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DOES SOCIAL PERFORMANCE AFFECT THE RISK OF FINANCIAL FIRMS?

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ABSTRACT

This paper examines the impact of social performance (SP) on the financial firm's risk (total, idiosyncratic, systematic and tail). We find that the aggregate measure of SP (concerns) is significantly and negatively (positively) related to a financial firm's risk. Only some SP dimensions significantly affect the risk of financial firms. Specifically, Employee, Product and Corporate Governance concerns positively affect total risk, idiosyncratic risk, systematic risk, and the Value at Risk (VaR), whereas Product strengths positively affect the VaR. Additional analysis shows that SP affects the risk of banks and trading firms, but not insurance firms.

Keywords: Financial firms, Volatility, Value at Risk, Social performance, Strengths, Concerns.

JEL Classification: G21, G22, G24, G32, M14

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DOES SOCIAL PERFORMANCE AFFECT THE RISK OF FINANCIAL FIRMS?

1. INTRODUCTION

Financial institutions are an essential ingredient for the economy because of their role as financial intermediaries and capital providers. The failure of financial institutions, particularly those considered by the recent Basel Committee on Banking Supervision reforms (Basel III) as global and systemically important financial institutions (i.e., too-big-to-fail), can damage the economy domestically and globally. Because of this systemic risk, financial institutions are increasingly subject to more stringent regulations at the national and global level (Jorion, 2003). At the global level, the Basel Committee on Banking Supervision (BCBS) has established minimum risk-based capital standards known as Basel I, II, and III.[4]

According to Walter, Secretary General of BCBS,[5] the recent financial crisis was triggered primarily by excess liquidity which resulted in too much credit and weak underwriting standards, higher leverage, too little capital of sufficient quality, and inadequate liquidity buffers. The crisis was exacerbated by other factors including major shortcomings in risk management, corporate governance, market transparency, compensation practices, and the quality of supervision.[6] Basel III was designed to address these shortcomings and to ensure the soundness and stability of

[4] The G20 countries endorsed the Basel III capital and liquidity requirements at the November 2010 Summit held in Seoul, Korea.

[5] Speech by Stefan Walter, Secretary General, Basel Committee on Banking Supervision, at the 5th Biennial Conference on Risk Management and Supervision, Financial Stability Institute, Bank for International Settlements, Basel, 3-4 November 2010 (http://www.bis.org/speeches/sp101109a.htm).

[6] During the 90s, several regulatory changes became effective in the U.S. (Chen *et al.*, 2006). For example, banks are permitted to sell stocks through a subsidiary (10% of the total revenue in 1990, then 25% in 1996). In 1994, the Riegle-Neal Act permitted bank holding companies to operate in multiple states. The Gramm-Leach-Bliley Act in 1999 allows banks to expand into the securities and insurance businesses.

the financial system. Main issues addressed by Basel III include:[7] raising the quality and quantity of capital, with a much greater focus on common equity to absorb losses; improving risk coverage, especially related to capital markets activities (e.g., trading book exposures); the introduction of two liquidity ratios (short-term and long-term) and a leverage ratio; and stronger supervision, risk management and disclosure standards.

In recent years, several facts highlight the increasing importance of the concept of social performance (SP) within the financial industry. First, major institutional investors from different countries have signed the Principles for Responsible Investment (PRI), launched in April 2006, which provide a voluntary framework to incorporate environmental, social and corporate governance (ESG) issues into their decision-making and ownership practices in order to better align their objectives with those of society at large.[8] Second, numerous financial firms have voluntarily adopted responsible environmental and social management practices pertaining to the financial industry, such as the Equator Principles, the Carbon Principles, and the Climate Principles. The Equator Principles (EPs) are a credit risk management framework for determining, assessing and managing environmental and social risk in project finance transactions where total capital costs exceed US$10 million.[9]

The Carbon Principles provide a framework for financial institutions to evaluate and address carbon risks in the financing of electric power projects in the US. Launched in 2007, these principles focus on a portfolio approach that includes efficiency, renewables and low carbon power sources to address climate change and carbon cost risks, while recognizing the need to provide reliable power at a

[7] Additional information about the Basel III standards can be found at: http://www.bis.org
[8] http://www.unpri.org/principles/
[9] The Equator Principles (EPs) were launched on June 4, 2003. There are currently 72 adopting financial institutions from 27 countries covering over 70% of international project finance debt in emerging markets. Additional information can be found at: http://www.equator-principles.com

reasonable cost to consumers.[10] Financial institution signatories of the international 2008 Climate Principles actively manage climate change across the full range of financial products and services, including research activities, asset management, retail banking, insurance and re-insurance, corporate banking, investment banking and markets, and project finance.[11]

A large majority of the studies related to SP focus on the link between SP and financial performance (FP), and report mixed results (Griffin and Mahon, 1997; Orlitsky and Benjamin, 2001; Margolis and Walsh, 2003; Orlitsky *et al.*, 2003; Mattingly and Berman, 2006; Baron *et al.*, 2009). A substantial number of these studies used samples composed of firms from multiple industries, including the financial industry (Griffin and Mahon, 1997; Margolis and Walsh, 2003). Nonetheless, some studies examined a single industry arguing that the analysis of a single industry emphasizes internal validity rather than the external validity of multiple industry analysis (Griffin and Mahon, 1997; Simpson and Kohers, 2002). For example, Simpson and Kohers (2002) find a positive relationship between SP, which is measured using the Community Reinvestment Act ratings, and FP for a sample of commercial banks in the U.S. during 1993 and 1994.

Most of the previous studies report a negative relation between some measure of firm risk and SP for undifferentiated samples when financial firms are not excluded (e.g., Spicer, 1978; McGuire *et al.*, 1988; Feldman *et al.*, 1997; Orlitsky and Benjamin, 2001; Boutin-Dufresne and Savaria, 2004; Goss, 2007; Sharfman and Fernando, 2008; Salama *et al.*, 2011; Lee and Faff, 2009; Oikonomou *et al.*, 2010). Since financial firms are fundamentally different from other corporations (Diamond and Rajan, 2000; Jorion, 2003), they should be treated separately. The assets and activities of banks differ from those of industrial firms (Diamond and Rajan, 2000).

[10] http://www.carbonprinciples.org
[11] http://www.theclimategroup.org/programs/the-climate-principles/

Moreover, the indirect effects of failure are lower for industrial versus financial firms (Jorion, 2003).

Given that both regulators and investors are interested in identifying and understanding the effect of social performance on the risk of financial institutions and prior research that SP may affect firm value and performance (e.g., Starks, 2009), the objective of this paper is to examine the impact of social performance (SP) on the risk of financial institutions. The question is whether risk managers of financial firms should integrate SP into extra-financial risk evaluation? We estimate four market-based measures of risk: total, idiosyncratic, systematic and tail (VaR). We compute various measures of SP based on previous reasearch (e.g., Waddock and Graves, 1997; Griffin and Mahon, 1997; Johnson and Greening, 1999; Hillman and Keim, 2001; Rehbein *et al.*, 2004; Mattingly and Berman, 2006; Harjoto and Jo, 2008; Sharfman and Fernando, 2008). We test the relationship between various risk and SP measures for a sample of 4132 financial firm-year observations covering the time period from 1991 to 2007.

Our results can be summarized as follows. First, the aggregate measure of SP (concerns) is significantly and negatively (positively) related to a financial firm's risk. The negative impact of SP on a financial firm's risk is mainly due to concerns, which suggests an asymmetric relation between SP and a financial firm's risk. Second, only the SP dimensions of Employee relations, Product and Corporate Governance significantly (negatively) affect a financial firm's risk. Third, Employee, Product and Corporate Governance concerns positively affect total risk, idiosyncratic risk, systematic risk, and the Value at Risk (VaR), whereas Product strengths positively affect the VaR. Finally, SP affects the risk of banks and trading firms, but not insurance firms.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and research hypotheses. Section 3 describes the data and

sample selection procedure. Section 4 describes the methodology used in order to test our hypotheses. Section 5 presents and discusses our empirical results. Section 6 concludes and provides avenues for future research.

2. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

The finance and strategic management literatures provide theoretical arguments motivating the link between a firm's risk and social performance. The arguments involve the stakeholder theory, risk management, the Merton (1987) argument on investor recognition or the size of a firm's investor base, and investor preferences.

2.1 The stakeholder theory and risk management

The stakeholder theory is a central theoretical argument justifying the relationship between SP and firm value / performance (Freeman, 1984; Donaldson and Preston, 1995). The stakeholder theory suggests that SP may affect firm value / performance by affecting cash flows, their riskiness or both. This theory predicts that SP is inversely related with a firm's risk (McGuire *et al.*, 1988; Waddock and Graves, 1997) if, for example, SP is an indicator of management quality (McGuire *et al.*, 1988). Consistent with this prediction, previous studies report that SP is negatively related to the cost of capital (Feldman *et al.*, 1997; Sharfman and Fernando, 2008; El Ghoul *et al.*, 2011), financial distress or the probability of default (Goss, 2007), the book-to-market ratio (Galema *et al.*, 2008), and the cost of private debt (Goss and Roberts, 2011).

Thus, the risk management of social and environmental issues potentially can reduce firm risk by reducing the probabilities of social or environmental crisis that could affect negatively firm's cash flows (Sharfman and Fernando, 2008) and/or by generating moral capital or goodwill which can provide insurance mechanisms to

preserve financial performance (Godfrey, 2005; Godfrey *et al.*, 2009). Consistent with the risk management argument, a negative relationship is found between idiosyncratic risk and SP (Boutin-Dufresne and Savaria, 2004; Lee and Faff, 2009) and between systematic risk and SP (Oikonomou *et al.*, 2010). In addition, Godfrey *et al.* (2009) find that a measure of SP based on two dimensions (community and diversity) reduces the negative impact on shareholder returns (two-day cumulative abnormal returns) of negative legal actions against firms.

2.2 Merton (1987) argument on investor recognition and investor preferences

Merton (1987) develops an equilibrium model where investors with incomplete information about all stocks (e.g., expected returns, variances, and covariances) only include known stocks in their portfolios. This results in price differences induced by demand differences for different types of stocks so that the firm's risk decreases as the size of its investor base increases. If stocks with higher SP are stocks with more complete information from the investor's perspective due to their larger investor bases, then we would expect a negative relationship between SP and firm risk.

Other theoretical models examine the relationship between expected returns and SP (e.g., Heinkel *et al.*, 2001; Barnea *et al.*, 2005; Mackey *et al.*, 2007) by assuming differences in investor preferences based on SP. These models also predict that stocks with higher SP will have an excess demand and greater risk sharing, which leads to lower risk.

2.3 Research Hypotheses

Based on the aforementioned arguments, we present our first hypothesis stated in its alternative form:

H_1^A: The aggregate measure of social performance, which uses the difference between the scores for strengths and concerns, negatively affects a financial firm's risk.

The aggregate measures of SP may confound the differential effects of the individual dimensions of SP such as Diversity, Employee, and Product on firm risk (Galema *et al.*, 2008). Based on the arguments that social issues are different for different industries (Carroll, 1979; Griffin and Mahon, 1997), we expect that only some SP dimensions impact risk for financial firms. For example, banks do not face the same challenges of pollution, product safety, and employee safety encountered by other firms (Simpson and Kohers, 2002). Banks have limited direct pollution of the environment, a relatively homogeneous production process where product safety and employee safety are minimal concerns (Simpson and Kohers, 2002). However, social issues such as Corporate Governance seem a priori to be more important for financial firms. It is argued that the recent financial crisis was exacerbated by factors such as corporate governance and compensation practices.[12] These issues are mentioned explicitly in the Pillar 2 (Risk management and supervision) of Basel III. Thus, we may posit the following second hypothesis (stated in the alternative form):

H_2^A: Only some SP dimensions (e.g., Corporate Governance) significantly affect the financial firm's risk.

Previous research reports that concerns and strengths are distinct constructs (Waddock, 2003; Mattingly and Berman, 2006) because the latter are largely discretionary (Goss and Roberts, 2011). Since the aggregate (or individual dimension) measure of SP is simply the difference between strengths and concerns, which are positive by construction, the aggregate (or individual dimension) measure

[12] Speech by Stefan Walter, Secretary General, Basel Committee on Banking Supervision, at the 5th Biennial Conference on Risk Management and Supervision, Financial Stability Institute, Bank for International Settlements, Basel, 3-4 November 2010 (http://www.bis.org/speeches/sp101109a.htm).

of strengths (concerns) is expected to be negatively (positively) related to a financial firm's risk. This leads to our third and fourth hypotheses stated in their alternative forms:

H_3^A : The aggregate (individual dimension) measure of strengths affects negatively a financial firm's risk.

H_4^A : The aggregate (individual dimension) measure of concerns affects positively a financial firm's risk.

The empirical evidence suggests that the impact of concerns on firm risk is likely to be more important (e.g., Frooman, 1997; Mattingly and Berman, 2006; Godfrey *et al.,* 2009; Oikonomou *et al.*, 2010; Goss and Roberts, 2011). Lankoski (2009) finds that the economic impacts of SP are more positive for issues reducing negative externalities (e.g., avoiding or reducing concerns), than for issues generating positive externalities (e.g., undertaking or having strengths). Using the stakeholder theory framework, she argues that avoiding or reducing concerns seem to be the priority for stakeholders, whereas undertaking or having strengths come only secondary in stakeholder expectations. The above discussion leads to our fifth and final hypothesis stated in its alternative form:

H_5^A: The impact of concerns measures at the aggregate and individual level, respectively, on financial firm's risk is stronger than the impact of strengths measures at the aggregate and individual level, respectively.

3. DATA AND SAMPLE SELECTION

To construct our sample we merge four databases based on the firms' CUSIP. MSCI ESG STATS (formerly KLD Research & Analytics, Inc) provides social

performance data for U.S. firms, Thompson Reuters Institutional Brokers Earnings Services (I/B/E/S) provides analyst earnings forecasts data, CRSP provides information on stock returns, and COMPUSTAT provides accounting data.

The MSCI ESG STATS (henceforth KLD) database assesses firms by assigning binary ratings (1 or zero) to seven qualitative screens (both *Strength* ratings and *Concern* ratings) and six exclusionary screens (only *Concern* ratings). The qualitative screens are Community, Diversity, Employee relations, Environment, Product, Human Rights (formerly "*non-US operations*" before 2002), and Corporate Governance (formerly "*Other"* category before 2002). The exclusionary screens are Alcohol, Gambling, Firearms, Military, Nuclear power, and Tobacco.

Our sample defines financial firms as banks, insurance, real estate and trading firms. After retaining all firms in all four datasets and then removing non financial and utility firms, we obtain a final sample of 4132 firm-year observations for the period 1991-2007. The sample composition by Fama and French (1997) industry groups is as follow: 2040 firm-year observations for banking (49.37%), 950 for Insurance (23%), 40 for Real Estate (0.96%), and 1102 for Trading (26.67%). Given the relatively small sample size for Real Estate, we do not examine that subgroup by itself.

4. METHODOLOGY

4.1 Measures of social performance

We compute aggregate measures of SP concern and strength scores combined and separately. The separate measures are given by:

$$Str = \frac{1}{D}\sum_{d=1}^{D}\left[\frac{1}{N_{STR}}\sum_{i=1}^{I} Strength_i\right] \quad (1); \quad Con = \frac{1}{D}\sum_{d=1}^{D}\left[\frac{1}{N_{CON}}\sum_{j=1}^{J} Concern_j\right] \quad (2)$$

where, N_{STR} and N_{CON} are total maximum numbers of strengths and concerns, respectively, within a given KLD dimension for each year. These maximum numbers can vary over time as KLD adds or removes some strengths or concerns within a given dimension. D is the total number of KLD dimensions for a given year, and d refers to the KLD dimension. The combined aggregate measure is merely the difference between the individual aggregate measures (Strength minus Concern). Exclusionary screens are not considered in our analysis because most of their values are zeros.[13]

In the second part of our analysis, we focus on individual dimensions of SP. For each KLD dimension, we compute similar measures which deal with strengths and concerns together and individually. To illustrate, the measure that combines strengths and concerns for dimension *d* is as follows:

$$AVE\_SP_d = \left[\frac{1}{N_{STR}} \sum_{i=1}^{I} Strength_i - \frac{1}{N_{CON}} \sum_{j=1}^{J} Concern_j \right]_d \quad (3)$$

AVE_SP_d is equal to the difference between the average strength and average concern scores for each firm-year observation; and N_{STR} and N_{CON} are as defined above. Human rights strengths are removed from our analysis because only 19 out of 3912 observations are different from zero. Appendix A presents a description of the strengths and concerns of the SP dimensions.

4.2 Measures of firm risk

Following standard practice in the literature, we compute a firm's total risk using two alternative measures. The first measure is the annualized standard deviation

[13] Only 11, 1, 7, 2 and 24 observations are different from zero for Gambling, Firearms, Military, Nuclear power, and Tobacco dimensions, respectively. All firm-year observations for the Alcohol dimension are zeros.

from the monthly stock returns over the previous five years, and the second measure is the annualized standard deviation from the daily stock returns over the past year. Systematic risk (i.e., market beta) is computed using the standard CAPM, and the four-factor Carhart (1997) model using monthly excess returns over the five previous years up to the measurement date (i.e., six months after the fiscal-year end date) for each firm-year observation. Idiosyncratic or unsystematic risk is computed as the standard deviation of the residuals from the standard CAPM, the three-factor Fama and French (1993) model and the four-factor Carhart (1997) model using daily excess returns over the previous year up to the measurement date for each firm-year observation.

The first two models are nested within the four-factor Carhart (1997) model which is given by the following equation:

$$R_{it} - R_{ft} = \alpha_i + \beta_{iM}(R_{Mt} - R_{ft}) + \beta_{is}SMB_t + \beta_{ih}HML_t + \beta_{iu}UMD_t + \varepsilon_{it} \qquad (4)$$

R_{it} is the return of firm i for month t. R_{ft} is the risk-free rate (1-month Treasury-bill rate). $(R_{Mt} - R_{ft})$ is the excess return on the market portfolio (CSRP value-weighted index) for month t. SMB_t and HML_t are the difference between the returns on portfolios of "small" and "big" capitalization stocks, and "high" and "low" book-to-market stocks, respectively, for month t. UMD_t is the difference between the returns on portfolios of high and low prior return stocks. ε_{it} is the stochastic error term, assumed to be IID normal with mean zero and constant variance $\sigma^2_{\varepsilon_i}$. The standard CAPM only includes the market factor, and the three-factor Fama and French (1993) model all but the UMD_t factor. The three models are estimated using data for the factors obtained from Kenneth French's web site.[14]

[14] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Up to this point, we considered traditional risk measures (i.e., stock return volatility and its systematic and idiosyncratic components) which are functions of both upside and downside variations from the expected or mean return (i.e., downside losses and upside gains). From an investor perspective, these risk measures can be justified if the distribution of returns is well-behaved (e.g., the normal distrbution) as is the case in the mean-variance framework of traditional portfolio theory (Markowitz, 1952). If this is not the case, for example, if the distribution of returns is asymmetric with fat tails, then these risk measures may not provide an accurate charaterization of the desirability of an investment. Moreover, previous research has shown that investors care differently about downside losses versus upside gains (see e.g., Ang, Chen and Xing, 2006). Ang *et al.* (2006) show that the cross-section of stock returns reflects a premium for bearing downside risk as measured by dowside beta. Thus, we extend our analysis by examining the impact of SP on downside risk as measured by the Value at Risk (VaR).

4.2.1 Value at Risk (VaR)[15]

VaR is a statistical measure of downside risk. VaR is the expected loss of a portfolio or security over a specified time period for a set level of probability (Jorion, 2003; Choudhry, 2006).[16] We follow the Basel Committee recommendations which require VaR to be computed with a 99% confidence interval for a one-day horizon and a minimum historical observation period of one year (Jorion, 2003).[17] For each firm-year in our sample, we calculate the 1-day 1% VaR on each day using four methods: Historical simulation (HS), RiskMetrics (RM), the GARCH (1,1) - t(d) model, and Filtered historical simulation (FHS). Hereafter, we briefly discuss these methods. Appendix B provides details on the implementation of the four methods.

[15] This section draws heavily from Christoffersen (2003).
[16] To learn more about the VaR measure, readers can refer to Jorion (2003), Christoffersen (2003) and Choudhry (2006).
[17] VaR is used to calculate capital requirements through the 1996 Market Risk Amendment to the Basle Accord (Berkowitz and O'Brien, 2002).

The historical simulation (HS) method is model-free since it does not rely on any particular parametric model for variance and a normal distribution for returns. HS assumes that the distribution of tomorrow's returns is well approximated by the empirical distribution of the past m observations without imposing any further asumptions. However, the serious drawback of the HS method is the ad hoc choice of m, which has an impact on the magnitude and dynamics of VaR. In this study, we use a 504-day moving sample size (i.e. m = 504) which corresponds to approximately two years of past daily returns.

The RiskMetrics (RM) method assumes normal distributions for standardized returns coupled with a conditional variance model where weights on past returns decline exponentially as we move backward in time.[18] The RM variance model, also called the exponential smoothing variance model, tracks variance changes in a way consistent with observed returns. However, the RM variance model has certain drawbacks, such as it does not allow for the leverage effect,[19] which is indeed a stylized fact in asset returns. Also, it ignores the empirical observation that the long-run average variance tends to be relatively stable over time.

These shortcomings motivate the use of more elaborate models such as the generalized autoregressive conditional heteroskedasticity (GARCH) models. The GARCH model corrects for the shortcomings of the RM variance model and can capture important features of returns due to its flexibility. A key advantage of the GARCH model for risk management is that the 1-day forecast of variance is given directly by the model. The GARCH (1,1) - t(d) model considered in this study assumes that the standardized returns follow the standardized $t(d)$ distribution which has only one parameter, d. The standardized $t(d)$ distribution fits the return data better because it allows for fatter tails than the normal distribution. Moreover, the

[18] Time-varying variance models help explain the non-normal features of asset returns.

[19] The leverage effect refers to the negative correlation between variances and returns, which is a stylized fact generally observed in asset returns. A negative return increases variance by more than a positive return of the same magnitude.

GARCH (1,1) - t(d) model used here takes into account the leverage effect discussed above. The downside of the GARCH model is that it requires nonlinear parameter estimation.

Finally, the filtered historical simulation (FHS) method combines a conditional variance model with a historical simulation method for the standardized returns. We use GARCH (1,1) - t(d) model as the conditional variance model for the FHS method.

We implement these four models as in Christoffersen (2003). For each firm, we first calculate the 1-day 1% VaR for each year using the four methods. We denote the resulting 1-day 1% VaR as dvarhsw, dvarrmw, dvargarchw, and dvarfhsw, respectively. We then compute for each firm-year estimates of the annualized 1% VaR by multiplying the average 1-day 1% VaR by $\sqrt{252}$. We denote the resulting annualized 1% VaR as avarhsw, avarrmw, avargarchw, and avarfhsw, respectively.

4.3 Impact of Social Performance on a Financial Firm's Risk

4.3.1. Multivariate framework

In the first part of our analysis, we examine the effect on a financial firm's risk of the aggregate measure of social performance (SP) which combines strengths and concerns using the following regression:

$$Risk_{it} = \alpha_0 + \alpha_1 SP_{it} + \delta X_{it} + \varepsilon_{it} \qquad (5)$$

where $Risk_{it}$ and SP_{it} are the risk and the social performance measure for firm i at time t, respectively. X_{it} is a vector of firm-specific characteristics as well as the industry and year dummies. δ is the vector of the associated regression coefficients.

Next we examine the effect on the firm's risk of the two aggregate measures of strengths (*Str*) and Concerns (*Con*) separately using the following regression:

$$Risk_{it} = \alpha_0 + \alpha_{11} Str_{it} + \alpha_{12} Con_{it} + \delta X_{it} + \varepsilon_{it} \qquad (6)$$

In the second part of our analysis, we examine the effect on a financial firm's risk of the dimensions of social performance using the following regression:

$$Risk_{it} = \lambda_0 + \sum_{d=1}^{D} \beta_d AVE\_SP_{idt} + \delta X_{it} + \varepsilon_{it} \qquad (7)$$

where AVE_SP_{idt} is the social performance measure for firm i relative to dimension d at time t, and all other variables are as defined above. Then, we examine the effect on a financial firm's risk of the strengths and concerns of SP dimensions separately using the following regression:

$$Risk_{it} = \lambda_0 + \sum_{d=1}^{D} \beta_{sd} AVE\_STR_{idt} + \sum_{d=1}^{D} \beta_{cd} AVE\_CON_{idt} + \delta X_{it} + \varepsilon_{it} \qquad (8)$$

where AVE_STR_{idt} and AVE_CON_{idt} are the strengths and concerns scores, respectively, for firm i relative to dimension d at time t.

We estimate our regressions using pooled cross-section time-series regressions and controlling for industry and year fixed effects. The industry dummy variables control for the cross-sectional heterogeneity in the risk measures across the four sub-industries (banking, insurance, real estate, and trading). The year dummy variables control for the market-wide effects (i.e., the prevailing macroeconomic conditions) on the firm's risk. Standard errors are adjusted for both heteroskedasticity and clustering of observations.

4.3.2 Control Variables

In our multivariate analysis we include control variables that prior research finds has an effect on firm risk.[20]

Size (-): Firm size (lnmkteq) is measured as the natural logarithm of the market value of common equity at the most recent fiscal year end prior to the measurement date of the risk measures. We expect firm size to be negatively related to a firm's risk.

Book-to-Market (B/M) ratio (+):[21] B/M ratio (bmw) is measured as the ratio of the book to market value of common equity as of the most recent fiscal year end. We expect the book-to-market ratio to be positively related to a firm's risk.

Net leverage (+): Net leverage (netlevw) is measured as the ratio of long-term debt minus cash & marketable securities to the market value of common equity (Bates *et al.*, 2009) where all components are measured at the most recent fiscal year end. We expect net leverage to be positively related to a firm's risk (Botosan and Plumlee, 2005; Lee *et al.*, 2009).

Expected return (+): Expected retun (ret1y), which is proxied by the annualized return from the previous year's daily stock returns, is expected to be positively related to a firm's risk (Gordon and Gordon, 1997; Malkiel and Xu, 1997; Gode and Mohanram, 2003; Botosan and Plumlee, 2005; Hail and Leuz, 2006; Lee *et al.*, 2009; Lee and Faff, 2009).

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[20] See, for example, Fama and French (1992, 1993), Brennan *et al.* (1998), Berk *et al.* (1999), Gebhardt *et al.* (2001), Chordia *et al.* (2001), Gode and Mohanram (2003), Carlson *et al.* (2004, 2006), Botosan and Plumlee (2005), and Lee *et al.* (2009).

[21] B/M has been used as proxy for risk, growth opportunities, market mispricing or accounting conservatism (Gode and Mohanram, 2003; Goss and Roberts, 2011).

Stock liquidity (-): The level of liquidity (avgturnover), which is measured as the average daily share turnover, and the liquidity risk (cvturnover), which is measured as the coefficient of variation of this measure over the previous year, are both expected to be negatively related to the firm's risk (Brennan *et al.,* 1998; Chordia *et al.,* 2001). Share turnover is defined as daily shares traded divided by daily shares outstanding.

Cash flow risk (+): We expect the dispersion of analyst forecasts and the standard deviation of return on assets (ROA), which are used to proxy for cash flow variability, to be positively related to the firm's risk. Dispersion of analyst forecasts (dispeps1w) is measured as the cross-sectional standard deviation of one-year-ahead earnings forecasts. The standard deviation of return on assets (sdroaw) is computed over the previous five years up to the fiscal-year end date.

Investment (-): We expect investment, which is measured as the sum of Capital expenditures, R&D expenditures, and Advertising expenses, divided by total assets, to be negatively related to the firm's risk based on previous research (Berk *et al.,* 1999; Carlson *et al.,* 2004, 2006; Liu *et al.,* 2007).

Expected growth in earnings (+): We expect the firm's expected long-term growth in earnings (expgrthw), which is measured as the mean annualized five-year earnings growth rate from I/B/E/S, to be positively related to the firm's risk. If the long-term rate is missing, we estimate it as the implicit growth in forecasted earnings from year 1 to year 2.

Default risk (+): We expect Altman's (1993) Zscore, which is a measure of distress risk, to be negatively related to the firm's risk. A higher value of the Zscore indicates a lower likelihood of default.

Investor base (-): We expect the investor base (inv_basew), which is measured as the number of common ordinary shareholders divided by common shares outstanding, to be negatively related to the firm's risk.

5. EMPIRICAL RESULTS

5.1 Descriptive Statistics[22]

Table 1 reports descriptive statistics for the social performance (SP) measures (Panel A and B). The mean (median) value of the aggregate SP measure that combines strengths and concerns is zero. The mean and median aggregate measure of strengths (Str) of 0.0363 and 0.0238, respectively, are significantly smaller than the mean and median aggregate measure of concerns (Con) of 0.0458 and 0.0357, respectively, based on t- and z- values of -11.02 and -11.64, respectively.[23] Panel B of Table 1 shows that the mean values of the individual SP measures are negative, except for Community (0.0241) and Environment (0.0004). However, the median values of the individual SP measures are all zero. Except for Community and Environment dimensions, the average concern scores exceed their average strength scores for all dimensions.

[Insert Table 1]

Panel C of Table 1 also reports descriptive statistics for the risk measures. The mean (median) annualized total risk is 0.29 (0.26) using five-year monthly returns and 0.29 (0.27) using one-year daily returns. The mean (median) systematic risk is 0.76 (0.62) using the CAPM and 0.86 (0.78) using the Fama-French three-factor model. The mean (median) idiosyncratic risk is 0.25 (0.23) using the CAPM, 0.25 (0.22) using the three factor model, and 0.24 (0.21) using the four-factor model. The mean (median) anualized Value at Risk (VaR) is 0.75 (0.68) using historical

[22] To ensure that our results are not driven by outliers we winsorize all variables, except the social performance measures and dummy variables, at the 1st and 99th percentiles.
[23] We use the paired t-test (the wilcoxon signed rank test) for the comparison of the means (medians).

simulation model, 0.70 (0.64) using the Risk Metric model, 0.81 (0.74) using the GARCH model, and 0.73 (0.67) using filtered historical simulations, respectively. Panel D of Table 1 reports descriptive statisctics for our explanatory variables.

Table 2 reports that the aggregate measure of social performance (SP) has a positive and negative correlation with the strengths score (Str) and concerns scores (Con), respectively. The correlation of 0.3 between strengths and concerns is relatively low. Table 2 also reports that the correlation coefficients among the risk measures are positive as expected.

[Insert Table 2]

Based on Table 2, the aggregate measure of social performance (SP) which combines strengths and concerns is correlated negatively and significantly with the systematic risk computed from the CAPM, and the volatility computed using five-year monthly returns. The aggregate measure of strengths (Str) is correlated positively and significantly with the systematic risk measures. The aggregate measure of concerns (Con) is correlated positively and significantly with the systematic risk measures, the volatility computed using five-year monthly returns, and the VaR measure computed using the Risk Metric model.

Based on Table 3, the correlation coefficients between some explanatory variables are relatively high. While the correlation coefficient between the average and the standard deviation of share turnover is 0.83, the correlation coefficient between the average and the coefficient of variation of share turnover is insignificant. Thus, we use these two latter variables in our regression analyses. Also, we use only the investment variable in our regression analyses since the correlations between investment and the three variables (R&D, advertising, and capital expenditures) are high. Except for these special cases, all correlation coefficients are relatively low suggesting that multicollinearity should not be a concern in our study. Finally, Table 4 reports the correlation coefficients between the SP dimensions (measures which

combine strengths and concerns within the same dimension) as well as between the strengths and concerns of SP dimensions. Although significant in many cases, the correlation coefficients are relatively low.

[Insert Tables 3 and 4]

5.2 Impact of Social Performance on a Financial Firm's Risk

5.2.1 Impact of social performance on total risk

Panel A of Table 5 reports the results of the regressions between total risk and the aggregate measures of social performance. The aggregate measure of social performance (SP), which combines strengths and concerns, is significantly and negatively related to stock return volatility. The coefficient associated with the aggregate measure of concerns (Con) is positive and statistically significant regardless of the total risk metric used. The coefficients associated with the aggregate stengths measure (Str) are also positive, but marginally significant (at 10% level). Therefore, firms with higher concerns scores have higher total risk. Thus, the negative impact of SP on total risk seems to be mainly due to concerns.

[Insert Table 5]

5.2.2 Impact of Social Performance on Idiosyncratic Risk

Based on Panel B of Table 5, the aggregate measure of social performance (SP), which combines strengths and concerns, is not related to idiosyncratic risk. Unlike that for the aggregate stengths measure (Str), the coefficients associated with the aggregate measure of concerns (Con) are positive and statistically significant regardless of the idiosyncratic risk metric used. Therefore, firms having lower social

performance based on concerns (but not strengths) scores have higher idiosyncratic risk.

5.2.3 Impact of Social Performance on Systematic Risk

Based on Panel C of Table 5, the aggregate combined measure of social performance (SP) is significantly and negatively related to systematic risk. Again, unlike that for the aggregate stengths measure (Str), the coefficient associated with the aggregate measure of concerns (Con) is positive and statistically significant in both specifications. Thus, social performance in aggregate is negatively related to systematic risk mainly due to concerns.

5.2.4 Impact of Social Performance on Value at Risk (VaR)

Based on Panel D of Table 5, the aggregate combined measure of SP is significantly and negatively related to all VaR measures. The coefficients associated with the aggregate measure of concerns (Con) are positive and statistically significant for all specifications. None of the coefficients associated with the aggregate stengths measure (Str) are significant. Thus, social performance in aggregate is negatively related to VaR mainly due to concerns.

5.3 Impact of the Dimensions of Social Performance on a Financial Firm's Risk

Table 6 reports the results of the regressions between the risk measures and the social performance dimensions. The results suggest that some SP dimensions (such as Employee Relations, Product and Corporate Governance) are more relevant for a financial firm's risk. Specifically, Employee Relations are significantly and negatively related to stock return volatility, idiosyncratic risk and VaR. Product and

Corporate Governance are significantly and negatively related to volatility, idiosyncratic risk, systematic risk and VaR.

To a lesser extent, other SP dimensions (e.g., Diversity and Human Rights) affect some risk measures. Diversity is significantly and positively related to idiosyncratic risk measured using the three-factor model, whereas Human Rights are significantly and negatively related to volatility computed using five-year monthly returns, and VaR computed using the GARCH model. Except for these special cases, all coefficients associated with these two dimensions as well as those associated with Community and Environment are not significant at conventional levels (i.e., 5%).

[Insert Table 6]

The mean values of Employee relations, Product and Corporate Governance are negative (see Table 1) with concerns exceeding strengths, which suggests that their negative impact on risk appear to be induced by concerns. Since aggregate combined measures of SP dimensions might have some limitations (e.g., important information about SP might be lost due to aggregation), the next section examines the impact of strengths and concerns separately for each SP dimension.

5.4 Impact of the Strengths and Concerns of SP Dimensions on a Financial Firm's Risk

Table 7 reports the results of the regressions between the risk measures and the strengths and concerns of each SP dimensions. Table 7 shows that the impact of some SP dimensions (e.g., Community, Diversity, Environment and Human Rights) on the risk measures does not exhibit significant patterns in the sense that only some of their associated coefficients are significant with some specific models. For example, Community strengths are significantly and negatively related to both measures of systematic risk, whereas Community concerns are significantly and

negatively related (counter to expectations) to the VaR measured using the Risk Metric model. Environment strengths are significantly and negatively related to the volatility measured using one-year daily returns and systematic risk measured using the three-factor model. Human Rights concerns are significantly and positively related to total risk measured using five-year monthly returns, and to the VaR measured using the GARCH model. All coefficients associated with Diversity as well as Environment concerns are insignificant regardless of the risk measure used.

[Insert Table 7]

In contrast, the impacts on a firm's risk of Employee Relations, Product and Corporate Governance exhibit significant patterns. Employee concerns are significantly and positively related to total risk, idiosyncratic risk, systematic risk, and the VaR for all specifications, except for the one measured using filtered historical simulation. All coefficients associated with Employee strengths are insignificant regardless of the risk measure used. Similar to Employee concerns, Product and Corporate Governance concerns are significantly and positively related to total risk, idiosyncratic risk, systematic risk, and the VaR for all specifications. All coefficients associated with Corporate Governance strengths are insignificant regardless of the risk measure used. However, Product strengths are significantly and positively related to total risk and the VaR measured using the Risk Metric model.

Overall, three main conclusions can be drawn from the results reported in table 7. First, Employee, Product and Corporate Governance concerns positively affect total risk, idiosyncratic risk, systematic risk, and the Value at Risk (VaR). Second, Product strengths positively affect total risk. Third, Community, Diversity, Environment and Human Rights have no systematically significant impact on total risk or the VaR measures.

5.5 Robustness Checks

5.5.1 Endogeneity of Social Performance

To this point of our analysis, the social performance measures are implicitly assumed exogenous. If SP measures are endogenous for any reason, their associated coefficient estimates using standard OLS would be biased and inconsistent. Endogeneity issues may arise if some of the regressors (e.g., firm size) and/or unobserved (omitted) variables affect both SP measures and the firm's risk measures. To address this potential endogeneity problem, we use the instrumental variables (IV) method. The IV regressions are estimated using the two-step efficient generalized method of moments (GMM):[24]

$$SP_{it} = \gamma + \eta Z_{it}^{SP} + +\theta Y_{it}^{SP} + \omega_{it} \qquad (9)$$

$$Risk_{it} = \alpha_0 + \alpha_1 SP_{it}^{*} + \delta X_{it} + \varepsilon_{it} \qquad (10)$$

where Z_{it}^{SP} denotes instruments, and Y_{it}^{SP} denotes variables that affect social performance. Instruments should be correlated with the SP measure, but have zero or low correlation with the firm's risk measure. We use three instruments: lagged SP, the median industry SP and a dummy variable for loss firms (i.e., those with negative free cash flow in the previous year). The first two instruments allow us to control for the persistence of the SP measures and for industry SP. The third instrument is used to control for the argument suggested by the slack resources theory in which non profitable firms may simply not be able to make CSR investments.[25] In the first stage, there are as many equations as endogenous variables. In the second stage, we use the fitted values of the first-stage SP measures as the explanatory variables instead of

[24] The GMM estimation generates efficient estimates of the coefficients and consistent estimates of the standard errors that are robust to the presence of arbitrary heteroskedasticity and clustering by firm.

[25] The slack resources theory suggests that profitable firms (e.g., those with higher past financial performance) can improve their SP through CSR investments (McGuire *et al.*, 1988; Waddock and Graves, 1997).

their original values. Only the results of the second stage estimation are reported in Table 8.

[Insert Table 8]

The findings reported in Table 8 are virtually similar to those reported in Table 5, except that the coefficient of the aggregate combined measure of social performance (SP) becomes insignificant when the dependent variable is the volatility measured using one-year daily returns. Table 8 shows that the aggregate combined measure of social performance (SP) is significantly and negatively related to stock return volatility measured using five-year monthly returns, systematic risk and VaR. The significant and positive relation is identified for the aggregate measure of concerns (Con) with stock return volatility, idiosyncratic risk, systematic risk and VaR. None of the coefficients associated with the aggregate stengths measure (Str) is significant at conventional level. Therefore, we conclude that financial firms with higher concerns scores have higher risk regardless of how risk is measured. Thus, the negative impact of SP on a financial firm's risk is mainly due to concerns suggesting an asymmetric relation between SP and risk.

The results reported in Table 9 are virtually similar to those reported in Table 6, once again reinforcing our conclusion. Specifically, Corporate Governance is significantly and negatively related to volatility, idiosyncratic risk, systematic risk and VaR. Product is significantly and negatively related to volatility, systematic risk and VaR. Employee relations are significantly and negatively related to stock return volatility measured using five-year monthly returns, and VaR using the Risk Metric model. The other dimensions (i.e., Community, Diversity, Environment, and Human Rights) are not significantly related to a financial firm's risk, except for Diversity which remains significantly and positively related to idiosyncratic risk.

[Insert Tables 9 and 10]

Except for Community concerns which now become significantly and negatively related to systematic risk, which is contrary to our expectations, the results reported in Table 10 are similar to those reported in Table 7. In particular, the impact on the firm's risk of Employee relations, Product and Corporate Governance remains after controlling for endogeneity. Employee, Product and Corporate Governance concerns remain significantly and positively related to total risk, idiosyncratic risk, systematic risk, and the VaR in all specifications. Note that the relation between Employee concerns and idiosyncratic risk now becomes marginally significant (at 10% level). Product strengths are significantly and positively related to the VaR.

We refine our conclusion about the impact of strengths and concerns of SP dimensions separately after correcting for endogeneity as follow. First, Employee, Product and Corporate Governance concerns positively affect total risk, idiosyncratic risk, systematic risk, and the Value at Risk (VaR). Second, Product strengths positively affect the VaR. Third, the other SP dimensions (i.e., Community, Diversity, Environment, and Human Rights) have no systematically significant impact on total risk or the VaR measures.

5.5.2 Regressions by industry: banks, insurance and trading firms

Table 11 reports the results of the regressions between the risk measures and the aggregate measures of social performance for banks, insurance and trading firms.[26] The result shows that social performance affects the risk of banks and trading firms, but not insurance firms. For trading firms, the aggregate combined measure of social performance (SP) is significantly and negatively related to volatility, systematic risk and VaR. The aggregate measure of concerns (Con) is significantly and positively related to volatility, idiosyncratic risk, systematic risk and VaR. None of the coefficients associated with the aggregate stengths measure (Str) is significant. Thus, social performance in aggregate is negatively related to a trading firm's risk

[26] We can not examine Real Estate because there are only 40 firm-year observations, as noted earlier.

mainly due to concerns. For banks, none of the coefficients associated with the aggregate combined measure of social performance (SP) is significant. However, the aggregate measure of concerns (Con) is significantly and positively related to volatility, idiosyncratic risk and VaR. The aggregate stengths measure (Str) is also significantly and positively related to volatility and idiosyncratic risk. Thus, both aggregate stengths and concerns positively affect a bank's risk.

[Insert Table 11]

5.5.3 Alternative Model Specifications

We perform additional robustness checks in order to examine the sensitivity of our results to alternative model specifications. First, the Altman (1993) distress risk measure (zscorew) can be criticized by arguing that this measure is designed primarily for industrial firms and not for financial firms. Therefore, we use investment grade rating (i.e., S&P long-term debt rating) as an alternative proxy for default risk instead of the Zscore. Investment grade rating is computed as a dummy variable equal to one if the S&P debt rating is BB+ or less (i.e., junk bonds) and equal to zero otherwise (i.e., investment grade debt). Investment grade is expected to be positively related to the risk measures. Second, we use the Amihud illiquidity measure as an alternative measure of the level of liquidity. The illiquidity measure is computed as in Amihud (2002). Third, we use the cross-sectional standard deviation of the long-term growth in earnings forecasts (displtg) from I/B/E/S as an alternative measure of the dispersion of analyst forecasts instead of the the cross-sectional standard deviation of the one-year-ahead earnings forecasts (dispeps1w). Fourth, we include in our regressions the percentage absolute forecast error as an additional measure of cash flow risk. Forecast error is measured as the difference between the one-year ahead median earnings forecast and the actual earnings divided by the stock price. Finally, we also include in our regressions the free cash flow to equity (or to

the firm) to control for profitability.[27] Overall, the untabulated results from these alternative model specifications are not materially different from those reported in this paper and our main conclusion remains unchanged. [28]

6. CONCLUSION

This paper examines the impact of social performance (SP) on a financial firm's risk. We use various measures of SP and four market-based measures of risk: total, idiosyncratic, systematic and Value at Risk (VaR). We examine this impact using a sample of 4132 financial firm-year observations covering the time period from 1991 to 2007 and employing alternative estimation methodologies.

Several important conclusions can be drawn from our analysis. First, the aggregate combined measure of SP is significantly and negatively related to stock return volatility, systematic risk and VaR. The aggregate measure of concerns is significantly and positively related to all risk measures. Therefore, we conclude that financial firms with higher concerns scores have higher risk regardless of how risk is measured. Thus, the negative impact of SP on a financial firm's risk is mainly due to concerns suggesting an asymmetric relation between SP and risk.

Second, only some SP dimensions significantly affect a financial firm's risk. In particular, Employee relations, Product and Corporate Governance significantly and negatively affect a financial firm's risk as measured by stock return volatility and VaR. Moreover, Corporate Governance is negatively related to idiosyncratic and systematic risks, and Product is negatively related to systematic risk. Third, Employee, Product and Corporate Governance concerns positively affect total risk,

[27] The free cash flow to equity is measured as net income plus depreciation minus capital expenditures minus changes in non cash working capital minus net debt issues minus preferred dividends. The free cash flow to the firm is measured as EBIT minus tax paid plus depreciation minus capital expenditures minus changes in non cash working capital.

[28] Results are available from the authors upon request.

idiosyncratic risk, systematic risk, and the Value at Risk (VaR), whereas Product strengths positively affect the VaR.

Fourth, additional analysis by subsamples shows that social performance affects the risk of banks and trading firms, but not insurance firms. In particular, social performance in the aggregate is negatively related to a trading firm's risk mainly due to concerns. For banks, the aggregate measure of concerns is significantly and positively related to volatility, idiosyncratic risk and VaR. The aggregate stengths measure is also significantly and positively related to volatility and idiosyncratic risk. Thus, both aggregate stengths and concerns positively affect a bank's risk.

Our findings regarding the positive impact on a financial firm's risk of Employee, Product and Corporate Governance concerns are consistent with the stakeholder theory and its risk management argument of social risks, the Merton (1987) argument on investor recognition or the size of a firm's investor base, and models of investor preferences (e.g., Heinkel *et al.,* 2001; Barnea *et al.,* 2005; Mackey *et al.,* 2007). They are also consistent with the results of previous studies (e.g., Frooman, 1997; Godfrey *et al.,* 2009; Oikonomou *et al.,* 2010; Goss and Roberts, 2011) suggesting that the impact of concerns on firm risk is more important than the impact of strengths. As argued by some authors (e.g., Lankoski, 2009), avoiding or reducing concerns and not undertaking or having strengths seem to be of higher priority for stakeholders. Thus, concerns are weighted more heavily than strengths by investors.

Our findings regarding the positive impact on a financial firm's risk of Product strengths might be explained by the managerial opportunism hypothesis which draws on agency theory and suggests that managers make over-investment in SP (i.e., undertaking strengths) for their private benefit (i.e., to improve their own reputation and job security), even at the expense of shareholders (Barnea and Rubin, 2010; Cespa and Cestone, 2007). This agency costs can be viewed as a costly

diversion of scarce resources, which increases risk. Another potential explanation is that the stock market does not fully value intangibles (e.g., Edmans, 2011).

Our results could be interesting at several levels. For investors and financial analysts, our results suggest that concerns should be included as significant extra financial risk in the evaluation of a bank or trading firm. Our results could also help regulators in their role as monitors of financial institutions. While regulators recognize that corporate governance issues are important, [29] our findings suggest three additional issues for future research. First, it would be interesting to examine whether our results hold outside the U.S. context examined herein. Second, the recent financial crisis offers an opportunity to examine whether there is a systematic variation in the impact of SP on financial firm's risk between the pre-crisis and post-crisis periods. Finally, it would be interesting to investigate the impact of SP on other important risk sources for financial firms such as credit risk and operational risk.

[29] Chen *et al.,* (2006) find that stock option-based executive compensation induces risk-taking in the banking industry.

Appendix A: MSCI ESG STATS (KLD)'s Strength and Concern Ratings

Dimension	Strengths	Concerns
Community	- Charitable Giving - Innovative Giving - Non-US Charitable Giving - Support for Housing - Support for Education - Indigenous Peoples Relations - Volunteer Programs - Other Strength	- Investment Controversies - Negative Economic Impact - Indigenous Peoples Relations - Tax Disputes - Other Concern
Diversity	- CEO's identity - Promotion - Board of Directors - Work/Life Benefits - Women & Minority Contracting - Employment of the Disabled - Gay & Lesbian Policies - Other Strength	- Controversies (e.g., fines) - Non-Representation - Other Concern
Employee Relations	- Union Relations - No-Layoff Policy - Cash Profit Sharing - Employee Involvement - Retirement Benefits Strength - Health and Safety Strength - Other Strength	- Union Relations - Health and Safety Concern - Workforce Reductions - Retirement Benefits Concern - Other Concern
Environment	- Beneficial Products and Services - Pollution Prevention - Recycling - Clean Energy - Communications - Property, Plant, and Equipment - Management Systems - Other Strength	- Hazardous Waste - Regulatory Problems - Ozone Depleting Chemicals - Substantial Emissions - Agricultural Chemicals - Climate Change - Other Concern
Product	- Quality - R&D/Innovation - Benefits to Economically Disadvantaged - Other Strength	- Product Safety - Marketing/Contracting Concern - Antitrust - Other Concern
Human Rights	- Positive Record in South Africa (1994-1995) - Indigenous Peoples Relations Strength - Labor Rights Strength - Other Strength	- South Africa (1991-1994) - Northern Ireland (1991-1994) - Burma Concern - Mexico (1995-2002) - Labor Rights Concern - Indigenous Peoples Relations Concern - Other Concern
Corporate Governance	- Limited Compensation - Ownership Strength - Transparency Strength - Political Accountability Strength - Other Strength	- High Compensation - Ownership Concern - Accounting Concern - Political Accountability Concern - Transparency Concern - Other Concern

Appendix B: Calculation of Value at Risk (VaR)

In this appendix, the four methods used to calculate the VaR are described.

B.1. Historical simulation (HS)

Consider a sequence of m daily past returns of security i noted as $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$. The HS technique assumes that the distribution of tomorrow's security returns, $R_{i,t+1}$, is well approximated by the empirical distribution of the past m observations $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$. That is, the distribution of $R_{i,t+1}$ is captured by the histogram of $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$. To compute the daily value at risk (VaR) with coverage rate, 1%, we sort the returns in $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$ in ascending order and choose the $VaR_{t+1}^{0.01}$ to be the number such that only 1% of the observations are smaller than the $VaR_{t+1}^{0.01}$. The 1-day 1% VaR is calculated as the 0.01^{th} percentile of the sequence of past returns:

$$VaR\_HS_{t+1}^{0.01} = -Percentile\left(\{R_{i,t+1-\tau}\}_{\tau=1}^{m}, 0.01\right)$$

Linear interpolation is used to calculate the exact number as the VaR typically falls in between two observations. We choose m = 504 which corresponds to approximately two years of daily past returns.

B.2. RiskMetrics (RM) model

Assuming that the mean value of daily returns of security i, $R_{i,t+1}$, is zero and that the innovations (i.e., news hitting return), z_{t+1}, are independently and identically normally distributed with mean equal to zero and variance equal to 1, we can write the daily return as:

$$R_{i,t+1} = \sigma_{i,t+1} z_{t+1}, \qquad \text{with } z_{t+1} \longrightarrow i.i.d.N(0,1)$$

Given these assumptions, we can know the entire distribution of tomorrow's return, $R_{i,t+1}$, if we establish a model for forecasting tomorrow's variance, $\sigma^2_{i,t+1}$. JP Morgan's RiskMetrics system for market risk management has proposed a conditional variance model where weights on past squared returns decline exponentially as we move backward in time. The RiskMetrics variance model, also called the exponential smoothing variance model, is writtern as:

$$\sigma^2_{i,t+1} = \lambda\sigma^2_{i,t} + (1-\lambda)R^2_{i,t}, \qquad \text{where } \lambda = 0.94$$

The forecast of tomorrow's variance, $\sigma^2_{i,t+1}$, can be calculated at the end of today when the daily return is realized. The 1-day 1% VaR is calculated as:

$$VaR\_RM^{0.01}_{t+1} = -\sigma_{i,t+1} \times \Phi^{-1}_{0.01}$$

where $\Phi^{-1}_{0.01} = \Phi^{-1}(0.01) = -2.33$, which is the 1% quantile from the standard normal distribution. We use a moving window sample of m daily past returns, $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$, in order to compute the RiskMetrics conditional variances for any given year. The first observation is set equal to the unconditional variance computed over the sequence of m daily past returns. We choose m = 504 which corresponds to approximately two years of daily past returns.

B.3. GARCH(1,1) - t(d) model

Consider the following $GARCH(1,1)-\tilde{t}(d)$ model with leverage:

$$R_{i,t+1} = \sigma_{i,t+1} z_{t+1}, \qquad \text{with } z_{t+1} \longrightarrow \tilde{t}(d)$$

$$\sigma^2_{i,t+1} = \omega + \alpha\left(R_{i,t} - \theta\sigma_{i,t}\right)^2 + \beta\sigma^2_{i,t}$$

The innovations z_{t+1} follow the standardized $t(d)$ distribution, noted as $\tilde{t}(d)$, which has only one parameter, d. The $\tilde{t}(d)$ density function is given by the following formula:

$$f_{t(d)}(z;d) = \frac{\Gamma\left((d+1)/2\right)}{\Gamma\left(d/2\right)\sqrt{\pi(d-2)}}\left(1+z^2/(d-2)\right)^{-(1+d)/2}, \qquad \text{where } d>2$$

where $\Gamma(*)$ represents the gamma function. We estimate all the parameters, $\{\omega,\alpha,\beta,\theta,d\}$, simultaneously using maximum likelihood estimation (MLE). We use a moving sample of m daily past returns, $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$, in order to estimate the parameters and compute the daily conditional variances for any given year. The first observation is set equal to the unconditional variance computed over the sequence of m daily past returns. We choose m = 504 which corresponds to approximately two years of daily past returns. The 1-day 1% VaR is calculated as:

$$VaR_{t+1}^{0.01} = -\sigma_{i,t+1} \times \tilde{t}_{0.01}^{-1}(d)$$

where $\tilde{t}_{0.01}^{-1}(d)$ is the 1% quantile of the $\tilde{t}(d)$ distribution, which is equal to the quantile of the conventional student's $t(d)$ multiplied by $\sqrt{(d-2)/d}$. Thus, we have:

$$VaR\_GARCH_{t+1}^{0.01} = -\sigma_{i,t+1} \times \left(\sqrt{\frac{d-2}{d}}\right) \times t_{0.01}^{-1}(d)$$

where $t_{0.01}^{-1}(d)$ is the 1% quantile of the conventional student's $t(d)$ distribution.

B.4. Filtered historical simulation (FHS)

The FHS method combines a conditional variance model with a historical simulation method for the standardized returns. Consider again the $GARCH(1,1)-\tilde{t}(d)$ model with leverage:

$$R_{i,t+1} = \sigma_{i,t+1} z_{t+1}, \qquad \text{with } z_{t+1} \longrightarrow \tilde{t}(d)$$
$$\sigma^2_{i,t+1} = \omega + \alpha\left(R_{i,t} - \theta\sigma_{i,t}\right)^2 + \beta\sigma^2_{i,t}$$

For any given year, we estimate the parameters of the GARCH model using the sequence of m daily past returns of security i, $\{R_{i,t+1-\tau}\}_{\tau=1}^{m}$. We then calculate standardized returns from the observed returns and from the standard deviations estimated using the GARCH model as follows:

$$\hat{z}_{i,t+1-\tau} = R_{i,t+1-\tau} / \sigma_{i,t+1-\tau}, \qquad \text{for } \tau = 1,2,.....,m$$

We refer to the set of standardized returns as $\left\{\hat{z}_{i,t+1-\tau}\right\}_{\tau=1}^{m}$. At the end of day t we obtain $R_{i,t}$ which allow us to calculate the day $t+1$'s variance, $\sigma^2_{i,t+1}$, in the GARCH model. Since the variance is known, we calculate the 1-day 1% VaR using the percentile of the set of the standardized residuals as follows:

$$VaR\_FHS^{0.01}_{t+1} = -\sigma_{i,t+1} Percentile\left\{\left\{\hat{z}_{i,t+1-\tau}\right\}_{\tau=1}^{m}, 0.01\right\}$$

We choose m = 504 which corresponds to approximately two years of daily past returns.

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Table 1: Descriptive statistics of the social performance measures during 1991-2007

	Mean	Median	Standard deviation	Min	Max	Skewness	Kurtosis	N
Panel A: Aggregate SP measures								
SP	-0.0099	0	0.0548	-0.2666	0.1880	-0.0785	3.8039	4132
Str	0.0363	0.0238	0.0436	0	0.3277	1.8983	7.8563	4132
Con	0.0458	0.0357	0.0495	0	0.3428	1.6788	7.1823	4132
Panel B: Individual SP measures								
ave_com	0.0241	0	0.1594	-0.6666	1	0.7595	6.6972	4132
ave_div	-0.0228	0	0.2197	-0.6666	0.75	-0.0174	2.8634	4132
ave_emp	-0.0050	0	0.1175	-0.6	0.5	-0.0829	4.6144	4132
ave_env	0.0004	0	0.0238	-0.4285	0.3333	0.7397	86.613	4132
ave_non	-0.0055	0	0.0554	-0.5	0.5	-4.2750	52.088	4132
ave_pro	-0.0505	0	0.1527	-0.75	0.5	-2.0418	8.4619	4132
ave_oth	-0.0101	0	0.1775	-0.5	0.3333	0.1063	3.1520	4132
avestr_com	0.0634	0	0.1326	0	1	2.4994	9.7326	4132
avecon_com	0.0393	0	0.1028	0	0.6666	2.4366	7.8627	4132
avestr_div	0.0800	0	0.1317	0	0.75	1.9893	7.1222	4132
avecon_div	0.1028	0	0.1580	0	0.6666	0.9869	2.3740	4132
avestr_emp	0.0358	0	0.0792	0	0.5	2.2006	7.5183	4132
avecon_emp	0.0408	0	0.0869	0	0.6	1.9690	6.2767	4132
avestr_env	0.0020	0	0.0210	0	0.6	13.248	241.2191	4132
avecon_env	0.0016	0	0.0197	0	0.5714	16.840	358.9668	4132
avecon_non	0.0072	0	0.0497	0	0.5	7.6314	65.3217	4132
avestr_pro	0.0134	0	0.0566	0	0.5	4.0207	17.5274	4132
avecon_pro	0.0639	0	0.1503	0	0.75	2.5529	9.3231	4132
avestr_oth	0.0550	0	0.1127	0	0.3333	1.7374	4.3555	4132
avecon_oth	0.0651	0	0.1141	0	0.5	1.5986	4.8559	4132

Table 1 (Continued): Descriptive statistics of the risk measures and the explanatory variables during 1991-2007

	Mean	Median	Standard deviation	Min	Max	Skewness	Kurtosis	N
Panel C: Risk measures								
mbetaw	0.7683	0.6221	0.6186	-0.2037	2.9884	1.1015	4.2796	4056
mbetaffw	0.8648	0.7815	0.6203	-0.4239	2.6561	0.5238	2.9905	4056
Volatilityw	0.2939	0.2618	0.1259	0.1373	0.8646	1.9491	8.0895	4056
dvolatilityw	0.2994	0.2703	0.1223	0.1376	0.8174	1.5922	6.4161	4132
sdresCAPMw	0.2595	0.2302	0.1160	0.1225	0.8954	2.1726	10.0758	4132
sdresffw	0.2505	0.2225	0.1118	0.1186	0.8770	2.2816	10.7888	4132
sdres4ffw	0.2476	0.2191	0.1106	0.1175	0.8665	2.2797	10.7409	4132
dvarhsw	0.0473	0.0433	0.0177	0.0219	0.1158	1.4375	5.5853	3900
avarhsw	0.7522	0.6882	0.2819	0.3482	1.8397	1.4375	5.5853	3900
dvarrmw	0.0446	0.0404	0.0185	0.0206	0.1226	1.6164	6.4776	3900
avarrmw	0.7084	0.6413	0.2942	0.3276	1.9471	1.6164	6.4776	3900
dvargarchw	0.0515	0.0467	0.0212	0.0250	0.1452	1.8642	7.7030	3862
avargarchw	0.8175	0.7414	0.3378	0.3978	2.3060	1.8642	7.7030	3862
dvarfhsw	0.0465	0.0423	0.0178	0.0208	0.1129	1.3569	5.1258	3848
avarfhsw	0.7385	0.6730	0.2839	0.3316	1.7935	1.3569	5.1258	3848
Panel D: Independent variables								
dispeps1w	0.1054	0.05	0.1674	0	1.22	4.3915	26.1865	3614
expgrthw	0.1193	0.105	0.0850	0	0.6774	3.8567	24.081	4111
ret1y	0.1208	0.1432	0.2907	-2.0877	1.8380	-0.828	7.8221	4132
avgturnover	0.0054	0.0040	0.0053	0.0001	0.1082	5.2958	58.5696	4132
sdturnover	0.0046	0.0029	0.0069	0.0001	0.2829	18.0713	632.2373	4132
cvturnover	0.8566	0.7061	0.5051	0.2734	6.193	3.0356	17.2777	4132
illiq ($*10^{-7}$)	0.14	0.0179	0.721	0.0000	34.6	31.0286	1334.966	4132
lnmkteq	7.6004	7.4795	1.5264	-3.1700	12.519	0.3377	3.2411	4127
bmw	0.5585	0.5153	0.2843	0.0542	1.6495	1.1983	5.3371	4120
rd	0.0066	0	0.0288	0	0.2238	5.3109	32.6639	730
ad	0.0036	0.0008	0.0167	0	0.2783	10.7626	138.0205	1731
capxs	0.0063	0.0015	0.0172	-0.0008	0.3395	8.5160	111.8933	3292
investment	0.0077	0.0012	0.0249	-0.0000	0.3395	6.7714	58.9943	4128
zscorew	1.5265	0.5424	4.1063	-8.5574	74.864	9.0580	114.9431	4132
netlevw	0.2164	0.1434	0.2655	-0.8111	1.2329	0.6808	3.8346	4128
sdroa5yw	0.0174	0.0067	0.0365	0.0011	0.4073	6.0445	51.4512	3856
inv_basew	0.1874	0.0701	0.3226	0.0003	2.0228	3.4238	16.8299	2963

Notes:

Table 1 presents the descriptive statistics of the social performance measures (panels A and B), the risk measures (Panel C), and the explanatory variables (Panel D) for the 4132 firm-year observations covering the time period from 1991 to 2007.
SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). Community relations (ave_com), Diversity (ave_div), Employee relations (ave_emp), Environmental performance (ave_env), Human Rights (ave_non), Product (ave_pro), and Corporate Governance (ave_oth) are the difference between the average strength and average concern for each SP dimension, respectively. Community strengths (avestr_com), Community concerns (avecon_com), Diversity strengths (avestr_div), Diversity concerns (avecon_div), Employee strengths (avestr_emp), Employee concerns (avecon_emp), Environment strengths (avestr_env), Environment concerns (avecon_env), Human Rights concerns (avecon_non), Product strengths (avestr_pro), Product concerns (avecon_pro), Corporate Governance strengths (avestr_oth), and Corporate Governance concerns (avecon_oth) are separate average strength and concern scores for each SP dimension, respectively.
Systematic risk (mbetaw and mbetaffw) are the market beta derived from the CAPM or the four-factor Carhart (1997) model, respectively. Idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw) is the standard deviation of the residuals derived from the CAPM, the three-factor Fama and French (1993) model and the four-factor Carhart (1997) model, respectively. Total risk (Volatilityw and dvolatilityw) is the annualized standard deviation from the monthly stock returns over the previous five years and from the daily stock returns over the past year, respectively. The annualized (daily average) 1% VaR (Value at Risk) denoted as avarhsw, avarrmw, avargarchw, and avarfhsw (dvarhsw, dvarrmw, dvargarchw, and dvarfhsw) are estimated using historical simulation (HS), RiskMetrics (RM), the GARCH (1,1) - t(d) model, and filtered historical simulation (FHS), respectively.
Dispersion of analyst forecasts is measured by the cross-sectional standard deviation of one-year-ahead earnings forecasts (dispeps1w). Expected growth in earnings (expgrthw) is the mean annualized five-year earnings growth rate from I/B/E/S (where available, otherwise estimated as the implicit growth in forecasted earnings from year 1 to year 2). ret1y is the annualized return from the previous year's daily stock returns.The level of liquidity is measured as the average daily share turnover (avgturnover), and the liquidity risk is measured as the standard deviation (sdturnover) or the coefficient of variation (cvturnover) of this measure over the previous year. Share turnover is defined as daily shares traded divided by daily shares outstanding. The Amihud illiquidity measure (illiq) is computed as in Amihud (2002). Firm size (lnmkteq) is measured as the logarithm of the market value of common equity at the most recent fiscal year-end. Book-to-market ratio (bmw) is measured as the ratio of the book to market value of common equity as of the most recent fiscal year end. Capxs is capital expenditures divided by total assets, rd is R&D expenditures divided by total assets, and ad is advertising expenses divided by total assets. Investment is computed as the sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets. Net leverage (netlevw) is measured as the ratio of long-term debt minus cash & marketable securities to the market value of common equity using values for the most recent fiscal year end. The standard deviation of return on assets (sdroa5yw) is measured over the five previous years up to the fiscal-year end date of each firm-year observation. The variable investor base (inv_basew) is computed as the number of common ordinary shareholders divided by common shares outstanding. Altman's (1993) distress risk measure (zscorew) is computed as:

$$Zscore = 1.2 \times \left(\frac{NWC}{TA}\right) + 1.4 \times \left(\frac{RE}{TA}\right) + 3.3 \times \left(\frac{EBIT}{TA}\right) + \left(\frac{\mathrm{Re}v}{TA}\right) + 0.6 \times \left(\frac{MVEquity}{BVTL}\right)$$

where, NWC is net working capital (current assets – current liabilities), RE is retained earnings, EBIT is earnings before interest and taxes, Rev is the total revenues, MVEquity is the market value of total equity (common and preferred stocks), BVTL is total liabilities (current and long term liabilities), and TA is total assets. Except for the social performance measures and dummy variables, the variables are winsorized (w) at the 1st and 99th percentiles.

Table 2: Correlation coefficients between the risk measures and the aggregate measures of social performance during 1991-2007

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
SP	**(1)**	1.0000													
Str	**(2)**	0.5114*	1.0000												
Con	**(3)**	-0.6652*	0.3001*	1.0000											
mbetaw	**(4)**	-0.0758*	0.1115*	0.1723*	1.0000										
mbetaffw	**(5)**	-0.0318	0.1991*	0.2008*	0.7725*	1.0000									
Volatilityw	**(6)**	-0.0813*	0.0034	0.0895*	0.4758*	0.4256*	1.0000								
dvolatilityw	**(7)**	-0.0403	0.0028	0.0471	0.4369*	0.2979*	0.5076*	1.0000							
sdresCAPMw	**(8)**	-0.0288	-0.0280	0.0061	0.3964*	0.2556*	0.5206*	0.9619*	1.0000						
sdresffw	**(9)**	-0.0356	-0.0291	0.0123	0.3956*	0.2632*	0.5462*	0.9506*	0.9956*	1.0000					
sdres4ffw	**(10)**	-0.0365	-0.0317	0.0109	0.3959*	0.2661*	0.5547*	0.9444*	0.9925*	0.9988*	1.0000				
avarhsw	**(11)**	-0.0408	0.0084	0.0491	0.3129*	0.3314*	0.7986*	0.6020*	0.6029*	0.6217*	0.6303*	1.0000			
avarrmw	**(12)**	-0.0568	0.0189	0.0782*	0.2795*	0.2832*	0.8137*	0.3982*	0.3807*	0.4037*	0.4132*	0.8081*	1.0000		
avargarchw	**(13)**	-0.0619	-0.0168	0.0534	0.2668*	0.2414*	0.7860*	0.4167*	0.4058*	0.4267*	0.4356*	0.7824*	0.9434*	1.0000	
avarfhsw	**(14)**	-0.0365	0.0016	0.0399	0.3862*	0.3262*	0.6297*	0.8529*	0.8286*	0.8283*	0.8288*	0.8043*	0.5400*	0.5475*	1.0000

Table 2 presents the correlation coefficients between the risk and social performance measures for the 4132 firm-year observations covering the time period from 1991 to 2007. SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). Systematic risk (mbetaw and mbetaffw) are the market beta derived from the CAPM or the four-factor Carhart (1997) model, respectively. Idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw) is the standard deviation of the residuals derived from the CAPM, the three-factor Fama and French (1993) model and the four-factor Carhart (1997) model, respectively. Total risk (Volatilityw and dvolatilityw) is the annualized standard deviation from the monthly stock returns over the previous five years and from the daily stock returns over the past year, respectively. The annualized 1% VaR (Value at Risk) denoted as avarhsw, avarrmw, avargarchw, and avarfhsw are estimated using historical simulation (HS), RiskMetrics (RM), the GARCH (1,1) - t(d) model, and filtered historical simulation (FHS), respectively.

* Statistical significance at the 1% level ($p < 0.01$).

Table 3: Correlation coefficients between the aggregate measures of social performance and the explanatory variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
SP	**(1)**	1.0000																			
Str	**(2)**	0.5114*	1.0000																		
Con	**(3)**	-0.6652*	0.3001*	1.0000																	
dispeps1w	**(4)**	-0.0638	0.0755*	0.1327*	1.0000																
expgrthw	**(5)**	-0.0348	-0.0191	0.0224	-0.0634	1.0000															
ret1y	**(6)**	0.0278	0.0395	0.0007	-0.2330*	0.0399	1.0000														
avgturnover	**(7)**	-0.1406*	-0.0832*	0.0856*	0.3967*	0.0778*	-0.2139*	1.0000													
sdturnover	**(8)**	-0.0753*	-0.0910*	0.0055	0.3082*	0.0652*	-0.1663*	0.8305*	1.0000												
cvturnover	**(9)**	0.0338	-0.1316*	-0.1533*	-0.0046	0.0610	0.0183	-0.0091	0.2960*	1.0000											
illiq	**(10)**	0.0610	-0.0050	-0.0745*	-0.0563	0.0197	0.0421	-0.1136*	-0.0370	0.3483*	1.0000										
lnmkteq	**(11)**	-0.0562	0.4049*	0.4144*	0.1021*	-0.0304	0.1294*	0.0261	-0.0871*	-0.3926*	-0.2455*	1.0000									
bmw	**(12)**	-0.0218	-0.0065	0.0124	0.2408*	-0.1108*	-0.2849*	0.0780*	0.0738*	0.0385	0.0070	-0.2087*	1.0000								
rd	**(13)**	-0.0151	0.0838	0.0677	-0.1354	0.1185	-0.0042	0.2123*	0.1751*	0.0229	0.0670	-0.0904	-0.2394*	1.0000							
ad	**(14)**	-0.0684	-0.0807	0.0029	-0.0303	0.0844	0.0594	0.0733	0.0342	-0.0085	0.0953	0.0168	-0.1516*	0.0394	1.0000						
capxs	**(15)**	-0.0326	-0.0617	-0.0182	-0.0393	0.0479	0.0070	0.0986*	0.0831*	0.0575	-0.0040	-0.0295	-0.1424*	0.4780*	0.2278*	1.0000					
investment	**(16)**	-0.0614	-0.0864*	-0.0075	-0.0487	0.0981*	-0.0019	0.1481*	0.1164*	0.0326	0.0327	-0.0568	-0.1754*	0.8060*	0.7976*	0.7427*	1.0000				
zscorew	**(17)**	-0.0696*	-0.0996*	-0.0088	-0.0369	0.1371*	0.0812*	0.1947*	0.1288*	0.0097	-0.0097	-0.0327	-0.2201*	0.3386*	0.3712*	0.2795*	0.3864*	1.0000			
netlevw	**(18)**	-0.0165	0.0135	0.0303	0.1539*	-0.0309	-0.0435	0.1176*	0.0797*	-0.0602	-0.0702*	0.0625	0.0148	-0.5404*	0.0553	-0.1413*	-0.1554*	-0.2685*	1.0000		
sdroa5yw	**(19)**	-0.1110*	-0.1066*	0.0300	0.0661	0.1775*	-0.0013	0.2785*	0.2087*	0.0511	-0.0021	-0.0928*	-0.1259*	0.4697*	0.3382*	0.1911*	0.3208*	0.3984*	-0.1907*	1.0000	
inv_basew	**(20)**	0.0865*	0.0307	-0.0689	0.0609	-0.0600	0.0223	0.0038	-0.0091	-0.0278	-0.0204	-0.0329	0.1751*	-0.0596	-0.0495	-0.0612	-0.0697	-0.0470	-0.0128	-0.0632	1.0000

Table 3 presents the correlation coefficients between the social performance measures and the explanatory variables for the 4132 firm-year observations covering the time period from 1991 to 2007. SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). The explanatory variables are: dispersion of analyst forecasts (dispeps1w), expected growth in earnings (expgrthw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (sdturnover or cvturnover), the Amihud (2002) illiquidity measure (illiq), firm size (lnmkteq), the book-to-market ratio (bmw), capital expenditures (capxs), R&D expenditures (rd), advertising expenses (ad), Investment, net leverage (netlevw), the standard deviation of return on assets (sdroa5yw), investor base (inv_basew), and Altman's (1993) distress risk measure (zscorew). All variables are defined in footnotes of Table 1.

* Statistical significance at the 1% level ($p < 0.01$).

Table 4: Correlation coefficients between the measures of social performance dimensions

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
ave_com	**(1)**	1.0000																			
ave_div	**(2)**	0.2192*	1.0000																		
ave_emp	**(3)**	0.1167*	0.1586*	1.0000																	
ave_env	**(4)**	0.0995*	0.0811*	0.0707*	1.0000																
ave_non	**(5)**	-0.0907*	-0.0392	-0.0389	-0.0324	1.0000															
ave_pro	**(6)**	-0.1290*	-0.1367*	0.0579	-0.0124	0.1646*	1.0000														
ave_oth	**(7)**	-0.1975*	-0.2279*	-0.0940*	-0.0327	0.1020*	0.2975*	1.0000													
avestr_com	**(8)**	0.7672*	0.3396*	0.1623*	0.1128*	-0.1501*	-0.2041*	-0.2494*	1.0000												
avecon_com	**(9)**	-0.5611*	0.0982*	0.0285	-0.0088	-0.0530	-0.0632	-0.0156	0.1004*	1.0000											
avestr_div	**(10)**	0.3127*	0.7023*	0.1317*	0.0950*	-0.0764*	-0.3122*	-0.3520*	0.4687*	0.1199*	1.0000										
avecon_div	**(11)**	-0.0442	-0.8050*	-0.1107*	-0.0336	-0.0092	-0.0701*	0.0236	-0.0815*	-0.0366	-0.1430*	1.0000									
avestr_emp	**(12)**	0.1610*	0.2133*	0.6731*	0.0682*	-0.0550	-0.0748*	-0.2191*	0.2606*	0.0865*	0.3055*	-0.0420	1.0000								
avecon_emp	**(13)**	-0.0110	-0.0201	-0.7391*	-0.0335	0.0025	-0.1465*	-0.0724*	0.0180	0.0403	0.1002*	0.1115*	0.0006	1.0000							
avestr_env	**(14)**	0.1056*	0.1181*	0.0816*	0.6194*	-0.1240*	-0.1021*	-0.0960*	0.1709*	0.0566	0.1704*	-0.0221	0.1367*	0.0142	1.0000						
avecon_env	**(15)**	-0.0077	0.0277	0.0015	-0.5484*	-0.0928*	-0.0938*	-0.0627	0.0457	0.0709*	0.0667*	0.0170	0.0632	0.0556	0.3168*	1.0000					
avecon_non	**(16)**	0.1227*	0.1067*	0.0659*	0.0356	-0.9015*	-0.2019*	-0.1424*	0.2173*	0.0901*	0.1793*	0.0011	0.0985*	0.0006	0.1350*	0.1008*	1.0000				
avestr_pro	**(17)**	0.1699*	0.1655*	0.1216*	0.0731*	-0.0734*	0.2271*	-0.0973*	0.2212*	0.0219	0.2451*	-0.0259	0.1984*	0.0163	0.0937*	0.0115	0.1170*	1.0000			
avecon_pro	**(18)**	0.1951*	0.2012*	-0.0130	0.0401	-0.1948*	-0.9303*	-0.3389*	0.2906*	0.0725*	0.4094*	0.0615	0.1508*	0.1549*	0.1391*	0.0997*	0.2492*	0.1460*	1.0000		
avestr_oth	**(19)**	-0.1232*	-0.1300*	-0.0609	-0.0043	0.0386	0.1146*	0.7797*	-0.1200*	0.0363	-0.1365*	0.0670*	-0.0884*	0.0018	-0.0193	-0.0154	-0.0564	-0.0147	-0.1219*	1.0000	
avecon_oth	**(20)**	0.1855*	0.2263*	0.0861*	0.0467	-0.1207*	-0.3497*	-0.7856*	0.2695*	0.0601	0.4129*	0.0295	0.2535*	0.1144*	0.1303*	0.0824*	0.1659*	0.1368*	0.4068*	-0.2251*	1.0000

Table 4 presents the correlation coefficients between the measures of social performance dimensions for the 4132 firm-year observations covering the time period from 1991 to 2007. Community relations (ave_com), Diversity (ave_div), Employee relations (ave_emp), Environmental performance (ave_env), Human Rights (ave_non), Product (ave_pro), and Corporate Governance (ave_oth) are the difference between the average strength and average concern for each SP dimension, respectively. Community strengths (avestr_com), Community concerns (avecon_com), Diversity strengths (avestr_div), Diversity concerns (avecon_div), Employee strengths (avestr_emp), Employee concerns (avecon_emp), Environment strengths (avestr_env), Environment concerns (avecon_env), Human Rights concerns (avecon_non), Product strengths (avestr_pro), Product concerns (avecon_pro), Corporate Governance strengths (avestr_oth), and Corporate Governance concerns (avecon_oth) are separate average strength and concern scores for each SP dimension, respectively.
* Statistical significance at the 1% level ($p < 0.01$).

Table 5: Relation between the risk measures and the aggregate measures of social performance

	Panel A: Total risk measures				Panel B: Idiosyncratic risk measures						Panel C: Systematic risk measures			
	Volatilityw	Volatilityw	dvolatilityw	dvolatilityw	sdresCAPMw	sdresCAPMw	sdresffw	sdresffw	sdres4ffw	sdres4ffw	mbetaw	mbetaw	mbetaffw	mbetaffw
SP	-0.1858***		-0.1165**		-0.0720		-0.0751		-0.0784*		-1.2386***		-0.9300***	
	(-3.05)		(-2.23)		(-1.54)		(-1.60)		(-1.69)		(-3.65)		(-3.20)	
Str		0.1316*		0.1305*		0.1132		0.1158*		0.1129		0.0712		-0.1542
		(1.74)		(1.74)		(1.63)		(1.67)		(1.65)		(0.17)		(-0.39)
Con		0.3738***		0.2634***		0.1817***		0.1880***		0.1915***		2.0118***		1.3803***
		(5.83)		(4.94)		(3.87)		(4.00)		(4.07)		(5.02)		(3.97)
lnmkteq	-0.0142***	-0.0236***	-0.0165***	-0.0238***	-0.0202***	-0.0257***	-0.0190***	-0.0247***	-0.0193***	-0.0249***	0.0388**	0.0001	0.0742***	0.0515***
	(-4.78)	(-6.96)	(-6.55)	(-7.60)	(-8.74)	(-8.53)	(-8.43)	(-8.37)	(-8.49)	(-8.41)	(2.36)	(0.01)	(5.16)	(3.12)
bmw	0.0414***	0.0275**	0.0360***	0.0247**	0.0360***	0.0275**	0.0324***	0.0237**	0.0298***	0.0211*	0.3504***	0.2935***	0.3733***	0.3399***
	(3.02)	(1.97)	(3.06)	(2.06)	(3.19)	(2.40)	(2.92)	(2.10)	(2.68)	(1.86)	(4.73)	(3.89)	(5.30)	(4.73)
netlevw	-0.0403*	-0.0424**	-0.0118	-0.0134	0.0025	0.0013	0.0023	0.0011	0.0018	0.0005	-0.3085***	-0.3172***	-0.1661	-0.1712*
	(-1.88)	(-2.09)	(-0.75)	(-0.90)	(0.18)	(0.09)	(0.17)	(0.08)	(0.13)	(0.04)	(-2.71)	(-2.88)	(-1.62)	(-1.69)
ret1y	0.0461***	0.0471***	-0.0369***	-0.0365***	-0.0348***	-0.0345***	-0.0328***	-0.0325***	-0.0306***	-0.0303***	0.0666	0.0709	0.0471	0.0497
	(3.73)	(3.83)	(-3.63)	(-3.57)	(-3.17)	(-3.13)	(-3.01)	(-2.98)	(-2.81)	(-2.77)	(1.24)	(1.32)	(0.87)	(0.91)
avgturnover	10.2976***	10.3282***	10.3728***	10.3871***	10.7083***	10.7191***	10.6837***	10.6948***	10.5752***	10.5863***	30.6981***	30.8267***	21.0082***	21.0865***
	(10.70)	(10.84)	(15.27)	(15.71)	(14.89)	(15.17)	(14.96)	(15.25)	(14.94)	(15.22)	(6.52)	(6.47)	(4.79)	(4.77)
cvturnover	-0.0034	-0.0041	0.0293***	0.0286***	0.0414***	0.0408***	0.0427***	0.0421***	0.0429***	0.0423***	-0.0001	-0.0029	-0.0444	-0.0461
	(-0.62)	(-0.75)	(4.80)	(4.72)	(6.78)	(6.70)	(6.92)	(6.84)	(6.98)	(6.90)	(-0.00)	(-0.10)	(-1.30)	(-1.37)
dispeps1w	-0.0636***	-0.0674***	-0.0155	-0.0181	-0.0115	-0.0134	-0.0109	-0.0129	-0.0144	-0.0165	-0.2540***	-0.2698***	-0.1291	-0.1385*
	(-3.60)	(-3.85)	(-1.07)	(-1.27)	(-0.77)	(-0.90)	(-0.73)	(-0.86)	(-0.99)	(-1.12)	(-3.11)	(-3.36)	(-1.56)	(-1.71)
investment	0.8513***	0.8183***	0.5573***	0.5308***	0.5377***	0.5178***	0.5263***	0.5058***	0.5231***	0.5026***	2.4691**	2.3338**	1.5845*	1.5051
	(4.20)	(4.31)	(4.23)	(4.28)	(4.27)	(4.31)	(4.33)	(4.37)	(4.36)	(4.40)	(2.22)	(2.17)	(1.69)	(1.63)
expgrthw	0.2400***	0.2268***	0.1866***	0.1768***	0.1668***	0.1594***	0.1733***	0.1658***	0.1743***	0.1667***	0.7498***	0.6951**	0.3419	0.3098
	(4.11)	(4.07)	(4.59)	(4.57)	(4.59)	(4.56)	(4.77)	(4.74)	(4.78)	(4.75)	(2.62)	(2.52)	(1.44)	(1.34)
zscorew	-0.0011	-0.0010	-0.0007	-0.0006	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0002	-0.0105	-0.0101	-0.0121*	-0.0119*
	(-0.76)	(-0.73)	(-0.84)	(-0.78)	(-0.27)	(-0.21)	(-0.29)	(-0.23)	(-0.35)	(-0.28)	(-1.35)	(-1.33)	(-1.81)	(-1.80)
sdroaw	0.8723***	0.8223***	0.4282***	0.3901***	0.4184***	0.3898***	0.4160***	0.3866***	0.4177***	0.3883***	3.5658***	3.3602***	2.8127***	2.6921***
	(4.72)	(4.49)	(4.70)	(4.26)	(4.61)	(4.29)	(4.67)	(4.34)	(4.69)	(4.36)	(4.70)	(4.36)	(3.96)	(3.74)
inv_basew	-0.0234***	-0.0228***	-0.0132**	-0.0128**	-0.0174***	-0.0172***	-0.0170***	-0.0167***	-0.0167***	-0.0164***	-0.0178	-0.0154	-0.0541	-0.0528
	(-3.19)	(-3.03)	(-2.25)	(-2.44)	(-3.20)	(-3.41)	(-3.17)	(-3.38)	(-3.09)	(-3.30)	(-0.37)	(-0.33)	(-1.16)	(-1.13)
Constant	0.3635***	0.4286***	0.3464***	0.3978***	0.3278***	0.3661***	0.3130***	0.3525***	0.3141***	0.3536***	0.6660***	0.9374***	0.4613***	0.6221***
	(10.91)	(11.90)	(11.89)	(12.35)	(12.18)	(12.10)	(11.84)	(11.86)	(11.84)	(11.83)	(3.75)	(5.09)	(2.92)	(3.68)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2344	2344	2389	2389	2389	2389	2389	2389	2389	2389	2344	2344	2344	2344
Number of firms	501	501	510	510	510	510	510	510	510	510	501	501	501	501
R-squared	0.529	0.544	0.650	0.660	0.661	0.667	0.647	0.654	0.642	0.649	0.406	0.418	0.302	0.307

Table 5 (Continued)

	Panel D: VaR measures							
	avarhs	**avarhs**	**avarrm**	**avarrm**	**avargarch**	**avargarch**	**avarfhs**	**avarfhs**
SP	-0.4662***		-0.4901***		-0.5743***		-0.3686***	
	(-3.23)		(-3.30)		(-3.11)		(-2.63)	
Str		0.2124		0.2931		0.3061		0.2970
		(1.12)		(1.57)		(1.37)		(1.44)
Con		0.8649***		0.9577***		1.0982***		0.7627***
		(5.58)		(5.74)		(4.99)		(5.12)
lnmkteq	-0.0359***	-0.0561***	-0.0233***	-0.0468***	-0.0442***	-0.0707***	-0.0467***	-0.0667***
	(-5.16)	(-6.55)	(-3.15)	(-5.43)	(-4.20)	(-5.46)	(-6.38)	(-6.96)
bmw	0.1178***	0.0880**	0.0582*	0.0236	0.0561	0.0176	0.1193***	0.0900**
	(3.02)	(2.22)	(1.82)	(0.72)	(1.46)	(0.44)	(2.97)	(2.21)
netlevw	-0.0201	-0.0266	-0.0723	-0.0798	-0.0842	-0.0927	0.0118	0.0050
	(-0.45)	(-0.62)	(-1.32)	(-1.56)	(-1.34)	(-1.58)	(0.26)	(0.12)
ret1y	0.1395***	0.1415***	0.1548***	0.1571***	0.1690***	0.1715***	0.0274	0.0293
	(3.64)	(3.71)	(4.88)	(4.99)	(4.52)	(4.61)	(0.80)	(0.85)
avgturnover	21.4766***	21.5182***	18.5813***	18.6271***	18.5270***	18.5639***	25.2055***	25.2283***
	(9.15)	(9.19)	(8.66)	(8.70)	(6.93)	(6.97)	(9.76)	(9.74)
cvturnover	0.0280	0.0274	0.0059	0.0052	0.0245	0.0241	0.0365**	0.0363**
	(1.29)	(1.28)	(0.34)	(0.31)	(1.23)	(1.21)	(2.21)	(2.23)
dispeps1w	-0.1443***	-0.1521***	-0.1914***	-0.2004***	-0.1899***	-0.2002***	-0.1381***	-0.1458***
	(-3.76)	(-3.99)	(-4.71)	(-4.92)	(-4.06)	(-4.31)	(-3.77)	(-3.97)
investment	1.3221***	1.2631***	1.6513***	1.5829***	1.7823***	1.7057***	1.3659***	1.3057***
	(3.01)	(3.05)	(3.47)	(3.56)	(3.23)	(3.29)	(3.58)	(3.63)
expgrthw	0.5200***	0.4906***	0.5784***	0.5441***	0.6129***	0.5743***	0.4353***	0.4058***
	(3.93)	(3.83)	(3.69)	(3.64)	(3.48)	(3.41)	(3.74)	(3.62)
zscorew	0.0019	0.0019	0.0015	0.0015	0.0042	0.0042	0.0019	0.0020
	(0.80)	(0.83)	(0.37)	(0.38)	(0.87)	(0.88)	(0.88)	(0.92)
sdroaw	2.3598***	2.2402***	2.6728***	2.5337***	2.7907***	2.6339***	1.5660***	1.4480***
	(5.08)	(4.79)	(5.14)	(4.86)	(4.89)	(4.61)	(5.81)	(5.24)
inv_basew	-0.0092	-0.0080	-0.0136	-0.0122	-0.0303	-0.0287	-0.0238	-0.0227
	(-0.52)	(-0.47)	(-0.73)	(-0.68)	(-1.43)	(-1.42)	(-1.48)	(-1.47)
Constant	0.8820***	1.0226***	0.5369***	0.7002***	0.7966***	0.9803***	0.9701***	1.1091***
	(10.70)	(11.27)	(6.73)	(8.02)	(7.46)	(8.05)	(11.61)	(11.68)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2241	2241	2241	2241	2237	2237	2224	2224
Number of firms	460	460	460	460	459	459	454	454
R-squared	0.541	0.552	0.516	0.530	0.426	0.439	0.536	0.547

Table 5 reports results from OLS regressions of the risk measures on the social performance measures and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.

*** Significant at the 1% level (p<0.01); ** Significant at the 5% level (p<0.05); * Significant at the 10% level (p<0.1).

Table 6: Relation between the risk measures and the social performance dimensions

	Total risk		Idiosyncratic risk			Systematic risk	
	Volatilityw	**dvolatilityw**	**sdresCAPMw**	**sdresffw**	**sdres4ffw**	**mbetaw**	**mbetaffw**
ave_com	0.0220	0.0124	0.0079	0.0061	0.0060	-0.0394	-0.0987
	(1.16)	(0.68)	(0.46)	(0.35)	(0.35)	(-0.39)	(-1.05)
ave_div	0.0091	0.0175	0.0212*	0.0217**	0.0208*	-0.0159	-0.0014
	(0.55)	(1.48)	(1.95)	(2.01)	(1.93)	(-0.19)	(-0.02)
ave_emp	-0.0619**	-0.0378**	-0.0396**	-0.0383**	-0.0376**	-0.1233	-0.0476
	(-2.55)	(-2.36)	(-2.57)	(-2.50)	(-2.46)	(-0.91)	(-0.38)
ave_env	0.0293	-0.0738	-0.0049	-0.0001	-0.0013	-0.4552	-0.6541*
	(0.46)	(-0.98)	(-0.07)	(-0.00)	(-0.02)	(-1.20)	(-1.89)
ave_non	-0.1103**	-0.0252	0.0156	0.0161	0.0144	-0.5181*	-0.2694
	(-2.11)	(-0.74)	(0.57)	(0.60)	(0.55)	(-1.71)	(-1.16)
ave_pro	-0.0519***	-0.0515***	-0.0336**	-0.0366**	-0.0371**	-0.3448***	-0.2466**
	(-2.77)	(-3.11)	(-2.24)	(-2.44)	(-2.50)	(-2.88)	(-2.39)
ave_oth	-0.0646***	-0.0451***	-0.0435***	-0.0431***	-0.0438***	-0.3806***	-0.3151***
	(-3.00)	(-3.07)	(-3.50)	(-3.47)	(-3.54)	(-3.29)	(-2.85)
lnmkteq	-0.0222***	-0.0234***	-0.0257***	-0.0248***	-0.0250***	-0.0015	0.0453***
	(-6.41)	(-7.08)	(-8.05)	(-7.93)	(-7.95)	(-0.09)	(2.74)
bmw	0.0307**	0.0270**	0.0297***	0.0260**	0.0234**	0.3106***	0.3534***
	(2.25)	(2.37)	(2.68)	(2.38)	(2.14)	(4.15)	(4.97)
netlevw	-0.0409*	-0.0114	0.0021	0.0022	0.0016	-0.3113***	-0.1710
	(-1.91)	(-0.72)	(0.16)	(0.16)	(0.11)	(-2.69)	(-1.63)
ret1y	0.0435***	-0.0390***	-0.0365***	-0.0346***	-0.0323***	0.0610	0.0457
	(3.56)	(-3.86)	(-3.36)	(-3.22)	(-3.01)	(1.14)	(0.84)
avgturnover	10.0707***	10.1679***	10.4943***	10.4681***	10.3601***	29.4284***	19.8453***
	(10.36)	(15.09)	(14.74)	(14.81)	(14.78)	(6.36)	(4.50)
cvturnover	-0.0041	0.0288***	0.0410***	0.0424***	0.0425***	-0.0027	-0.0462
	(-0.72)	(4.72)	(6.68)	(6.81)	(6.87)	(-0.09)	(-1.37)
dispeps1w	-0.0638***	-0.0143	-0.0100	-0.0094	-0.0130	-0.2514***	-0.1239
	(-3.51)	(-0.98)	(-0.65)	(-0.61)	(-0.85)	(-3.15)	(-1.56)
investment	0.8231***	0.5329***	0.5168***	0.5055***	0.5024***	2.3802**	1.5339
	(4.03)	(4.12)	(4.20)	(4.27)	(4.29)	(2.12)	(1.63)
expgrthw	0.2307***	0.1789***	0.1604***	0.1670***	0.1680***	0.7085**	0.3127
	(4.07)	(4.52)	(4.52)	(4.69)	(4.70)	(2.56)	(1.35)
zscorew	-0.0010	-0.0006	-0.0001	-0.0001	-0.0002	-0.0100	-0.0116*
	(-0.74)	(-0.73)	(-0.18)	(-0.19)	(-0.25)	(-1.28)	(-1.74)
sdroaw	0.8554***	0.4204***	0.4132***	0.4106***	0.4123***	3.5147***	2.7980***
	(4.63)	(4.68)	(4.61)	(4.68)	(4.69)	(4.56)	(3.87)
inv_basew	-0.0232***	-0.0133**	-0.0180***	-0.0176***	-0.0173***	-0.0192	-0.0583
	(-3.06)	(-2.47)	(-3.53)	(-3.49)	(-3.41)	(-0.40)	(-1.24)
Constant	0.4279***	0.4069***	0.3786***	0.3656***	0.3666***	0.9943***	0.7052***
	(11.32)	(11.92)	(11.64)	(11.48)	(11.46)	(5.25)	(4.10)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2344	2389	2389	2389	2389	2344	2344
Number of firms	501	510	510	510	510	501	501
R-squared	0.542	0.659	0.668	0.655	0.650	0.417	0.308

Table 6 (Continued)

	Panel D: VaR measures			
	avarhs	**avarrm**	**avargarch**	**avarfhs**
ave_com	0.0368	0.0734	0.0515	0.0399
	(0.78)	(1.64)	(0.89)	(0.79)
ave_div	0.0193	0.0089	0.0143	0.0164
	(0.54)	(0.23)	(0.30)	(0.46)
ave_emp	-0.1486***	-0.1823***	-0.1833***	-0.0470
	(-2.83)	(-3.24)	(-2.64)	(-0.90)
ave_env	0.1047	0.0528	0.1254	-0.1679
	(0.69)	(0.30)	(0.70)	(-0.92)
ave_non	-0.1620	-0.2060*	-0.3239**	-0.1211
	(-1.54)	(-1.75)	(-2.21)	(-1.28)
ave_pro	-0.1350***	-0.1492***	-0.1532***	-0.1456***
	(-2.75)	(-2.93)	(-2.69)	(-2.89)
ave_oth	-0.1660***	-0.1335**	-0.1759***	-0.1430***
	(-3.22)	(-2.29)	(-2.64)	(-3.16)
lnmkteq	-0.0552***	-0.0422***	-0.0660***	-0.0662***
	(-5.85)	(-4.50)	(-5.25)	(-6.49)
bmw	0.0930**	0.0268	0.0258	0.0958**
	(2.43)	(0.84)	(0.66)	(2.45)
netlevw	-0.0223	-0.0722	-0.0855	0.0100
	(-0.49)	(-1.31)	(-1.36)	(0.21)
ret1y	0.1323***	0.1456***	0.1605***	0.0222
	(3.46)	(4.58)	(4.31)	(0.65)
avgturnover	20.8432***	18.1445***	17.9240***	24.6175***
	(8.80)	(8.38)	(6.59)	(9.61)
cvturnover	0.0269	0.0049	0.0231	0.0358**
	(1.24)	(0.28)	(1.15)	(2.16)
dispeps1w	-0.1413***	-0.1895***	-0.1897***	-0.1334***
	(-3.58)	(-4.52)	(-3.95)	(-3.54)
investment	1.2705***	1.5920***	1.7214***	1.3303***
	(2.91)	(3.35)	(3.10)	(3.49)
expgrthw	0.4969***	0.5530***	0.5865***	0.4129***
	(3.86)	(3.65)	(3.43)	(3.68)
zscorew	0.0020	0.0016	0.0043	0.0021
	(0.86)	(0.39)	(0.90)	(0.98)
sdroaw	2.3140***	2.6184***	2.7314***	1.5266***
	(5.00)	(5.07)	(4.81)	(5.57)
inv_basew	-0.0088	-0.0111	-0.0289	-0.0234
	(-0.53)	(-0.62)	(-1.41)	(-1.51)
Constant	1.0445***	0.6931***	0.9719***	1.1341***
	(10.58)	(7.24)	(7.98)	(11.42)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	2241	2241	2237	2224
Number of firms	460	460	459	454
R-squared	0.552	0.528	0.437	0.545

Table 6 reports results from OLS regressions of the risk measures on the individual dimensions of SP and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). The individual dimensions of SP are Community relations (ave_com), Diversity (ave_div), Employee relations (ave_emp), Environmental performance (ave_env), Human Rights (ave_non), Product (ave_pro), and Corporate Governance (ave_oth), respectively. The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.
*** Significant at the 1% level ($p<0.01$); ** Significant at the 5% level ($p<0.05$); * Significant at the 10% level ($p<0.1$).

Table 7: Relation between the risk measures and strengths and concerns of SP dimensions

	Total risk		Idiosyncratic risk			Systematic risk	
	Volatilityw	**dvolatilityw**	**sdresCAPMw**	**sdresffw**	**sdres4ffw**	**mbetaw**	**mbetaffw**
avestr_com	-0.0307	-0.0180	-0.0124	-0.0141	-0.0146	-0.3617***	-0.2973**
	(-1.37)	(-0.83)	(-0.63)	(-0.72)	(-0.76)	(-2.74)	(-2.28)
avecon_com	-0.0483*	-0.0224	-0.0111	-0.0081	-0.0084	-0.2503*	-0.1227
	(-1.78)	(-0.88)	(-0.42)	(-0.30)	(-0.31)	(-1.70)	(-0.84)
avestr_div	0.0466*	0.0276	0.0304	0.0308*	0.0318*	0.0703	-0.0943
	(1.70)	(1.38)	(1.61)	(1.65)	(1.72)	(0.49)	(-0.66)
avecon_div	0.0157	-0.0088	-0.0141	-0.0143	-0.0125	0.0662	-0.0472
	(0.85)	(-0.62)	(-1.06)	(-1.08)	(-0.93)	(0.62)	(-0.46)
avestr_emp	0.0240	0.0163	0.0031	0.0048	0.0032	0.2854	0.3187*
	(0.84)	(0.66)	(0.14)	(0.21)	(0.14)	(1.50)	(1.83)
avecon_emp	0.1318***	0.0802***	0.0727***	0.0718***	0.0691***	0.4477**	0.3480**
	(3.65)	(3.55)	(3.38)	(3.39)	(3.27)	(2.36)	(2.10)
avestr_env	-0.0774	-0.1886**	-0.1018	-0.0999	-0.0984	-0.6472	-0.8512**
	(-0.91)	(-2.18)	(-1.33)	(-1.38)	(-1.33)	(-1.48)	(-2.42)
avecon_env	-0.1036	0.0032	-0.0556	-0.0608	-0.0580	0.3883	0.5763
	(-1.44)	(0.03)	(-0.74)	(-0.83)	(-0.79)	(0.76)	(1.38)
avecon_non	0.1356**	0.0368	-0.0111	-0.0146	-0.0136	0.6255*	0.2914
	(2.14)	(0.96)	(-0.35)	(-0.47)	(-0.44)	(1.93)	(1.05)
avestr_pro	0.1181**	0.1233**	0.0932*	0.0970*	0.0935*	0.5859*	0.5782*
	(2.20)	(1.99)	(1.81)	(1.91)	(1.88)	(1.72)	(1.79)
avecon_pro	0.0752***	0.0768***	0.0516***	0.0557***	0.0554***	0.4989***	0.4082***
	(3.58)	(4.41)	(3.22)	(3.47)	(3.47)	(3.90)	(3.53)
avestr_oth	-0.0497*	-0.0115	-0.0140	-0.0143	-0.0135	-0.2714*	-0.2721*
	(-1.70)	(-0.52)	(-0.69)	(-0.72)	(-0.68)	(-1.94)	(-1.67)
avecon_oth	0.0733***	0.0713***	0.0650***	0.0645***	0.0656***	0.4805***	0.4038***
	(2.63)	(3.59)	(3.76)	(3.77)	(3.86)	(3.07)	(2.91)
lnmkteq	-0.0271***	-0.0276***	-0.0290***	-0.0281***	-0.0284***	-0.0222	0.0311*
	(-7.12)	(-7.53)	(-8.22)	(-8.13)	(-8.15)	(-1.17)	(1.76)
bmw	0.0302**	0.0268**	0.0290***	0.0253**	0.0227**	0.3210***	0.3618***
	(2.23)	(2.32)	(2.59)	(2.29)	(2.06)	(4.26)	(5.02)
netlevw	-0.0441**	-0.0146	-0.0002	-0.0003	-0.0010	-0.3236***	-0.1744*
	(-2.29)	(-1.04)	(-0.01)	(-0.03)	(-0.08)	(-3.08)	(-1.79)
ret1y	0.0462***	-0.0369***	-0.0349***	-0.0329***	-0.0307***	0.0745	0.0544
	(3.76)	(-3.62)	(-3.20)	(-3.05)	(-2.84)	(1.39)	(0.98)
avgturnover	10.0640***	10.1310***	10.4640***	10.4345***	10.3313***	29.2699***	19.4567***
	(10.45)	(15.44)	(15.00)	(15.06)	(15.02)	(6.43)	(4.43)
cvturnover	-0.0043	0.0287***	0.0410***	0.0423***	0.0424***	-0.0045	-0.0453
	(-0.79)	(4.72)	(6.65)	(6.78)	(6.83)	(-0.15)	(-1.36)
dispeps1w	-0.0664***	-0.0175	-0.0124	-0.0119	-0.0154	-0.2577***	-0.1290
	(-3.60)	(-1.23)	(-0.81)	(-0.77)	(-1.01)	(-3.21)	(-1.61)
investment	0.7875***	0.5057***	0.4961***	0.4839***	0.4814***	2.2221**	1.4047
	(4.29)	(4.35)	(4.34)	(4.42)	(4.46)	(2.12)	(1.54)
expgrthw	0.2138***	0.1672***	0.1518***	0.1582***	0.1591***	0.6302**	0.2724
	(3.99)	(4.54)	(4.49)	(4.67)	(4.68)	(2.40)	(1.23)
zscorew	-0.0010	-0.0005	-0.0001	-0.0001	-0.0002	-0.0096	-0.0113*
	(-0.74)	(-0.72)	(-0.14)	(-0.15)	(-0.21)	(-1.28)	(-1.72)
sdroaw	0.8108***	0.3851***	0.3856***	0.3823***	0.3842***	3.3154***	2.6525***
	(4.46)	(4.41)	(4.43)	(4.49)	(4.50)	(4.30)	(3.66)
inv_basew	-0.0249***	-0.0145***	-0.0189***	-0.0186***	-0.0182***	-0.0259	-0.0600
	(-3.40)	(-2.61)	(-3.54)	(-3.53)	(-3.46)	(-0.57)	(-1.37)
Constant	0.4657***	0.4365***	0.4016***	0.3893***	0.3904***	1.1680***	0.8179***
	(11.81)	(12.02)	(11.73)	(11.59)	(11.56)	(5.87)	(4.56)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2344	2389	2389	2389	2389	2344	2344
Number of firms	501	510	510	510	510	501	501
R-squared	0.559	0.672	0.676	0.664	0.659	0.437	0.324

Table 7 (Continued)

	Panel D: VaR measures			
	avarhs	**avarrm**	**avargarch**	**avarfhs**
avestr_com	-0.0557	-0.0304	-0.0417	-0.0644
	(-0.91)	(-0.56)	(-0.65)	(-0.99)
avecon_com	-0.0869	-0.1215**	-0.0698	-0.1049
	(-1.29)	(-2.22)	(-0.87)	(-1.54)
avestr_div	0.0659	0.0509	0.0626	0.0684
	(1.11)	(0.88)	(0.93)	(1.08)
avecon_div	0.0156	0.0271	0.0329	0.0194
	(0.36)	(0.58)	(0.54)	(0.45)
avestr_emp	-0.0298	-0.0171	-0.0153	0.0329
	(-0.42)	(-0.26)	(-0.20)	(0.43)
avecon_emp	0.2443***	0.3198***	0.3253***	0.1066
	(3.20)	(3.55)	(2.84)	(1.65)
avestr_env	-0.0641	0.0213	0.0311	-0.3122
	(-0.30)	(0.08)	(0.12)	(-1.43)
avecon_env	-0.1988	0.0150	-0.1172	0.1014
	(-0.88)	(0.06)	(-0.42)	(0.30)
avecon_non	0.1656	0.2325*	0.3917**	0.1324
	(1.33)	(1.69)	(2.28)	(1.19)
avestr_pro	0.2606*	0.3201**	0.3337*	0.2973*
	(1.84)	(2.06)	(1.96)	(1.87)
avecon_pro	0.1913***	0.2159***	0.2161***	0.2087***
	(3.38)	(3.75)	(3.41)	(3.67)
avestr_oth	-0.0740	-0.0672	-0.1096	-0.0393
	(-1.13)	(-0.89)	(-1.15)	(-0.58)
avecon_oth	0.2312***	0.1827**	0.2208***	0.2172***
	(3.54)	(2.49)	(2.71)	(3.56)
lnmkteq	-0.0653***	-0.0538***	-0.0790***	-0.0762***
	(-6.31)	(-5.26)	(-5.63)	(-6.74)
bmw	0.0929**	0.0257	0.0232	0.0982**
	(2.41)	(0.83)	(0.59)	(2.48)
netlevw	-0.0324	-0.0830*	-0.0977*	-0.0025
	(-0.78)	(-1.69)	(-1.71)	(-0.06)
ret1y	0.1390***	0.1535***	0.1688***	0.0291
	(3.67)	(4.87)	(4.53)	(0.86)
avgturnover	20.8444***	18.1316***	17.9266***	24.6251***
	(8.75)	(8.27)	(6.52)	(9.73)
cvturnover	0.0255	0.0042	0.0224	0.0339**
	(1.19)	(0.24)	(1.12)	(2.07)
dispeps1w	-0.1455***	-0.1947***	-0.1981***	-0.1376***
	(-3.64)	(-4.51)	(-4.03)	(-3.61)
investment	1.2185***	1.5269***	1.6525***	1.2818***
	(3.08)	(3.56)	(3.25)	(3.76)
expgrthw	0.4620***	0.5157***	0.5474***	0.3740***
	(3.79)	(3.61)	(3.38)	(3.59)
zscorew	0.0020	0.0016	0.0043	0.0021
	(0.91)	(0.41)	(0.91)	(1.07)
sdroaw	2.2056***	2.4919***	2.5959***	1.4181***
	(4.75)	(4.85)	(4.59)	(5.16)
inv_basew	-0.0115	-0.0137	-0.0315	-0.0269
	(-0.65)	(-0.72)	(-1.47)	(-1.62)
Constant	1.1233***	0.7809***	1.0638***	1.2139***
	(10.69)	(7.65)	(8.11)	(11.32)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	2241	2241	2237	2224
Number of firms	460	460	459	454
R-squared	0.564	0.543	0.449	0.559

Table 7 reports results from OLS regressions of the risk measures on the strengths and concerns of the individual dimensions of SP and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). The strengths and concerns of the individual dimensions of SP are Community strengths (avestr_com), Community concerns (avecon_com), Diversity strengths (avestr_div), Diversity concerns (avecon_div), Employee strengths (avestr_emp), Employee concerns (avecon_emp), Environment strengths (avestr_env), Environment concerns (avecon_env), Human Rights concerns (avecon_non), Product strengths (avestr_pro), Product concerns (avecon_pro), Corporate Governance strengths (avestr_oth), and Corporate Governance concerns (avecon_oth), respectively. Human Rights strengths (avestr_non) are excluded. The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.
*** Significant at the 1% level ($p<0.01$); ** Significant at the 5% level ($p<0.05$); * Significant at the 10% level ($p<0.1$).

Table 8: Instrumental variables regressions between the risk measures and the aggregate measures of social performance

	Panel A: Total risk measures				Panel B: Idiosyncratic risk measures						Panel C: Systematic risk measures			
	Volatilityw	Volatilityw	dvolatilityw	dvolatilityw	sdresCAPMw	sdresCAPMw	sdresffw	sdresffw	sdres4ffw	sdres4ffw	mbetaw	mbetaw	mbetaffw	mbetaffw
SP	-0.2059***		-0.1067		-0.0253		-0.0350		-0.0403		-1.7049***		-1.2434***	
	(-2.63)		(-1.64)		(-0.45)		(-0.62)		(-0.72)		(-3.89)		(-3.35)	
Str		0.1119		0.1150		0.1476*		0.1444*		0.1411*		-0.2108		-0.1750
		(1.16)		(1.28)		(1.80)		(1.77)		(1.75)		(-0.38)		(-0.35)
Con		0.3979***		0.2377***		0.1284**		0.1392**		0.1453**		2.5683***		1.8222***
		(5.00)		(3.66)		(2.23)		(2.45)		(2.57)		(5.29)		(4.27)
lnmkteq	-0.0126***	-0.0222***	-0.0129***	-0.0196***	-0.0159***	-0.0211***	-0.0150***	-0.0204***	-0.0153***	-0.0208***	0.0379**	-0.0094	0.0730***	0.0409**
	(-4.30)	(-6.19)	(-5.20)	(-5.63)	(-6.80)	(-6.38)	(-6.60)	(-6.31)	(-6.72)	(-6.40)	(2.29)	(-0.50)	(5.13)	(2.34)
bmw	0.0513***	0.0351**	0.0438***	0.0319**	0.0393***	0.0303**	0.0371***	0.0276**	0.0342***	0.0246**	0.4152***	0.3370***	0.3706***	0.3211***
	(3.55)	(2.36)	(3.55)	(2.48)	(3.28)	(2.43)	(3.14)	(2.24)	(2.89)	(2.00)	(5.08)	(4.02)	(4.95)	(4.16)
netlevw	-0.0228	-0.0264	-0.0037	-0.0082	0.0062	0.0033	0.0088	0.0054	0.0089	0.0054	-0.2278*	-0.2473**	-0.1666	-0.1793*
	(-1.04)	(-1.26)	(-0.24)	(-0.56)	(0.46)	(0.26)	(0.66)	(0.42)	(0.68)	(0.42)	(-1.92)	(-2.17)	(-1.60)	(-1.75)
ret1y	0.0527***	0.0503***	-0.0268**	-0.0277**	-0.0246**	-0.0250**	-0.0233*	-0.0237*	-0.0213*	-0.0217*	0.1335**	0.1210*	0.0726	0.0672
	(3.99)	(3.81)	(-2.24)	(-2.31)	(-1.98)	(-2.01)	(-1.90)	(-1.93)	(-1.73)	(-1.76)	(2.16)	(1.94)	(1.24)	(1.15)
avgturnover	9.8925***	9.8931***	10.0373***	10.0715***	10.5742***	10.6047***	10.5543***	10.5789***	10.4571***	10.4815***	29.3273***	29.2164***	20.3994***	20.5152***
	(10.18)	(10.32)	(14.52)	(15.00)	(14.28)	(14.55)	(14.35)	(14.62)	(14.35)	(14.61)	(5.79)	(5.69)	(4.50)	(4.51)
cvturnover	0.0016	0.0001	0.0411***	0.0397***	0.0539***	0.0528***	0.0560***	0.0548***	0.0560***	0.0548***	0.0005	-0.0086	-0.0507	-0.0572
	(0.24)	(0.02)	(4.89)	(4.83)	(6.02)	(5.97)	(6.14)	(6.09)	(6.18)	(6.13)	(0.01)	(-0.22)	(-1.23)	(-1.43)
dispeps1w	-0.0716***	-0.0763***	-0.0145	-0.0182	-0.0111	-0.0136	-0.0108	-0.0134	-0.0147	-0.0174	-0.2860***	-0.3048***	-0.1559*	-0.1738**
	(-3.76)	(-4.02)	(-0.93)	(-1.19)	(-0.70)	(-0.85)	(-0.67)	(-0.83)	(-0.93)	(-1.09)	(-3.21)	(-3.48)	(-1.76)	(-2.03)
investment	0.8440***	0.8140***	0.4339***	0.4150***	0.4243***	0.4095***	0.4217***	0.4064***	0.4207***	0.4053***	2.2823*	2.1214*	2.0284**	1.9303**
	(3.57)	(3.71)	(3.25)	(3.35)	(3.40)	(3.45)	(3.45)	(3.52)	(3.50)	(3.58)	(1.84)	(1.79)	(2.02)	(1.97)
expgrthw	0.2383***	0.2248***	0.1387***	0.1324***	0.1298***	0.1233***	0.1346***	0.1285***	0.1355***	0.1295***	0.6299**	0.5744**	0.4583*	0.4104*
	(3.78)	(3.77)	(3.42)	(3.45)	(3.59)	(3.56)	(3.69)	(3.69)	(3.69)	(3.70)	(2.11)	(2.03)	(1.85)	(1.72)
zscorew	0.0003	0.0003	0.0003	0.0001	0.0004	0.0004	0.0006	0.0005	0.0006	0.0004	-0.0036	-0.0041	-0.0094	-0.0095
	(0.23)	(0.19)	(0.37)	(0.17)	(0.54)	(0.43)	(0.72)	(0.58)	(0.70)	(0.56)	(-0.34)	(-0.39)	(-1.20)	(-1.21)
sdroaw	0.9161***	0.8745***	0.4601***	0.4153***	0.4191***	0.3860***	0.4213***	0.3862***	0.4233***	0.3875***	4.0390***	3.7551***	2.4362***	2.2594***
	(3.99)	(3.88)	(4.31)	(3.88)	(3.95)	(3.63)	(4.04)	(3.71)	(4.06)	(3.72)	(5.01)	(4.61)	(3.74)	(3.41)
inv_basew	-0.0202***	-0.0190**	-0.0111*	-0.0107**	-0.0177***	-0.0174***	-0.0169***	-0.0166***	-0.0164***	-0.0161***	0.0063	0.0098	-0.0227	-0.0218
	(-2.68)	(-2.40)	(-1.89)	(-2.03)	(-3.10)	(-3.29)	(-3.01)	(-3.19)	(-2.91)	(-3.09)	(0.12)	(0.19)	(-0.45)	(-0.43)
Constant	0.2102***	0.2758***	0.3089***	0.3557***	0.2598***	0.2957***	0.2307***	0.2687***	0.2253***	0.2639***	0.2303	0.5585***	-0.0797	0.1435
	(6.48)	(7.64)	(10.96)	(10.57)	(9.82)	(9.20)	(8.90)	(8.53)	(8.62)	(8.31)	(1.30)	(3.00)	(-0.52)	(0.84)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1970	1970	1971	1971	1971	1971	1971	1971	1971	1971	1970	1970	1970	1970
Number of firms	430	430	430	430	430	430	430	430	430	430	430	430	430	430
J statistic p-value	0.6272	0.5064	0.8383	0.9243	0.4512	0.3591	0.6744	0.6235	0.6094	0.5712	0.3287	0.2861	0.5182	0.6023
R-squared	0.528	0.545	0.680	0.688	0.683	0.687	0.665	0.670	0.659	0.664	0.413	0.426	0.328	0.334

Table 8 (Continued)

Panel D: VaR measures								
	avarhs	avarhs	avarrm	avarrm	avargarch	avargarch	avarfhs	avarfhs
SP	-0.5115***		-0.5422***		-0.5811***		-0.4109**	
	(-2.93)		(-2.95)		(-2.84)		(-2.21)	
Str		0.1170		0.3003		0.2977		0.1636
		(0.49)		(1.28)		(1.12)		(0.63)
Con		0.8872***		1.0542***		1.1170***		0.7567***
		(4.95)		(5.38)		(4.98)		(3.95)
lnmkteq	-0.0341***	-0.0536***	-0.0213***	-0.0474***	-0.0369***	-0.0642***	-0.0430***	-0.0610***
	(-4.79)	(-5.63)	(-3.09)	(-5.29)	(-4.36)	(-5.91)	(-5.61)	(-5.65)
bmw	0.1389***	0.1093**	0.0587*	0.0175	0.0707**	0.0282	0.1259***	0.0973**
	(3.40)	(2.58)	(1.80)	(0.52)	(2.01)	(0.77)	(2.87)	(2.15)
netlevw	-0.0185	-0.0278	-0.0726	-0.0830*	-0.0713	-0.0825	0.0237	0.0165
	(-0.41)	(-0.65)	(-1.41)	(-1.75)	(-1.22)	(-1.52)	(0.51)	(0.37)
ret1y	0.1717***	0.1703***	0.1868***	0.1840***	0.2011***	0.1985***	0.0267	0.0243
	(3.76)	(3.73)	(5.65)	(5.62)	(5.68)	(5.66)	(0.65)	(0.59)
avgturnover	20.9659***	21.0664***	17.9592***	18.0364***	18.4662***	18.5479***	23.5312***	23.5721***
	(8.68)	(8.84)	(8.77)	(8.97)	(7.84)	(8.01)	(8.66)	(8.70)
cvturnover	0.0264	0.0243	0.0118	0.0097	0.0344	0.0320	0.0530***	0.0513***
	(1.39)	(1.33)	(0.60)	(0.51)	(1.37)	(1.31)	(2.70)	(2.67)
dispeps1w	-0.1447***	-0.1556***	-0.1795***	-0.1931***	-0.1688***	-0.1832***	-0.1482***	-0.1586***
	(-3.61)	(-3.93)	(-4.28)	(-4.60)	(-3.63)	(-3.97)	(-3.88)	(-4.19)
investment	1.3092***	1.2544***	1.4095***	1.3326***	1.7099***	1.6300***	1.2673***	1.2170***
	(3.00)	(3.08)	(3.14)	(3.26)	(3.19)	(3.31)	(3.14)	(3.22)
expgrthw	0.4489***	0.4214***	0.5102***	0.4773***	0.5528***	0.5189***	0.3453***	0.3194***
	(3.36)	(3.26)	(3.47)	(3.46)	(3.35)	(3.33)	(2.96)	(2.86)
zscorew	0.0005	0.0002	0.0003	0.0001	0.0026	0.0023	0.0022	0.0020
	(0.22)	(0.10)	(0.09)	(0.03)	(0.66)	(0.60)	(0.93)	(0.87)
sdroaw	2.0217***	1.9034***	2.3362***	2.1810***	2.4879***	2.3260***	1.6567***	1.5484***
	(5.45)	(5.09)	(5.04)	(4.75)	(4.98)	(4.69)	(4.98)	(4.60)
inv_basew	-0.0032	-0.0011	-0.0067	-0.0042	-0.0197	-0.0170	-0.0191	-0.0172
	(-0.18)	(-0.06)	(-0.39)	(-0.25)	(-1.01)	(-0.90)	(-1.15)	(-1.07)
Constant	0.5915***	0.7232***	0.5052***	0.6826***	0.7288***	0.9146***	0.7799***	0.9040***
	(7.95)	(8.07)	(6.78)	(8.02)	(7.89)	(8.75)	(9.62)	(9.00)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1935	1935	1935	1935	1932	1932	1922	1922
Number of firms	416	4165	416	416	415	415	411	411
J statistic p-value	0.1366	0.1198	0.4523	0.4280	0.3463	0.3205	0.4832	0.4479
R-squared	0.531	0.542	0.512	0.529	0.485	0.500	0.536	0.545

Table 8 reports results from instrumental variables (IV) regressions of the risk measures on the social performance measures and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. The IV regressions are estimated using the two-step efficient generalized method of moments (GMM). We use three instruments: lagged SP, the median industry SP and a dummy variable for loss firms (i.e., equals to one for firms with negative free cash flow in the previous year, and zero otherwise). J statistic p-value is the p-value of the Hansen J statistic (overidentification test of all instruments). Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.

*** Significant at the 1% level ($p<0.01$); ** Significant at the 5% level ($p<0.05$); * Significant at the 10% level ($p<0.1$).

Table 9: Instrumental variables regressions between the risk measures and the social performance dimensions

	Total risk		Idiosyncratic risk			Systematic risk	
	Volatilityw	**dvolatilityw**	**sdresCAPMw**	**sdresffw**	**sdres4ffw**	**mbetaw**	**mbetaffw**
ave_com	0.0140	-0.0164	-0.0179	-0.0183	-0.0170	-0.0547	0.0167
	(0.53)	(-0.65)	(-0.72)	(-0.71)	(-0.66)	(-0.39)	(0.13)
ave_div	0.0106	0.0298*	0.0389***	0.0399***	0.0387***	-0.0322	-0.0201
	(0.52)	(1.94)	(2.63)	(2.72)	(2.64)	(-0.30)	(-0.21)
ave_emp	-0.0657**	-0.0390*	-0.0329*	-0.0301	-0.0293	-0.1881	-0.2175
	(-2.10)	(-1.87)	(-1.69)	(-1.56)	(-1.52)	(-1.03)	(-1.28)
ave_env	0.0181	-0.0227	0.0382	0.0405	0.0385	-1.1676	-1.5530*
	(0.17)	(-0.15)	(0.28)	(0.30)	(0.29)	(-1.49)	(-1.92)
ave_non	-0.1050	-0.0126	0.0265	0.0264	0.0241	-0.5008	-0.2400
	(-1.53)	(-0.29)	(0.69)	(0.71)	(0.65)	(-1.24)	(-0.78)
ave_pro	-0.0557**	-0.0404*	-0.0219	-0.0251	-0.0261	-0.4504***	-0.2917**
	(-2.47)	(-1.94)	(-1.09)	(-1.26)	(-1.32)	(-3.16)	(-2.28)
ave_oth	-0.0896**	-0.0729***	-0.0727***	-0.0722***	-0.0734***	-0.5730***	-0.4144**
	(-2.34)	(-2.84)	(-3.14)	(-3.12)	(-3.19)	(-2.92)	(-2.17)
lnmkteq	-0.0222***	-0.0206***	-0.0229***	-0.0221***	-0.0225***	-0.0149	0.0392**
	(-5.75)	(-5.38)	(-6.12)	(-6.02)	(-6.07)	(-0.76)	(2.16)
bmw	0.0369**	0.0365***	0.0343***	0.0302**	0.0268**	0.3243***	0.3055***
	(2.49)	(3.00)	(2.88)	(2.56)	(2.25)	(4.00)	(4.05)
netlevw	-0.0251	-0.0011	0.0092	0.0083	0.0078	-0.2437**	-0.1775*
	(-1.15)	(-0.07)	(0.64)	(0.58)	(0.55)	(-2.03)	(-1.66)
ret1y	0.0418***	-0.0353***	-0.0337***	-0.0309***	-0.0285**	0.0720	0.0208
	(3.29)	(-3.12)	(-2.84)	(-2.64)	(-2.43)	(1.23)	(0.35)
avgturnover	9.4184***	9.4145***	9.9301***	9.9349***	9.8504***	26.7104***	18.0746***
	(9.59)	(13.55)	(13.33)	(13.43)	(13.44)	(5.35)	(3.98)
cvturnover	0.0004	0.0406***	0.0535***	0.0548***	0.0547***	-0.0082	-0.0557
	(0.06)	(4.85)	(5.93)	(5.96)	(5.99)	(-0.21)	(-1.38)
dispeps1w	-0.0699***	-0.0118	-0.0089	-0.0083	-0.0123	-0.2676***	-0.1346
	(-3.44)	(-0.73)	(-0.52)	(-0.48)	(-0.71)	(-3.09)	(-1.61)
investment	0.8167***	0.4072***	0.3948***	0.3939***	0.3928***	2.1123*	1.8869*
	(3.44)	(3.07)	(3.19)	(3.26)	(3.29)	(1.68)	(1.87)
expgrthw	0.2218***	0.1232***	0.1151***	0.1233***	0.1248***	0.5054*	0.3345
	(3.72)	(3.16)	(3.23)	(3.42)	(3.43)	(1.87)	(1.45)
zscorew	0.0005	0.0009	0.0010	0.0010	0.0009	-0.0041	-0.0079
	(0.35)	(1.15)	(1.22)	(1.19)	(1.15)	(-0.41)	(-1.01)
sdroaw	0.8293***	0.4493***	0.4155***	0.4095***	0.4092***	3.7908***	2.2751***
	(3.63)	(4.31)	(3.96)	(3.97)	(3.97)	(4.68)	(3.41)
inv_basew	-0.0220***	-0.0133**	-0.0199***	-0.0194***	-0.0189***	-0.0048	-0.0356
	(-2.76)	(-2.35)	(-3.61)	(-3.56)	(-3.46)	(-0.09)	(-0.67)
Constant	0.2970***	0.3765***	0.3202***	0.2934***	0.2887***	0.7205***	0.2467
	(7.67)	(10.08)	(8.88)	(8.33)	(8.12)	(3.71)	(1.37)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1954	1954	1954	1954	1954	1954	1954
Number of firms	428	428	428	428	428	428	428
J statistic p-value	0.7458	0.7167	0.5605	0.6345	0.5537	0.4480	0.2039
R-squared	0.533	0.689	0.690	0.672	0.666	0.424	0.333

Table 9 (Continued)

	Panel D: VaR measures			
	avarhs	**avarrm**	**avargarch**	**avarfhs**
ave_com	0.0167	0.0857	0.0319	0.0132
	(0.25)	(1.24)	(0.41)	(0.19)
ave_div	0.0127	-0.0161	0.0066	0.0109
	(0.29)	(-0.36)	(0.13)	(0.22)
ave_emp	-0.1201*	-0.1586**	-0.1282*	-0.0290
	(-1.87)	(-2.49)	(-1.79)	(-0.46)
ave_env	-0.1263	0.0862	0.2503	-0.3212
	(-0.40)	(0.26)	(0.75)	(-0.89)
ave_non	-0.1459	-0.2099	-0.3095*	-0.0680
	(-1.12)	(-1.35)	(-1.69)	(-0.55)
ave_pro	-0.1668***	-0.1146*	-0.1296**	-0.1551**
	(-2.91)	(-1.89)	(-1.98)	(-2.59)
ave_oth	-0.1663**	-0.2480**	-0.2861**	-0.1661**
	(-2.02)	(-2.41)	(-2.54)	(-2.08)
lnmkteq	-0.0538***	-0.0430***	-0.0624***	-0.0616***
	(-5.01)	(-4.07)	(-4.89)	(-5.33)
bmw	0.0845**	0.0231	0.0389	0.0818**
	(2.31)	(0.71)	(1.09)	(2.33)
netlevw	-0.0171	-0.0857*	-0.0838	0.0266
	(-0.37)	(-1.68)	(-1.44)	(0.55)
ret1y	0.1247***	0.1510***	0.1665***	-0.0151
	(3.34)	(4.79)	(4.88)	(-0.51)
avgturnover	19.1151***	16.6372***	16.8278***	21.6307***
	(8.28)	(7.82)	(6.91)	(8.23)
cvturnover	0.0251	0.0082	0.0311	0.0513***
	(1.32)	(0.40)	(1.21)	(2.62)
dispeps1w	-0.1409***	-0.1736***	-0.1649***	-0.1402***
	(-3.37)	(-3.86)	(-3.30)	(-3.52)
investment	1.2373***	1.3352***	1.6361***	1.2181***
	(2.78)	(3.07)	(3.09)	(2.94)
expgrthw	0.4275***	0.4711***	0.5142***	0.3214***
	(3.27)	(3.42)	(3.29)	(2.87)
zscorew	0.0009	-0.0007	0.0021	0.0029
	(0.39)	(-0.23)	(0.60)	(1.24)
sdroaw	1.8885***	2.2004***	2.3550***	1.5293***
	(5.11)	(4.76)	(4.68)	(4.82)
inv_basew	-0.0032	-0.0078	-0.0232	-0.0206
	(-0.19)	(-0.45)	(-1.20)	(-1.28)
Constant	0.7802***	0.7092***	0.9620***	0.9541***
	(7.62)	(7.08)	(7.87)	(8.64)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	1921	1921	1919	1909
Number of firms	415	415	414	410
J statistic p-value	0.2347	0.5127	0.4164	0.7045
R-squared	0.537	0.513	0.484	0.552

Table 9 reports results from instrumental variables (IV) regressions of the risk measures on the individual dimensions of SP and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). The individual dimensions of SP are Community relations (ave_com), Diversity (ave_div), Employee relations (ave_emp), Environmental performance (ave_env), Human Rights (ave_non), Product (ave_pro), and Corporate Governance (ave_oth), respectively. The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. The IV regressions are estimated using the two-step efficient generalized method of moments (GMM). We use three instruments: lagged values of the individual dimensions of SP, the median industry SP and a dummy variable for loss firms (i.e., equals to one for firms with negative free cash flow in the previous year, and zero otherwise). J statistic p-value is the p-value of the Hansen J statistic (overidentification test of all instruments). Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.

*** Significant at the 1% level ($p<0.01$); ** Significant at the 5% level ($p<0.05$); * Significant at the 10% level ($p<0.1$).

Table 10: Instrumental variables regressions between the risk measures and the strengths and concerns of social performance dimensions

	Total risk		Idiosyncratic risk			Systematic risk	
	Volatilityw	**dvolatilityw**	**sdresCAPMw**	**sdresffw**	**sdres4ffw**	**mbetaw**	**mbetaffw**
avestr_com	-0.0313	-0.0241	-0.0299	-0.0253	-0.0245	-0.4418**	-0.2221
	(-1.02)	(-0.91)	(-1.13)	(-0.96)	(-0.95)	(-2.47)	(-1.29)
avecon_com	-0.0714	0.0421	0.0253	0.0342	0.0308	-0.5546**	-0.5003**
	(-1.62)	(0.98)	(0.60)	(0.79)	(0.71)	(-2.48)	(-2.28)
avestr_div	0.0108	0.0295	0.0417*	0.0392*	0.0398*	-0.0074	-0.1517
	(0.29)	(1.19)	(1.83)	(1.75)	(1.79)	(-0.04)	(-0.83)
avecon_div	-0.0103	-0.0263	-0.0350*	-0.0348*	-0.0316*	0.0166	-0.0886
	(-0.42)	(-1.35)	(-1.91)	(-1.91)	(-1.73)	(0.12)	(-0.66)
avestr_emp	0.0354	-0.0054	-0.0037	-0.0021	-0.0043	0.4276*	0.2536
	(0.90)	(-0.18)	(-0.13)	(-0.08)	(-0.16)	(1.72)	(1.15)
avecon_emp	0.1623***	0.0707**	0.0562*	0.0535*	0.0492*	0.7886***	0.6916**
	(3.09)	(2.30)	(1.89)	(1.84)	(1.69)	(2.79)	(2.58)
avestr_env	-0.1838	-0.2286	-0.1369	-0.1263	-0.1201	-1.3262	-1.5898*
	(-1.45)	(-1.54)	(-0.94)	(-0.89)	(-0.83)	(-1.65)	(-1.93)
avecon_env	-0.1857	-0.1242	-0.1734	-0.1663	-0.1600	1.0090	1.4700
	(-1.47)	(-0.74)	(-1.16)	(-1.13)	(-1.08)	(0.87)	(1.48)
avecon_non	0.1283	0.0231	-0.0302	-0.0356	-0.0344	0.6011	0.2213
	(1.47)	(0.44)	(-0.60)	(-0.72)	(-0.70)	(1.39)	(0.59)
avestr_pro	0.1221*	0.1106*	0.1104**	0.0972*	0.0897*	0.5759	0.5936*
	(1.92)	(1.71)	(2.16)	(1.94)	(1.84)	(1.60)	(1.72)
avecon_pro	0.0869***	0.0602***	0.0413*	0.0447**	0.0446**	0.6355***	0.4729***
	(3.20)	(2.69)	(1.88)	(2.05)	(2.06)	(3.80)	(3.16)
avestr_oth	0.0023	-0.0283	-0.0424	-0.0364	-0.0308	-0.1706	-0.0528
	(0.03)	(-0.60)	(-0.94)	(-0.81)	(-0.69)	(-0.55)	(-0.15)
avecon_oth	0.1555***	0.1108***	0.0974***	0.0988***	0.1011***	0.8627***	0.7048***
	(2.95)	(3.11)	(2.96)	(3.02)	(3.10)	(3.06)	(2.65)
lnmkteq	-0.0281***	-0.0249***	-0.0258***	-0.0252***	-0.0255***	-0.0429**	0.0178
	(-6.50)	(-5.78)	(-6.33)	(-6.29)	(-6.30)	(-2.01)	(0.89)
bmw	0.0329**	0.0321***	0.0313***	0.0273**	0.0240**	0.3145***	0.3058***
	(2.24)	(2.59)	(2.59)	(2.29)	(2.01)	(3.89)	(4.00)
netlevw	-0.0315	-0.0077	0.0033	0.0048	0.0041	-0.2856***	-0.1831*
	(-1.53)	(-0.54)	(0.26)	(0.39)	(0.34)	(-2.65)	(-1.88)
ret1y	0.0409***	-0.0340***	-0.0307***	-0.0296***	-0.0271**	0.0672	0.0215
	(3.29)	(-3.01)	(-2.65)	(-2.62)	(-2.39)	(1.19)	(0.37)
avgturnover	9.3805***	9.4079***	9.9732***	9.9302***	9.8637***	26.6657***	17.8726***
	(9.59)	(13.84)	(13.60)	(13.62)	(13.62)	(5.43)	(3.93)
cvturnover	-0.0011	0.0395***	0.0521***	0.0544***	0.0543***	-0.0198	-0.0671*
	(-0.17)	(4.77)	(5.86)	(6.00)	(6.02)	(-0.50)	(-1.66)
dispeps1w	-0.0746***	-0.0179	-0.0132	-0.0120	-0.0155	-0.2792***	-0.1391*
	(-3.61)	(-1.12)	(-0.75)	(-0.68)	(-0.88)	(-3.17)	(-1.66)
investment	0.7821***	0.3860***	0.3752***	0.3754***	0.3767***	1.9715*	1.8107*
	(3.71)	(3.31)	(3.29)	(3.40)	(3.46)	(1.74)	(1.91)
expgrthw	0.2092***	0.1205***	0.1128***	0.1184***	0.1190***	0.4462*	0.2818
	(3.76)	(3.29)	(3.32)	(3.47)	(3.46)	(1.81)	(1.30)
zscorew	0.0003	0.0006	0.0008	0.0009	0.0008	-0.0065	-0.0078
	(0.21)	(0.87)	(1.05)	(1.21)	(1.16)	(-0.66)	(-1.00)
sdroaw	0.7451***	0.3982***	0.3762***	0.3686***	0.3634***	3.2718***	1.8834***
	(3.49)	(3.97)	(3.79)	(3.79)	(3.72)	(4.26)	(2.88)
inv_basew	-0.0218***	-0.0144**	-0.0212***	-0.0202***	-0.0196***	-0.0065	-0.0285
	(-2.79)	(-2.39)	(-3.67)	(-3.54)	(-3.45)	(-0.13)	(-0.58)
Constant	0.3351***	0.4057***	0.3405***	0.3137***	0.3074***	0.9155***	0.4063**
	(8.14)	(9.93)	(8.85)	(8.28)	(8.05)	(4.37)	(2.06)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1954	1954	1954	1954	1954	1954	1954
Number of firms	428	428	428	428	428	428	428
J statistic p-value	0.9572	0.7845	0.7487	0.9623	0.8579	0.8123	0.1314
R-squared	0.546	0.699	0.696	0.680	0.673	0.444	0.347

Table 10 (Continued)

	Panel D: VaR measures			
	avarhs	**avarrm**	**avargarch**	**avarfhs**
avestr_com	-0.0409	-0.0031	-0.0459	-0.0476
	(-0.57)	(-0.04)	(-0.56)	(-0.60)
avecon_com	-0.0733	-0.1835*	-0.0924	-0.0411
	(-0.66)	(-1.86)	(-0.73)	(-0.37)
avestr_div	-0.0200	-0.0478	-0.0312	0.0333
	(-0.27)	(-0.65)	(-0.38)	(0.42)
avecon_div	-0.0163	0.0064	-0.0113	0.0141
	(-0.28)	(0.11)	(-0.17)	(0.22)
avestr_emp	-0.0338	0.0220	0.0267	-0.0459
	(-0.41)	(0.24)	(0.26)	(-0.50)
avecon_emp	0.2133**	0.3576***	0.3006**	0.0195
	(2.14)	(3.27)	(2.46)	(0.21)
avestr_env	-0.5473	-0.0836	-0.1221	-0.8113**
	(-1.42)	(-0.18)	(-0.26)	(-2.07)
avecon_env	-0.2261	-0.0788	-0.4323	-0.2136
	(-0.37)	(-0.11)	(-0.63)	(-0.32)
avecon_non	0.1049	0.2269	0.3644	0.0453
	(0.64)	(1.12)	(1.54)	(0.33)
avestr_pro	0.3131**	0.4395**	0.4562**	0.2635
	(2.03)	(2.48)	(2.35)	(1.48)
avecon_pro	0.2471***	0.2025***	0.2199***	0.2171***
	(3.55)	(2.87)	(2.91)	(3.15)
avestr_oth	-0.0415	-0.0834	-0.1398	0.0026
	(-0.33)	(-0.60)	(-0.84)	(0.02)
avecon_oth	0.2880**	0.3926***	0.4216***	0.2850**
	(2.53)	(2.77)	(2.73)	(2.40)
lnmkteq	-0.0641***	-0.0568***	-0.0764***	-0.0707***
	(-5.36)	(-4.75)	(-5.37)	(-5.48)
bmw	0.0773**	0.0126	0.0285	0.0810**
	(2.08)	(0.39)	(0.80)	(2.26)
netlevw	-0.0311	-0.0995**	-0.1015**	0.0123
	(-0.74)	(-2.28)	(-1.99)	(0.28)
ret1y	0.1220***	0.1470***	0.1620***	-0.0146
	(3.33)	(4.69)	(4.75)	(-0.49)
avgturnover	19.0681***	16.5544***	16.7391***	21.6627***
	(8.35)	(7.69)	(6.80)	(8.39)
cvturnover	0.0227	0.0059	0.0286	0.0455**
	(1.19)	(0.30)	(1.13)	(2.39)
dispeps1w	-0.1504***	-0.1852***	-0.1798***	-0.1473***
	(-3.60)	(-4.00)	(-3.50)	(-3.67)
investment	1.1692***	1.2596***	1.5576***	1.1832***
	(2.92)	(3.37)	(3.31)	(3.14)
expgrthw	0.4149***	0.4456***	0.4869***	0.3034***
	(3.31)	(3.49)	(3.34)	(2.87)
zscorew	0.0008	-0.0010	0.0017	0.0028
	(0.36)	(-0.37)	(0.49)	(1.34)
sdroaw	1.7170***	1.9552***	2.1054***	1.3959***
	(4.73)	(4.42)	(4.32)	(4.41)
inv_basew	-0.0062	-0.0084	-0.0250	-0.0240
	(-0.33)	(-0.43)	(-1.15)	(-1.35)
Constant	0.8561***	0.8035***	1.0606***	1.0199***
	(7.71)	(7.30)	(7.97)	(8.56)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	1921	1921	1919	1909
Number of firms	415	415	414	410
J statistic p-value	0.4456	0.8490	0.6795	0.9094
R-squared	0.547	0.529	0.498	0.561

Table 10 reports results from instrumental variables (IV) regressions of the risk measures on the strengths and concerns of the individual dimensions of SP and controls over the period 1991–2007. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). The strengths and concerns of the individual dimensions of SP are Community strengths (avestr_com), Community concerns (avecon_com), Diversity strengths (avestr_div), Diversity concerns (avecon_div), Employee strengths (avestr_emp), Employee concerns (avecon_emp), Environment strengths (avestr_env), Environment concerns (avecon_env), Human Rights concerns (avecon_non), Product strengths (avestr_pro), Product concerns (avecon_pro), Corporate Governance strengths (avestr_oth), and Corporate Governance concerns (avecon_oth), respectively. Human Rights strengths (avestr_non) are excluded. The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. The IV regressions are estimated using the two-step efficient generalized method of moments (GMM). We use three instruments: lagged values of the strengths and concerns of the individual dimensions of SP, the median industry SP and a dummy variable for loss firms (i.e., equals to one for firms with negative free cash flow in the previous year, and zero otherwise). J statistic p-value is the p-value of the Hansen J statistic (overidentification test of all instruments). Unreported industry controls are based on the Fama and French (1997) industry classification. Robust and clustered (by firm) t-Statistics are reported in parentheses.
*** Significant at the 1% level ($p<0.01$); ** Significant at the 5% level ($p<0.05$); * Significant at the 10% level ($p<0.1$).

Table 11: Relation between the risk measures and the aggregate measures of social performance by industry

	Panel A: Total risk measures				Panel B: Idiosyncratic risk measures						Panel C: Systematic risk measures			
	Volatilityw	Volatilityw	dvolatilityw	dvolatilityw	sdresCAPMw	sdresCAPMw	sdresffw	sdresffw	sdres4ffw	sdres4ffw	mbetaw	mbetaw	mbetaffw	mbetaffw
Banking														
SP	-0.0622		-0.0486		-0.0318		-0.0334		-0.0400		-0.5192		-0.6031*	
	(-1.17)		(-0.97)		(-0.78)		(-0.87)		(-1.03)		(-1.62)		(-1.88)	
Str		0.0049		0.2096***		0.1672***		0.1576***		0.1579***		-0.2191		-0.5847
		(0.06)		(3.27)		(3.09)		(3.12)		(3.09)		(-0.53)		(-1.30)
Con		0.1137*		0.2491***		0.1867***		0.1820***		0.1938***		0.7505*		0.6148
		(1.83)		(4.95)		(4.71)		(4.78)		(5.01)		(1.66)		(1.58)
Observations	1608	1608	1628	1628	1628	1628	1628	1628	1628	1628	1608	1608	1608	1608
R-squared	0.533	0.534	0.653	0.668	0.664	0.674	0.647	0.658	0.631	0.643	0.548	0.549	0.520	0.520
Insurance														
SP	-0.0616		-0.0508		-0.0760		-0.0805		-0.0785		-0.3580		-0.4670	
	(-0.82)		(-0.66)		(-0.94)		(-0.97)		(-0.95)		(-0.92)		(-1.35)	
Str		0.0122		-0.0091		-0.0061		-0.0007		0.0043		-0.5022		-0.5166
		(0.14)		(-0.09)		(-0.06)		(-0.01)		(0.04)		(-0.98)		(-1.02)
Con		0.1099		0.0777		0.1219		0.1332		0.1334		0.2416		0.4208
		(1.18)		(0.78)		(1.18)		(1.27)		(1.27)		(0.51)		(1.00)
Observations	872	872	886	886	886	886	886	886	886	886	872	872	872	872
R-squared	0.582	0.583	0.689	0.690	0.704	0.704	0.690	0.691	0.685	0.686	0.379	0.379	0.327	0.327
Trading														
SP	-0.4533***		-0.2749***		-0.1619*		-0.1567*		-0.1558*		-2.3314***		-1.1246*	
	(-3.15)		(-2.93)		(-1.96)		(-1.93)		(-1.94)		(-3.21)		(-1.68)	
Str		0.0980		0.0715		-0.0003		0.0067		0.0035		1.0136		0.9734
		(0.45)		(0.43)		(-0.00)		(0.05)		(0.02)		(0.94)		(1.00)
Con		0.5898***		0.3592***		0.2004**		0.1957**		0.1937**		3.1603***		1.6472**
		(4.31)		(4.09)		(2.57)		(2.54)		(2.55)		(4.46)		(2.41)
Observations	747	747	766	766	766	766	766	766	766	766	747	747	747	747
R-squared	0.566	0.580	0.637	0.645	0.616	0.618	0.609	0.611	0.607	0.610	0.490	0.513	0.390	0.400
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11 (Continued)

Panel D: VaR measures								
	avarhs	avarhs	avarrm	avarrm	avargarch	avargarch	avarfhs	avarfhs
Banking								
SP	-0.1395		-0.1082		-0.2094		-0.1640	
	(-1.12)		(-0.84)		(-1.29)		(-1.28)	
Str		0.2985*		0.2837*		0.3012		0.4311**
		(1.82)		(1.89)		(1.40)		(2.34)
Con		0.4713***		0.4072**		0.5925***		0.6115***
		(3.38)		(2.55)		(2.94)		(4.54)
Observations	1571	1571	1571	1571	1546	1546	1544	1544
R-squared	0.540	0.548	0.477	0.484	0.299	0.304	0.484	0.496
Insurance								
SP	-0.3135		-0.1325		-0.1627		-0.2429	
	(-1.40)		(-0.80)		(-0.66)		(-1.15)	
Str		0.0009		-0.0026		-0.0509		0.1128
		(0.00)		(-0.01)		(-0.17)		(0.34)
Con		0.5149*		0.2181		0.2315		0.4780*
		(1.75)		(0.95)		(0.60)		(1.68)
Observations	841	841	841	841	837	837	829	829
R-squared	0.599	0.601	0.587	0.587	0.343	0.343	0.609	0.611
Trading								
SP	-0.6060**		-1.0641***		-1.1166***		-0.4253	
	(-2.20)		(-3.38)		(-3.23)		(-1.61)	
Str		0.3655		0.3625		0.4029		0.5171
		(0.93)		(0.77)		(0.78)		(1.25)
Con		0.8495***		1.4280***		1.5034***		0.6599**
		(3.09)		(4.55)		(4.40)		(2.56)
Observations	698	698	698	698	698	698	695	695
R-squared	0.572	0.583	0.571	0.587	0.570	0.585	0.571	0.584
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 11 reports results from OLS regressions of the risk measures on the social performance measures and controls over the period 1991–2007 for three industries: Banking, Insurance and Trading. The risk measures are systematic risk (mbetaw and mbetaffw), idiosyncratic risk (sdresCAPMw, sdresffw and sdres4ffw), total risk (volatilityw and dvolatilityw), and the annualized 1% VaR (avarhsw, avarrmw, avargarchw and avarfhsw). SP is the aggregate (composite) measure of social performance, which combine strengths and concerns. Str (Con) is the aggregate measure of strengths (concerns). The explanatory variables are firm size (lnmkteq), the book-to-market ratio (bmw), net leverage (netlevw), the annualized return from the previous year's daily stock returns (ret1y), the level of liquidity (avgturnover), the liquidity risk (cvturnover), dispersion of analyst forecasts (dispeps1w), investment (sum of capital expenditures, R&D expenditures, and advertising expenses, divided by total assets), expected growth in earnings (expgrthw), Altman's (1993) distress risk measure (zscorew), the standard deviation of return on assets (sdroa5yw), and investor base (inv_basew). All variables are defined in footnotes of Table 1. Robust and clustered (by firm) t-Statistics are reported in parentheses.

*** Significant at the 1% level (p<0.01); ** Significant at the 5% level (p<0.05); * Significant at the 10% level (p<0.1).

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12-002 **Kais Bouslah, Lawrence Kryzanowski and Bouchra Mzali:** Does Social Performance Affect the Risk of Financial Firms?

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