter Estimate	Standard Error	t Value	p > l t l	Variance Inflation
Intercept	0.2267	0.0339	6.69	<0.0001	0
KLD	0.0097	0.0034	2.86	0.0044*	1.0870
LTA	0.0480	0.0051	9.34	<0.0001*	1.2357
LEV	0.0617	0.0395	1.56	0.1184	1.8610
AGE	0.1167	0.0406	2.87	0.0042*	1.0766
ROA	0.0040	0.0006	6.57	<0.0001*	1.0470
YEAR06	-0.0098	0.0190	-0.52	0.6061	2.0458
YEAR07	-0.0223	0.0189	-1.18	0.2376	2.0954

Notes: significance level: *p≤0.01, ** p ≤0.05, *** p ≤0.1

Variable Definitions:

DEA_{it} = Efficiency score for firm *i* in year *t*,
KLD_{it} = Social responsibility index score for firm *i* in year *t*;
LTA_{it} = Natural log of total assets (Compustat Item #6) for firm *i* in year *t*;
LEV_{it} = leverage ratio [total liabilities (Compustat Item #9 + Compustat Item #34) / total assets (Compustat Item #6)] of firm *i* in year *t*,
AGE_{it} = Net Property Plant and Equipment (Compustat Item #8) / Gross Property, Plant and Equipment (Compustat Item #7) of firm *i* in year *t*,
ROA_{it} = return on assets [income before extraordinary items – available for common equity (Compustat Item #237)] / total assets (Compustat Item #6) of firm *i* in year *t*,
YEAR06 = 1, if *t* = 2006, otherwise 0,
YEAR07 = 1, if *t* = 2007, otherwise 0,