Causality Between Corporate Social Performance and Financial Performance: Evidence from Canadian Firms

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ABSTRACT. This study assesses the causal relationship between corporate social performance (CSP) and financial performance (FP). We perform our empirical analyses on a sample of 179 publicly held Canadian firms and use the measures of CSP provided by Canadian Social Investment Database for the years 2004 and 2005. Using the "Granger causality" approach, we find no significant relationship between a composite measure of a firm's CSP and FP, except for market returns. However, using individual measures of CSP, we find a robust significant negative impact of the environmental dimension of CSP and three measures of FP, namely return on assets, return on equity, and market returns. This latter finding is consistent, at least in the short run, with the trade-off hypothesis and, in part, with the negative synergy hypothesis which states that socially responsible firms experience lower profits and reduced shareholder wealth, which in turn limits the socially responsible investments.

KEY WORDS: corporate social performance, financial performance, causality, environmental activities

Introduction

Business ethics in Canada has been shaped by different players: Canadian society in general, activism from religious groups and other institutional or ethical investors. In addition, the growing interest of academic researchers and the Canadian accounting profession has also facilitated its development (Brooks, 1997). Furthermore, the introduction of the Canadian Social Investment Database (CSID) developed by Michael Jantzi Research Associates (MJRA) provides researchers with a new and improved means to quantify corporate social performance (CSP) in Canada and

leads to increased research efforts in this area (Mahoney and Roberts, 2004).

"CSP research has employed a variety of theories and methodologies to study the potential relationship between corporate social responsibility activities and other traditional measures of a firm's success" (Mahoney and Roberts, 2007, p. 234). In addition to large-scale American empirical research, some researchers have examined the relationship between CSP and financial performance (FP) in other contexts including the Canadian context. Contrary to the US study by Waddock and Graves (1997); Mahoney and Roberts (2007) found no significant relationship between a composite measure of CSP and FP for Canadian firms. However, their findings do indicate a significant relationship between individual measures of a firm's CSP regarding environmental and international activities and FP. This study examined only one direction of causality, i.e. from CSP to FP.

The purpose of this paper is to assess the causal relationship between the firm's CSP and FP, using the Granger causality approach (Granger, 1969). As in Mahoney and Roberts (2007), our results do not show a consistent statistically significant relationship between the aggregate measure of a firm's CSP and all FP measures. However, contrary to this Canadian study, our findings do suggest a significant negative impact of the environmental dimension of CSP on FP. High ratings of social performance in terms of *environmental activities* "Granger causes" lower levels of financial performance. Our findings are robust to three measures of performance, ROA, ROE and stock market returns and to the inclusion of several control variables that are known to have an impact on CSP and FP.

Our contribution to the literature on CSP is twofold. First, our paper extends prior large-scale American studies of causality between CSP and FP, by utilizing data on publicly held Canadian firms. Second, our study is the first to investigate the causality links between CSP and FP in Canada.

The remainder of the paper is organized as follows. In the next section, we examine the "Theoretical framework" regarding the CSP-FP link. The third section describes our "Research methodology". In the fourth section, we present the "results" of the study, followed by the "Conclusions" in the last section.

Theoretical framework

Literature review

Preston and O'Bannon (1997) have distinguished between the direction of the CSP-FP relationship (positive, negative or neutral) and the causal sequence: does CSP influence FP, does FP influence CSP, or is there a synergistic relationship between the two? They have developed six possible causal and directional hypotheses: social impact hypothesis, slack resources hypothesis, trade-off hypothesis, managerial opportunism hypothesis, positive synergy hypothesis and negative synergy hypothesis.

The social impact hypothesis is based on the stakeholder theory which suggests that meeting the needs of various corporate stakeholders will lead to favourable FP (Freeman, 1984). According to this hypothesis, serving the implicit claims of stakeholders enhances a company's reputation in a way that has a positive impact on its FP. Conversely, disappointing these groups of stakeholders may have a negative financial impact (Preston and O'Bannon, 1997).

The slack resource hypothesis predicts that better FP potentially results in the availability of slack resources that may increase a firm's ability to invest in socially responsible domains such as community and society, employee relations or environment (Waddock and Graves, 1997).

The trade-off hypothesis supposes a negative impact of CSP on FP. This hypothesis deals with the neoclassical economists' position which holds that socially responsible behaviour will net few economic benefits while its numerous costs will reduce profits and shareholder wealth (Waddock and Graves, 1997). "This hypothesis reflects the classic Friedman position and is supported by the well-known early finding of Vance (1975) that corporations displaying strong social credentials experience declining stock prices relative to the market average" (Preston and O'Bannon, 1997, p. 421).

According to the managerial opportunism hypothesis, corporate managers may pursue their own private objectives to the detriment of both shareholders and other stakeholders (Weidenbaum and Sheldon, 1987; Williamson, 1967, 1985). In fact, when FP is strong, managers may reduce social expenditures in order to maximize their own short-term private gains. Conversely, when FP weakens, managers may engage in conspicuous social programs in order to offset their disappointing results (Preston and O'Bannon, 1997).

The positive synergy hypothesis supposes that higher levels of CSP lead to an improvement of FP, which offers the possibility of reinvestment in socially responsible actions (Allouche and Laroche, 2005a). Indeed, favourable CSP leads to a surplus of available funds (social impact hypothesis) which is reallocated, in part, to the different stakeholders (slack resources hypothesis). There may then be a simultaneous and interactive positive relation between CSP and FP, forming a virtuous circle (Waddock and Graves, 1997).

However, according to the negative synergy hypothesis, higher levels of CSP lead to decreased FP, which in turn limits the socially responsible investments. There may then be a simultaneous and interactive negative relation between CSP and FP, forming a vicious circle.

While empirical results concerning the nature of the relationship between CSP and FP continue to be mixed, the largest number of investigations found a positive relationship. This tendency towards the positivism of the CSP-FP link is supported by subsequent meta–analysis (Allouche and Laroche, 2005b; Orlitzky et al., 2003; Wu, 2006).

Another vein of research focused on the causal relationship between CSP and FP. For instance, using traditional statistical techniques, Waddock and Graves (1997) and Hillman and Keim (2001) find a positive synergistic relationship between CSP and FP showing the existence of a virtuous circle

between the two constructs. McGuire et al. (1988) find that lagged FP measures lead to improved current CSP measures, but the latter does not affect FP. In a more recent study, Nelling and Webb (2006) examine the causal relationship between CSP and FP by introducing a new econometric technique, the Granger causality approach. Their findings suggest that, using ordinary least square (OLS) regression models, CSP and FP are related. In disagreement with prior empirical research, they find a lower relationship between CSP and FP when employing a time series fixed effects approach. The same result is found when introducing Granger causality models. Furthermore, by focusing on individual measures of CSP, they find causality running from stock market performance to CSP ratings regarding employee's relationships.

In addition to those large-scale American empirical studies, Mahoney and Roberts (2007) have examined the relationship between CSP and FP in the Canadian context. This study has examined the relationship between these constructs using the CSID measure of CSP.[1] Contrary to Waddock and Graves (1997), Mahoney and Roberts (2007) found no significant relationship between a composite measure of a firm's CSP and FP. However, using a one-year lag, their findings indicate a significant positive relationship between individual measures of a firm's CSP

regarding environmental and international activities and FP. This study has examined only one direction of causality: from CSP to FP.

Conceptual model

Past research falls short of showing a clear causal relationship between FP and CSP. Our study aims at testing the following hypothesis by using the Granger causality approach, and by considering exogenous factors that could mitigate this relationship:

H1:   Higher (lower) levels of financial performance (corporate social performance) Granger cause higher (lower) levels of corporate social performance (financial performance).

Figure 1 illustrates our conceptual model. The following CSP dimensions are assessed in an aggregate CSP score and individually: *community and society*, *corporate governance*, *customers*, *employees*, *environment and human rights*. Financial performance is measured by two accounting ratios, ROA and ROE and stock market returns. Control variables that are known to have an impact on CSP and FP, namely size, risk and industry, are included in the statistical models to better isolate the effect of CSP and FP.
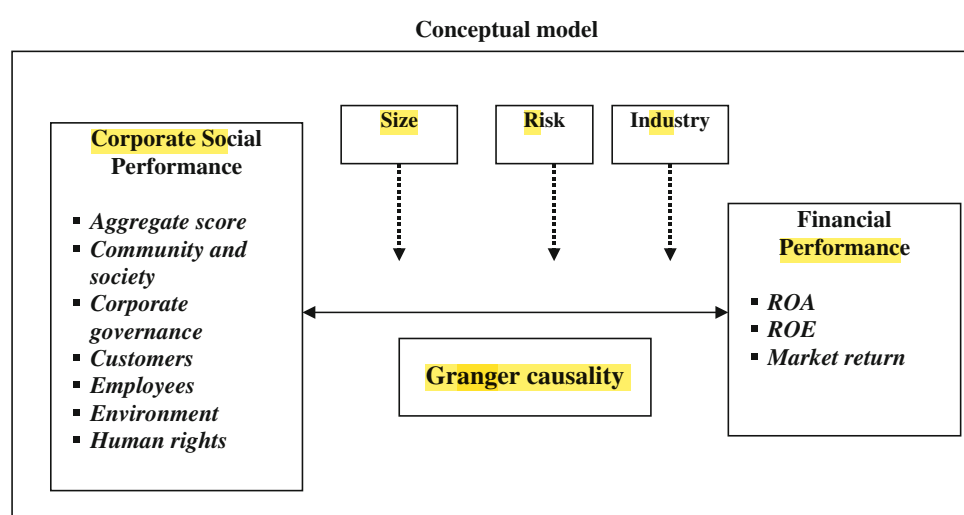

Figure 1. Conceptual model.

Research methodology

Sample

The sample used in this study is drawn from the CSID for the years 2004 and 2005. The framework for tracking and reporting on corporate social and environmental performance includes a set of social and environmental indicators carefully developed by MJRA. This framework is based largely on a stakeholder model and is similar in many ways to the framework used by the SiRi[2] Network, of which MJRA is a founding member. To further establish the credibility of MJRA, it is worth noting that it has a longstanding research partnership with KLD Research & Analytics, Inc., a worldwide renowned firm providing environmental, social and governance data to researchers outside of Canada. There were 222 companies listed for the year 2004 and 276 companies for the year 2005. CSP ratings were available for 179 companies for both 2004 and 2005. Missing values are attributed mostly to income funds and trusts.

Variables

Corporate social performance

For the years 2004 and 2005 we use two measures of CSP developed by MJRA. First, we use the aggregate score of CSP. As researchers are now investigating the effects of individual dimension variables within the KLD and the CSID databases, we perform our empirical tests using ratings for each of the dimensions (community and society, corporate governance, employees, environment, customers and human rights) as separate variables.

Financial performance

Following Mahoney and Roberts (2007), return on assets (ROA) and return on equity (ROE) were used separately to measure a firm's FP. For robustness, we used stock market returns as an additional criterion. Data on ROA and ROE were derived from the *Stock Guide* database. Market returns were obtained from the Toronto Stock Exchange (TSX) through the Canadian Financial Market Research Center (CFMRC) database.

Control variables

Some difference in CSP and FP may result from firm size, firm risk and industry and need to be operationalized as control variables (Mahoney and Roberts, 2007; Ullman, 1985; Waddock and Graves, 1997). In fact, smaller firms may not exhibit as much overt socially responsible behaviour as do larger firms (Waddock and Graves, 1997). Furthermore, less risky firms have a stable return model and invest, consequently, in socially responsible activities (Roberts, 1992). In addition, earlier research has shown that clear differences in performance and R&D investment exist among different industries (Graves and Waddock, 1994; Waddock and Graves, 1997). Size and systematic risk are also well-known determinants of FP (Fama and French, 1992, 1993).

Firm size was measured using the natural logarithm of total assets. As a proxy for the riskiness of a firm, we used the long-term debt to total assets ratio and the beta factor. TSX industries are accounted for in our models by dummy variables. All control variables were obtained for the year 2004. Firm size and debt level were derived from the *Stock Guide* database. Beta factors, calculated on a five-year basis, were obtained from the TSX - CFMRC.

Statistical analyses

We address the link between FP and CSP in the context of Granger causality (Granger, 1969). This approach, applied to our context with two years of data, involves the following two-variable regression models (Gujarati, 1995):

$$CSP_{i,2005} = \alpha_0 + \alpha_1 CSP_{i,2004} + \alpha_2 FP_{i,2004}$$

$$+ \sum_{j=1}^{J} \gamma_j C_{ij} + \varepsilon_{1i}, \quad i = 1, \ldots, N \quad (1)$$

$$FP_{i,2005} = \beta_0 + \beta_1 FP_{i,2004} + \beta_2 CSP_{i,2004}$$

$$+ \sum_{j=1}^{J} \delta_j C_{ij} + \varepsilon_{2i}, \quad i = 1, \ldots, N \quad (2)$$

where $CSP_{i,2005}$ and $CSP_{i,2004}$ represent the CSP score in year 2005 and 2004 for firm i, $FP_{i,2005}$ and $FP_{i,2004}$ represent the FP in year 2005 and 2004 for firm i, C_{ij} is the jth control variable for firm i, $j = 1,\ldots, J$ and ε_{1i} and ε_{2i} are uncorrelated

TABLE I

Descriptive statistics of the sample

	N	Mean	Median	Standard deviation	Minimum	Maximum
Corporate social performance (CSP)						
Aggregate CSP in 2005	179	4.72	4.6	0.81	3.0	7.1
Aggregate CSP in 2004	179	4.77	4.7	0.81	3.1	7.1
Community & society in 2005	179	4.15	3.8	1.71	0.7	8.8
Community & society in 2004	179	4.05	3.7	1.60	0.7	8.7
Corporate governance in 2005	179	6.67	6.6	1.14	3.3	9.3
Corporate governance in 2004	179	6.56	6.6	1.15	4.1	8.9
Employees in 2005	179	4.24	4.1	1.08	2.0	7.1
Employees in 2004	179	4.15	4.0	1.10	2.1	7.3
Environment in 2005	179	5.15	5.1	0.86	2.4	7.1
Environment in 2004	179	5.12	5.0	0.86	3.1	7.4
Customers in 2005	159	4.79	5.0	0.73	1.7	6.3
Customers in 2004	159	5.04	5.0	0.67	2.8	6.6
Human rights in 2005	120	2.75	2.3	1.54	0.0	5.8
Human rights in 2004	115	3.80	4.0	1.44	0.8	7.9
Corporate financial performance						
Market returns in 2005	168	0.14	0.15	0.38	−1.00	1.91
Market returns in 2004	168	0.40	0.29	0.45	−0.75	1.94
ROA in 2005	179	0.03	0.04	0.09	−0.69	0.23
ROA in 2004	179	0.03	0.03	0.08	−0.46	0.28
ROE in 2005	179	0.09	0.11	0.18	−1.29	0.59
ROE in 2004	179	0.07	0.09	0.17	−1.15	0.62
Control variables						
Natural log. of assets in 2004	179	14.80	14.61	1.76	11.24	19.87
Debt level in 2004	179	0.17	0.15	0.15	0.00	0.70
Beta factor in 2004	179	0.71	0.50	0.71	−0.41	3.92

Industries	n	%
Communications & media	10	5.6
Consumer products	11	6.2
Financial services	28	15.6
Gold & precious metals	19	10.6
Industrial products	35	19.6
Merchandizing	17	9.5
Utilities	13	7.3
Oil & gas	26	14.5
Metals & minerals	17	9.5
Paper	3	1.7

error terms, $i = 1,..., N$. If the coefficient α_2 in Model (1) is significantly different from zero, we conclude that FP in 2004 "Granger causes" CSP in 2005. Similarly, if the coefficient β_2 in Model (2) is significant, we infer causality from CSP in 2004 to FP in 2005. The same set of control variables is used in both regression models. Granger (1969) calls the system of equations (1) and (2) the

TABLE II

Pearson correlation coefficients between CSP and FP measures in 2005 with CSP and FP and the control variables in 2004

Year 2004	Year 2005									
	Aggregate CSP	Community & society	Corporate governance	Employees	Environment	Customers	Human rights	Market returns	ROA	ROE
Aggregate CSP	0.94***	0.79***	0.48***	0.78***	0.50***	0.13	0.21*	−0.04	0.04	0.12
Community & society	0.77***	0.96***	0.24**	0.62***	0.32***	−0.10	0.003	0.02	0.09	0.14
Corporate governance	0.50***	0.27***	0.86***	0.35***	0.23**	0.05	0.11	0.01	0.07	0.13
Employees	0.81***	0.64***	0.38***	0.92***	0.42***	0.04	0.19*	0.02	0.09	0.18*
Environment	0.59***	0.42***	0.23**	0.54***	0.90***	0.11	−0.04	−0.20**	−0.12	−0.09
Customers	−0.02	−0.15	−0.03	0.002	0.05	0.55***	−0.22*	−0.12	−0.14	−0.21**
Human rights	0.36***	−0.03	0.22*	0.26**	0.08	0.24*	0.78***	0.10	0.05	0.06
Market returns	−0.30***	−0.31***	−0.15	−0.20*	−0.13	0.09	0.01	0.13	−0.10	−0.09
ROA	0.09	0.13	0.06	0.09	−0.04	−0.15	0.12	0.21**	0.62***	0.59***
ROE	0.17*	0.15*	0.13	0.15*	−0.05	−0.11	0.14	0.18*	0.47***	0.51***
Ln of assets	0.55***	0.62***	0.20**	0.51***	0.03	−0.02	−0.05	0.11	0.14	0.28***
Debt level	0.08	0.10	0.04	0.06	0.05	−0.01	0.06	0.07	0.05	0.04
Beta factor	−0.19*	−0.18*	−0.17*	−0.18*	−0.02	0.22**	−0.15	−0.19*	−0.23*	−0.28***

*, **, ***p-values are <0.05, 0.01, and 0.001, respectively.

TABLE III

Results of the OLS regression models *testing* Granger causality between the aggregate CSP score and market returns
(results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Aggregate CSP in 2005 ($N = 168$)			Market returns in 2005 ($N = 168$)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	0.221	0.237	0.353	−0.113	0.313	0.719
Aggregate CSP in 2004	0.927	0.031	<0.001	*−0.095*	*0.041*	*0.024*★
Market returns in 2004	*0.022*	*0.056*	*0.691*	0.167	0.074	0.025
Natural log. of assets	0.014	0.016	0.372	0.055	0.021	0.010
Debt level	0.087	0.162	0.590	−0.216	0.213	0.313
Beta factor	−0.029	0.034	0.393	−0.091	0.045	0.042
Industry						
Communications & media	−0.161	0.110	0.144	−0.300	0.145	0.040
Consumer products	−0.368	0.106	0.001	−0.007	0.140	0.958
Financial services	−0.020	0.088	0.818	−0.245	0.116	0.036
Gold & precious metals	−0.033	0.088	0.711	−0.329	0.116	0.005
Industrial products	−0.079	0.080	0.322	−0.107	0.105	0.310
Merchandizing	−0.275	0.094	0.004	0.024	0.124	0.848
Utilities	−0.349	0.106	0.001	0.100	0.140	0.479
Oil & gas	−0.159	0.082	0.054	0.179	0.108	0.100
Metals, minerals & paper	Reference			Reference		
R^2	0.907			0.260		

★Granger causality test is statistically significant at the 5% level or lower.

simple causal model as opposed to the instantaneous causal model where FP in year 2005 is included as an independent variable in Model (1) and CSP in year 2005 in Model (2).

The ordinary least squares (OLS) method is used to estimate the regression coefficients in Models (1) and (2) and to test for Granger causality. The two-variable regression equations (1) and (2) are fit separately for all combinations of the CSP dimensions (aggregate CSP score, *community and society, corporate governance, employees, environment, customers and human rights*) with each one of the three FP measures (ROA, ROE, and stock market returns). Because we do not hypothesize a direction for the causality (positive or negative), we use a two-sided test for coefficients α_2 and β_2 in Models (1) and (2), respectively. Statistical significance is set at 5%. All statistical analyses were performed with SAS 9.1 for Windows.

Results

Descriptive statistics of the sample and simple correlation analysis

Table I presents the descriptive statistics of CSP and FP measures and of the control variables. The means of the aggregate CSP score are 4.72 and 4.77 for 2005 and 2004, respectively. The means for the different CSP dimensions vary between 2.75 and 6.67 and, as for the aggregate CSP, they do not differ much between 2004 and 2005. Stock market returns were not available for 11 firms in our sample, so the analyses for that particular FP measures are based on a sample size of 168 observations. The average compounded stock market returns for 2005 and 2004 are 0.14 and 0.40, respectively. The mean ROA is 0.03 for both years and the mean ROE is 0.09 in 2005 and 0.07 in 2004.

TABLE IV

Results of the OLS regression models *testing* Granger causality between the aggregate CSP score and ROA (results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Aggregate CSP in 2005 ($N = 179$)			ROA in 2005 ($N = 179$)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	0.283	0.217	0.193	0.034	0.059	0.561
Aggregate CSP in 2004	0.933	0.030	<0.001	*−0.010*	*0.008*	*0.214*
ROA in 2004	*0.204*	*0.271*	*0.453*	0.632	0.073	<0.001
Natural log. of assets	0.008	0.015	0.587	0.008	0.004	0.065
Debt level	0.089	0.161	0.580	−0.073	0.044	0.094
Beta factor	−0.022	0.032	0.495	−0.022	0.009	0.014
Industry						
Communications & media	−0.152	0.101	0.133	−0.053	0.027	0.055
Consumer products	−0.359	0.099	<0.001	−0.049	0.027	0.073
Financial services	−0.023	0.084	0.784	−0.102	0.023	<0.001
Gold & precious metals	−0.022	0.090	0.806	−0.085	0.024	0.001
Industrial products	−0.114	0.073	0.123	−0.038	0.020	0.056
Merchandizing	−0.283	0.086	0.001	−0.067	0.023	0.005
Utilities	−0.418	0.098	<0.001	−0.042	0.027	0.114
Oil & gas	−0.168	0.079	0.034	−0.058	0.021	0.007
Metals, minerals & paper	Reference			Reference		
R^2	0.905			0.478		

★Granger causality test is statistically significant at the 5% level or lower.

The Pearson correlation coefficients between the CSP and FP measures in 2005 with CSP, FP and the control variables in 2004 are given in Table II. In general, the CSP and FP measures in 2005 are positively and strongly correlated with their corresponding CSP and FP measures in year 2004. Furthermore, except for the *customer* and *human rights* dimensions, the other CSP dimensions are strongly correlated with the aggregate CSP score and they are also correlated with each other.

Results of the regression models testing Granger causality between aggregate CSP and FP

Tables III, IV and V present the results of the OLS regression models testing "Granger causality" between the aggregate CSP score and the three FP measures, respectively. According to Models (1) and (2) in Section "Statistical analyses", the primary independent variables are CSP and FP in 2004, the latter being measured either by compounded stock market returns, ROA and ROE. The natural logarithm of total assets, debt level, beta factor in 2004 and industry are included as control variables in both models. Because there were only 3 paper-sector firms (Table I) whose averages for the CSP and FP measures were not statistically different from the average scores of the firms in the metals and minerals sector, firms in all these industries were pooled and were arbitrarily used as the reference category in the regression models.

We find for Model (1) in Tables III, IV and V that the relationship between the aggregate CSP score in 2005 and the three FP measures in 2004 are not statistically significant. Therefore, FP does not "Granger cause" CSP. As for the second model, we have a statistically significant negative relationship between the aggregate CSP score in 2004 and stock market returns in 2005 ($p = 0.024$, Table III). This suggests a

TABLE V

Results of the OLS regression models *testing* Granger causality between the aggregate CSP score and ROE (results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Aggregate CSP in 2005 ($N = 179$)			ROE in 2005 ($N = 179$)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	0.284	0.216	0.190	−0.017	0.116	0.884
Aggregate CSP in 2004	0.932	0.030	<0.001	*−0.022*	*0.016*	*0.162*
ROE in 2004	*0.116*	*0.126*	*0.359*	0.440	0.068	<0.001
Natural log. of assets	0.009	0.015	0.573	0.025	0.008	0.003
Debt level	0.084	0.159	0.597	−0.179	0.085	0.038
Beta factor	−0.022	0.032	0.498	−0.055	0.017	0.002
Industry						
Communications & media	−0.154	0.101	0.129	−0.113	0.054	0.038
Consumer products	−0.362	0.100	<0.001	−0.091	0.053	0.089
Financial services	−0.034	0.083	0.687	−0.196	0.045	<0.001
Gold & precious metals	−0.023	0.089	0.797	−0.205	0.048	<0.001
Industrial products	−0.109	0.074	0.141	−0.080	0.039	0.044
Merchandizing	−0.286	0.086	0.001	−0.135	0.046	0.004
Utilities	−0.419	0.098	<0.001	−0.090	0.053	0.088
Oil & gas	−0.170	0.079	0.033	−0.129	0.042	0.003
Metals, minerals & paper	Reference			Reference		
R^2	0.905			0.420		

⋆Granger causality test is statistically significant at the 5% level or lower.

unidirectional ''Granger causal'' relationship between the aggregate CSP score and stock market returns: a higher overall corporate social performance ''Granger causes'' a lower market return on average. The relationships between the aggregate CSP score in 2004 with ROA and ROE in 2005 are however not statistically significant (see Tables IV and V).

It is also worth noting that the results from the causality specifications using the aggregate CSP as the dependent variable show very high R^2 (91%). This is mainly due to the very strong association between 2005 and 2004 CSP scores (Table II), suggesting little variation in these scores over that two-year period.

Results of the different CSP dimensions

Rather than focusing on the composite measure of CSP, some authors examined the individual dimensions of CSP (e.g. Fisman et al., 2005; Hillman

and Keim, 2001; Nelling and Webb, 2006). The findings of Hillman and Keim (2001) indicate that the restricted CSP measure linked to stakeholder management (e.g. shareholders, employees, customers) is associated with FP. In addition, Fisman et al. (2005) find that the individual measure of CSP regarding community positively affects FP in advertising-intensive industries. Furthermore, Nelling and Webb (2006) test the relationship between FP and individual measures of CSP and find that the only aspect of CSP driven by financial performance is 'employee relations'.

In the present study, we examine the relationship between FP and individual measures of CSP derived from the CSID (*community and society, corporate governance, employees, customers, environment* and *human rights*). Specifically, we fit the regression Models (1) and (2) six different times by substituting the CSP score of *community and society, corporate governance, employees, customers, environment* and *human rights* for

TABLE VI

Results of the OLS regression models *testing* Granger causality between the environment score and market returns (results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Environment in 2005 ($N = 168$)			Market returns in 2005 ($N = 168$)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	1.604	0.319	<0.001	0.063	0.318	0.842
Environment in 2004	0.923	0.035	<0.001	*−0.111*	*0.035*	*0.002*★
Market returns in 2004	*−0.051*	*0.073*	*0.489*	0.149	0.073	0.042
Natural log. of assets	−0.054	0.019	0.006	0.050	0.019	0.010
Debt level	0.296	0.211	0.163	−0.245	0.210	0.246
Beta factor	0.002	0.045	0.968	−0.074	0.044	0.099
Industry						
Communications & media	−0.413	0.142	0.004	−0.280	0.141	0.049
Consumer products	−0.581	0.139	<0.001	−0.035	0.139	0.801
Financial services	−0.497	0.116	<0.001	−0.298	0.115	0.011
Gold & precious metals	−0.233	0.117	0.049	−0.231	0.117	0.049
Industrial products	−0.363	0.104	0.001	−0.096	0.103	0.352
Merchandizing	−0.430	0.123	0.001	0.059	0.123	0.628
Utilities	−0.572	0.139	<0.001	0.117	0.138	0.398
Oil & gas	−0.554	0.107	<0.001	0.190	0.107	0.077
Metals, minerals & paper	Reference			Reference		
R^2	0.858			0.283		

★Granger causality test is statistically significant at the 5% level or lower.

CSP. We find no statistically significant relationship between the CSP individual measures and the FP measures except for *environment* and *employee*. Hence, only the regression results with these latter two dimensions are presented in more detail here.[3] Results for the *employee* CSP score are similar to those of the aggregate CSP score, i.e. there is a statistically significant negative association in Model (2) between the *employee* CSP score in 2004 and stock market returns in 2005 ($p = 0.038$), and this latter significant association is not observed with ROA and ROE.

Tables VI, VII and VIII present the results of the regression models testing "Granger causality" between the CSP *environment* score and market returns, ROA, and ROE, respectively. There is no statistically significant relationship between the three FP measures in 2004 and the CSP *environment* score in 2005; the p-values are 0.489, 0.162 and 0.319 for market returns, ROA, and ROE, respectively. On the other hand, there is a statistically significant and

negative relationship of the 2004 CSP *environment* score with the 2005 stock market returns ($p = 0.002$, Table VI) and also with the 2005 ROA ($p = 0.028$, Table VII). The negative relationship with ROE in 2005 is close to being statistically significant at the 5% level ($p = 0.059$, Table VIII), which gives robustness to our results. Hence, the finding of an unidirectional and negative "Granger causal" relationship between the CSP *environment* score and the FP measures supports the trade-off hypothesis and, in part, the negative synergy hypothesis.[4] Indeed, our findings suggest a negative impact of CSP *environment* score on FP measures but the latter does not affect CSP.

Conclusions

This study was undertaken to investigate the causal relationship between CSP and FP in Canadian firms.

TABLE VII

Results of the OLS regression models *testing* Granger causality between the environment score and ROA (results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Environment in 2005 ($N = 179$)			ROA in 2005 ($N = 179$)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	1.502	0.285	<0.001	0.060	0.060	0.320
Environment in 2004	0.927	0.032	<0.001	−0.015	0.007	0.028★
ROA in 2004	0.487	0.347	0.162	0.629	0.073	<0.001
Natural log. of assets	−0.053	0.018	0.004	0.008	0.004	0.045
Debt level	0.331	0.206	0.110	−0.078	0.043	0.074
Beta factor	0.005	0.041	0.902	−0.020	0.009	0.019
Industry						
Communications & media	−0.394	0.129	0.003	−0.048	0.027	0.079
Consumer products	−0.560	0.127	<0.001	−0.052	0.027	0.054
Financial services	−0.468	0.107	<0.001	−0.108	0.022	<0.001
Gold & precious metals	−0.188	0.117	0.111	−0.073	0.025	0.004
Industrial products	−0.342	0.094	<0.001	−0.035	0.020	0.078
Merchandizing	−0.402	0.111	<0.001	−0.061	0.023	0.010
Utilities	−0.608	0.126	<0.001	−0.036	0.026	0.174
Oil & gas	−0.562	0.101	<0.001	−0.056	0.021	0.009
Metals, minerals & paper	Reference			Reference		
R^2	0.862			0.488		

★Granger causality test is statistically significant at the 5% level or lower.

To our knowledge, this is the first study to examine causal relationships in a Canadian setting.

According to Mahoney and Roberts (2007) but contrary to Waddock and Graves (1997) our results suggest no significant relationship between the aggregated CSP score and FP, except for market returns. This latter finding is mainly driven by the statistically significant results of the *environment* and *employee* dimensions of CSP. However, we find a robust unidirectional and negative ''Granger causal'' relationship between the environmental dimension of CSP and all three FP measures, which is consistent with the trade-off hypothesis and, in part, with the negative synergy hypothesis which states that socially responsible firms experience lower profits and reduced shareholder wealth, which in turn limits the socially responsible investments.

Regulatory compliance, management systems and good control of resources and pollution should, theoretically, create a social reputation amongst stakeholders that will eventually enhance financial performance. However, our results show that corporate social initiatives in Canada, especially environmental programmes, lead to poor performance in the short term. Compared to large US corporations, Canadian firms are relatively small in size. Environmental initiatives appear too costly and do not seem to be considered as sound investments by the Canadian market. Government subsidies may be necessary to compensate for the short-term negative impact on financial performance that these firms suffer. Firms and policy makers can use the results of this study to understand the short run financial implications of making environmental spending decisions and improve corporate environmental disclosure in Canada. Although our results show that a better environmental performance is associated with poor short run FP, as Ambec and Lanoie (2007) argue, augmented environmental expenses could be compensated in the long run by increases in

TABLE VIII

Results of the OLS regression models *testing* Granger causality between the environment score and ROE (results of the Granger causality test are italicized)

Independent variable	Dependent variable					
	Environment in 2005 (N = 179)			ROE in 2005 (N = 179)		
	Estimated coefficient	Standard error	p-value	Estimated coefficient	Standard error	p-value
Intercept	1.511	0.285	<0.001	0.019	0.118	0.872
Environment in 2004	0.924	0.032	<0.001	*−0.025*	*0.013*	*0.059*
ROE in 2004	*0.162*	*0.162*	*0.319*	0.439	0.067	<0.001
Natural log. of assets	−0.052	0.018	0.005	0.024	0.008	0.002
Debt level	0.305	0.205	0.138	−0.184	0.085	0.032
Beta factor	0.0003	0.041	0.994	−0.052	0.017	0.002
Industry						
Communications & media	−0.392	0.129	0.003	−0.104	0.054	0.055
Consumer products	−0.559	0.128	<0.001	−0.097	0.053	0.070
Financial services	−0.490	0.107	<0.001	−0.207	0.044	<0.001
Gold & precious metals	−0.205	0.117	0.081	−0.182	0.048	<0.001
Industrial products	−0.334	0.095	0.001	−0.076	0.039	0.056
Merchandizing	−0.402	0.111	<0.001	−0.126	0.046	0.007
Utilities	−0.602	0.127	<0.001	−0.083	0.053	0.114
Oil & gas	−0.560	0.101	<0.001	−0.127	0.042	0.003
Metals, minerals & paper	Reference			Reference		
R^2	0.862			0.426		

★Granger causality test is statistically significant at the 5% level.

revenues through a better access to certain markets, the possibility to differentiate products and sell pollution-control technology and the reductions of costs related to regulations, material, labour and capital market.

These results must be interpreted with some limitations in mind. First, the CSP measures used in the analyses are subject to the limitations inherent in the measurement of CSP activities. Indeed, although an independent firm performs the CSID ratings, they are based on this firm's definition and evaluation of CSP. Second, our analysis takes into account only the years 2004 and 2005. Further studies should aim at evaluating the long-term relation existing between CSP and FP.

Notes

[1] MJRA started publishing CSP scores in 2004. Prior to 2004, CSP was evaluated solely by using strengths and concerns (or weaknesses). Mahoney and Roberts (2007) calculated composite scores by subtracting ''weaknesses'' ratings from ''strengths'' ratings. These authors acknowledged the limitations of their approach and stated in their conclusion that ''… future research using different weights for each of the CSP dimensions may prove to be beneficial''. In the present study, we use the weighted scores calculated by MJRA.

[2] SiRi stands for ''Sustainable Investment Research International Ltd''. This company is the world's largest independent provider of Socially Responsible Investment research and consulting services for institutional investors and financial professionals. http://www.siricompany.com/index.shtml

[3] The regression results for the other individual CSP measures are available upon request from the second author.

[4] We analysed the residuals of the regression equations (1) and (2) of the ''Granger causal'' testing approach to detect possible outlying observations and to verify the assumptions underlying the OLS method used to estimate the regression coefficients in both models.

The residuals analysis did not show departures from the OLS assumptions for any of the fitted models. However, we found only a few outlying observations for the FP measures. We did the "Granger causality" analyses without these few outlying observations, and we obtained similar results that do not change the conclusions. For example, the *p*-value associated with the negative regression coefficient of the CSP *environment* score in 2004 with each one of the three dependent FP measures in 2005 was even lower and reaches statistical significance for ROE ($p = 0.001$ for market returns in 2005, $p = 0.004$ for ROA in 2005 and $p = 0.010$ for ROE in 2005).

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