Corporate Social Responsibility and Asset Pricing in Industry Equilibrium

Introduction

Corporate social responsibility (CSR) represents a growing strategic concern for corporations around the world, many of which are adopting CSR as a core management or board function. The Global Reporting Initiative founded in the late 1990’s and later embraced by the United Nations Environment Program aims to provide corporations with a reporting framework on their economic, environmental, and social sustainability. The success of this initiative is visible in the widespread integration of its reporting framework within regular company annual reports. Arguably, CSR’s increased popularity inside boardrooms has outpaced the research needed to justify it. No longer necessarily viewed outside the profit maximizing framework, many questions still remain on how CSR policies affect the risks firms are facing and the stock market implications of those policies. In this paper, we aim to understand the asset pricing consequences of firm-level CSR policies and what is the impact of industry trends in CSR on asset prices.

We develop an industry equilibrium model where firms make production and CSR investment decisions and embed this model within a standard asset pricing framework. Following the work of Luo and Bhattacharya (2006, 2009) and an extensive Marketing literature, we model an investment in CSR as a mechanism to acquire customer loyalty. Greater customer loyalty takes the form of a less price elastic demand, which the firm uses to smooth out the effect of demand fluctuations. With this assumption, the model captures the folklore view in the Marketing literature that a firm with a more loyal demand has profits that are relatively less sensitive to aggregate economic conditions than a firm with a less loyal demand. A risk averse investor will therefore, all else equal, value more highly the firm with the more loyal demand and lower systematic risk, thus expecting from it a lower return.

In the context of our model, the benefit from CSR adoption as a risk management tool is a partial equilibrium effect that contrasts with an industry-equilibrium, feedback effect. Greater customer loyalty also gives CSR adopters higher operating profits per unit of revenue and leads more firms to adopt CSR policies. What follows depends on how we model the entry costs of CSR adoption. In our model firms vary in their entry costs, with some firms having lower costs of adopting CSR than others. We call this the “low hanging fruit” hypothesis. As a greater fraction of firms adopt CSR policies, however, it becomes costlier to do so for the marginal firm. These entry or adoption costs increase operating leverage, systematic risk, and expected returns.

We show that a critical parameter in determining the relative strength of these two effects, and the relative riskiness of CSR firms, is the preference of consumers for CSR goods in the form of their willingness to spend in CSR goods. A sufficiently low expenditure share caps the proportion of firms investing in CSR at a level that implies that the marginal CSR firm has a lower systematic risk and expected returns than non-CSR firms. Alternatively, the model predicts that increased consumer spending on CSR goods is associated with higher systematic risk for the marginal CSR firm relative to non-CSR firms.

The industry equilibrium of the model allows us to study the asset pricing effects of industry CSR trends on the non-adopters of CSR. We show that when CSR firms benefit from increasingly loyal demand, the systematic risk of non-adopters decreases. This surprising model prediction arises because the few firms that choose not to invest in CSR are able to extract higher operating margins given consumers’ fixed expenditure shares, reducing their operating leverage, systematic risk, and expected returns.

The model makes several additional predictions. First, greater systematic risk is associated with greater co-movement of net profits with the productivity shocks, which implies that net profits of CSR firms increase less than net profits of non-CSR firms in aggregate productivity booms. Second, output prices of CSR firms carry a premium relative to output prices of non-CSR firms. Third, stock valuations of CSR firms are on average higher than those of non-CSR firms because
of the higher risk that investors must absorb when holding non-CSR stocks, and CSR activities are positively associated with higher earnings.

We test the model predictions using a comprehensive dataset on firm-level CSR from MSCI’s Environmental, Social and Governance (ESG) database. The database provides coverage for companies that constitute several major international stock indices. The full sample includes 34 countries and 3,005 firms from 2004 to 2010, equivalent to an unbalanced panel with 9,795 firm-year observations. We first document that the level of systematic risk is significantly lower for firms with a higher CSR score. One standard deviation increase in CSR score reduces the level of systematic risk by 20% in a sample confined to U.S. firms and by 24% in an international sample.

Next, assuming that the expenditure share of CSR firms increases in economic upturns, we predict and find evidence that CSR firms have become relatively riskier in times of high GDP growth. Similarly, under the premise that the expenditure share of CSR goods has increased over time, we predict and find evidence that CSR firms have become relatively riskier in the latter part of the sample, controlling for GDP growth. In addition, we also demonstrate that the ratio of CSR firm profits to non-CSR profits is countercyclical, which is predicted by the model if in fact CSR firms are less risky. Our tests are conducted on a sample of U.S. firms as well as on the full sample of 34 countries, with similar results.

Finally, we test our baseline predictions using expected returns and find evidence that is consistent with the model and the previous findings on systematic risk, though not as strong statistically. We address several potential concerns with our tests, including the reverse causality that may be present in the data, and find that our results are robust.

Finally, we test the prediction that industry CSR trends affect the level of systematic risk of non-CSR firms. This constitutes a more direct test of the model and also one that we believe is less prone to endogeneity biases. We find that the level of systematic risk of the firms in the bottom quartile of CSR score in each industry co-varies negatively with the level of CSR in the whole industry. The magnitude of this effect is large and similar to the magnitude of the effect of a firm’s CSR on its risk. We find a statistically significant effect in the whole sample (p-value of 0.05), but an insignificant effect in the U.S. sample (p-value of 0.13), perhaps because of the smaller sample size.

A growing literature asserts that firms engage in profit maximizing CSR (e.g., Baron, 2001, and McWilliams and Siegel, 2001). According to the profit maximizing view, firms undertake CSR activities because they expect a net benefit from them (see Friedman, 1970, for an opposite view). For example, CSR may help firms avoid the temptations of shorttermism at the expense of long-term intertemporal profits (Bénabou and Tirole, 2010). Our paper fits into a line of research whereby profit maximizing CSR is a product differentiation strategy to gain competitive advantage over one’s rivals (see Navarro, 1988, Webb, 1996, Bagnoli and Watts, 2003, Fisman et al., 2006, and Siegel and Vitalino, 2007). Evidence that CSR is a mechanism that affects sales can be found in Navarro (1988) and Becchetti et al. (2005), though not all CSR should be perceived as such (e.g. César das Neves, 2008).

The only other paper we know that models the impact of CSR choices on firm risk does not take a stand on CSR as a profit maximizing activity. Heinkel et al. (2001) assume that some investors choose not to invest in non-CSR stocks (Barnea et al., 2009, endogenize this choice). This market segmentation leads to higher expected returns for non-CSR stocks, which must be held by only a fraction of the investors (as in Errunza and Losq, 1985, and Merton, 1987). In contrast, our paper builds on heterogeneous customer behavior toward firms rather than investor heterogeneity and we derive novel predictions that exploit the presence of such heterogeneity.

There is a recent empirical literature that tries to document a link between CSR and cost of equity capital. Sharfman and Fernando (2008) show that environmental performance is associated with lower cost of capital and Ghou et al. (2010) find that firms with better CSR have lower cost of capital. Our empirical analysis is complementary to theirs in that we investigate whether the effects on the cost of capital can be attributed to changes in a firm’s systematic risk (see also Oikonomou et al. 2010 and references therein). Furthermore, our analysis goes beyond their analyses in
several ways. First, we use a larger sample of firms and a more comprehensive list of control variables. Second, we document that firm profitability also co-moves in the expected way with output growth. Third, we show that there is an impact of industry CSR trends on non-CSR adopters’ risk. The evidence linking CSR with expected returns is mixed. Geczy et al. (2003) show that when controlling for market risk, the cost of restricting investments to socially responsible funds is small, but that this cost is significant when size, value and momentum factors are controlled for. However, Renneboog et al. (2008) show that socially responsible mutual funds underperform their benchmarks, but not more than conventional mutual funds, except for a small number of countries. Hong and Kacperczyk (2009) find that sin stocks have higher expected returns after controlling for risk and Brammer et al. (2006) find similar evidence for socially least desirable stocks with UK data. Becchetti and Ciciretti (2009) provide evidence that CSR stocks have lower mean returns but no difference in buy-and-hold risk adjusted returns relative to the control sample (see also Galema et al. 2008). In contrast, Derwall et al. (2005) show that the most ecologically efficient firms experience higher expected returns that cannot be accounted for by risk factors. Kempf and Osthoff (2007) form a strategy whereby they invest in most socially responsible stocks and short sell least socially responsible ones. This strategy exhibits significantly positive abnormal results.

This paper is also related to the literature linking a firm’s investment choices to its systematic risk and expected returns. Berk et al. (1999) show that the book-to-market premium can be explained by firm-level investments. Carlson et al. (2004) relate book-to-market effects to operating leverage. Novy-Marx (2011) shows empirically that operating leverage predicts cross-sectional returns. Gomes and Schmid (2010) endogenize both investment and financing choices and show that high financial leverage is associated with more safe assets-in-place and less risky growth options. Aguerrevere (2009) and Lyandres and Watanabe (2011) explore how firm-level investments and product market competition relate to stock returns.

We organize the rest of the paper as follows. Section 2 presents the model. Section 3 derives the equilibrium of the model and Section 4 analyzes the equilibrium properties regarding risk and expected returns of CSR and non-CSR firms. Section 5 presents the data used in our empirical tests and Section 6 discusses the results. Section 7 concludes the paper. Proofs are relegated to the appendix as is an extension of the model to an infinite horizon setting.