# Accepted Manuscript

Title: Towards a Theory of Responsible Investing: On the Economic Foundations of Corporate Social Responsibility

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Please cite this article as: Scholtens, L.D., </sup>and Bert, Towards a Theory of Responsible Investing: On the Economic Foundations of Corporate Social Responsibility, *Resource and Energy Economics* (2015), http://dx.doi.org/10.1016/j.reseneeco.2015.04.008

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**Towards a Theory of Responsible Investing:**

**On the Economic Foundations of Corporate Social Responsibility**

ABSTRACT

Studies that link corporate social and financial performance usually find a positive association between the two. However, the literature does not establish a significant impact of socially responsible investing on stock market returns. We develop a coherent economic framework of responsible investing to address this paradox. The framework offers theoretical underpinnings for all research on responsible investment as it provides the theoretical underpinnings for the actual behavior of market participants. We associate corporate social performance with key financial accounting ratios like the market-to-book ratio (market value of the firm in relation to accounting value), return on assets, and stock market return. We conclude that there is a strong theoretical foundation for a positive relationship between corporate social responsibility and financial performance, though the relation is conditional on which financial performance measure is considered. We illustrate that the empirical literature about responsible investing is well in line with our model's propositions.

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## 1    Introduction

Margolis and Walsh (2001, 2003) provide a thorough review of the literature connecting corporate social performance with financial performance. Based on more than 100 studies, they conclude that there is a positive association between social and financial performance and little evidence of a negative association (see also Orlitzky et al., 2003). In contrast, the literature about stock market returns in relation to corporate social responsibility does arrive at a somewhat different conclusion: Many researchers (e.g. Bauer et al., 2005; Bello, 2005; Renneboog et al., 2008) find that socially responsible investments yield returns that are not significantly different from those on conventional investments. Others (e.g. Gezcy et al., 2003; Hong & Kacperzcyk, 2009) even find that socially responsible stocks are overpriced. Thus, it appears that there is a paradox: Social performance of firms seems to be valued differently, depending upon the perspective taken, which is the supply-side or the demand-side of social responsibility.

In this paper, we provide a coherent theoretical framework for responsible investing. We build on a coherent economic framework from which we can logically derive propositions about the relationship between social and financial performance. We come up with a model that is based on the models of Heinkel et al. (2001) and Mackey et al. (2007). We integrate two of the model's extensions as suggested by Mackey et al. (2007), namely that firms vary in their responsible performance and that investor preferences are heterogeneous. As such, we explicitly link the supply and demand side for corporate social responsibility. Furthermore, we explore specifically what the consequences are of the choice of firms to meet investor's demand for corporate socially responsible behavior on three popular financial ratios.

The key ingredients of our model are that socially responsible investors take account of external effects of production, which we label "social damage", and as a consequence accept a lower financial return on a responsible stock compared to an irresponsible stock. The way we model this is by endowing consumers with a preference for "more responsible" firms. Formally, consumers receive a *warm-glow*, as in the seminal paper by Andreoni (1990), if they own shares of firms that produce more responsibly (i.e. their production is to be associated with less social damage). So in a way, consumers are purely egoistic in the setting; they do not actually care whether, for example, the firm pollutes or not, as they do not value the environment directly. They only care if they have shares of the firms that pollute. We do not consider where the preferences for socially responsible production come from; in this paper we are only interested in the consequences for firms' financial performance due to the demand for socially responsible production. To be clear, in the narrative of the paper, we often refer to ``pollution'' as the unwanted side-

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effect of production, but we do not model the standard external effect of pollution. The model's assumption that firms generate social damage as a byproduct also suits problems such as child-labor or poor health and safety standards in working conditions. For these two examples it is perhaps even more clear that consumers are not directly affected by variation in the standards of production. Hence, it is important to realize that we do not consider the standard (environmental) externality framework in this paper but only the warm glow effect. Furthermore, regarding the supply side of the economy, socially responsible entrepreneurs may meet the interest in the demand for socially responsible production. This results in less input of capital and a higher return on assets because of decreasing marginal returns to production. The implication from the demand side assumption is that responsible firms are characterized by higher market-to-book ratios than irresponsible firms. The implication from the supply side assumption is that more responsible firms are characterized by a higher return on assets. Combining the two in the equilibrium situation regarding stock market returns shows that the overall effect is conditional on the parameters of the model: stock market returns can both be higher or lower for responsible firms compared to those of irresponsible firms. Intuitively, this ultimately depends upon the relative strength of how much investors and firms respectively value the internalization of irresponsibility or social damage.

The structure of the remainder of this paper is as follows. Section 2 briefly reviews socially responsible investing. Section 3 discusses the models from which we derive our propositions regarding the relationship between social and financial performance. Section 4 discusses the propositions of our model. Section 5 is an illustration of our model as it reorganizes the literature covered by Margolis and Walsh (2001, 2003) by linking this literature to the propositions. Section 6 concludes.

## 2.    Socially responsible investing

The most common definition of socially responsible investment is: "*[...] ethical investments, responsible investments, sustainable investments, and any other investment process that combines investors' financial objectives with their concerns about environmental, social and governance (ESG) issues*" (Eurosif 2008, page 6). Different authors and organizations use heterogeneous vocabulary when referring to investments that are motivated by concerns beyond the strictly financial ones (see Sandberg et al. 2009). In this article, we will use the term SRI to cover investments that take into account environmental, social and governance (ESG) factors.

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What may be the impact on firm behavior because of socially responsible investing? Johnsen (2003) argues that the size of socially responsible investment funds usually is much too small for the fund's portfolio decisions to have an impact on firm behavior. Therefore, Johnsen argues, socially responsible funds should become active owners. However, the prospects of this policy are limited too. First, there are institutional and legal constraints, as in many countries mutual funds have to face restrictions for the ownership of a substantial part of corporations. Second is that the share of co-operating socially responsible investors would have to be quite substantial. Heinkel et al. (2001) show that exclusionary ethical investing leads to polluting firms being held by fewer investors since green investors eschew polluting firms' stock. This lack of risk sharing among non-green investors leads to lower stock prices for polluting firms, thus raising their cost of capital. If the higher cost of capital more than overcomes the cost of reforming (i.e. a polluting firm cleaning up its activities), then polluting firms will become socially responsible because of exclusionary ethical investing. A key determinant of the incentive for polluting firms to reform is the fraction of funds controlled by green investors. In their model, Heinkel et al. find that at least 20% green investors are required to induce any polluting firms to reform. Third, shareholder activism is seen as a factor that might impact on the direction of the business strategy. It consists of various elements: proxy voting, resolutions, and dialogue. Shareholder activism is a process by which the shareholders of a listed company, under the provisioning of securities legislation in various jurisdictions, can request their members to meet and vote on specific resolutions. However, the major problem with shareholder activism is that we do not have systematic surveys of the *de facto* impact of these efforts on firms' policies and performance (see Bauer et al., 2010). The evidence so far is rather anecdotal. Given the nature of the process, it also is very difficult to empirically verify whether shareholder activism has an impact at all.

Evaluating corporate governance, environmental, social, and economic factors allows investors to manage their funds in a way that is consistent with the investor's mission and values. The investor can make a trade-off between the performance and policies of the firm with respect to these factors and its financial performance (i.e. risk and return). Different studies of socially responsible investing suggest that ethical screening of companies is likely to affect the characteristics of the assets included in the portfolio. As such, screening for social responsibility might impact on the portfolio, in particular on portfolio diversification and portfolio performance (see Grossman and Sharpe, 1986; Diltz, 1995; Galema et al., 2008; Renneboog et al., 2008). Skipping funds from the list of investable objects reduces the investment universe from which the investors can make a choice. As such, screening reduces the scope for optimizing the trade-offs between financial risk and return. Several empirical studies of the financial performance of socially responsible investment funds have appeared in the recent past (for a critical review see Capelle-

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Blancard and Monjon, 2012). The general findings of these studies are that there is not a significant difference in the returns on the socially responsible investment funds compared to those of conventional funds. Financial risk also is of the same order of magnitude for the two types. Therefore, screening does not seem to have a significant impact on the risk and return characteristics of the two types of investing. Also, and relatedly, stock market indices that are made up of firms that are included in socially responsible investment funds do correlate highly with indices that are composed of conventional funds (Statman, 2005). So, it appears that socially responsible investors do not forego a lot of opportunities, but they also do not financially benefit from their screening activities.

The linkages between finance and sustainability or responsibility that are being investigated center on the role of shareholders. While shares and shareholder rights indeed can be an important instrument to impact upon the direction of the firm, they are not the only means. Private capital and bank credit are very important financial instruments too if it comes to providing external finance to the firm. However, these types of financing are much more opaque than financing via the market for stocks or bonds (see Boot and Thakor, 1997). Nevertheless, their impact is at least of equivalent importance. The channel through which the impact of the financier is transmitted, however, is quite different from that of the stock market, where we have shareholders with ownership and dividend rights. Especially, banks' screening and monitoring of projects and firms may affect the social responsible behavior and performance of the firm. As such, it will impact upon the actual operations of the firm that is being financed. Assessing non-financial attributes of firms is a very common way to do business by banks and other financial institutions. They often regard qualitative attributes of the firm and the entrepreneurs as proxies for the viability of their project or firm (Saunders and Allen, 2002). They select firms and projects on the basis of their performance with respect to such non-financial characteristics. As such, the screening of firms is a very important instrument for financial intermediaries to direct their funds. The screening literally gives direction to the way in which the funds are being put to use. This is because the financial intermediary as a lender not only provides finance, but also is involved in project design, monitoring, and implementation (Jappelli and Pagano, 2002).

Another issue is that in analyzing the connection between social and financial performance, it is implicitly assumed that financial performance measures can be used interchangeably (Margolis and Walsh, 2001 &, 2003; Orlitzky et al., 2003). This would indeed be the case without the existence of unwanted side-effects in production. In an imperfect environment, prices will not reflect all relevant economic information. Therefore, we explicitly ask what would be the economic impact of social responsibility. It appears that the taking into account the demand for socially responsible production will have a negative effect on accounting profits (see also Gregory et al., 2014). Lower profits will have a negative effect on the stock market value. However, if the mitigation of unwanted side effects is valued by socially responsible

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stockholders, there also is a positive effect on the stock market value from this internalization. Consequently, accounting profit and stock price need not change in the same way. Furthermore, partial equilibrium analysis cannot reveal the overall impact of the two opposing effects. Therefore, we need an economic model that links socially responsible investment and corporate social responsibility in a more general theoretical framework. Our model illustrates that in case non-monetary effects of production are internalized, different financial performance measures capture different economic effects.

To this extent, we depart from the work done by Merton (1987), Heinkel et al. (2001), and Mackey et al. (2007). Mackey et al. (2007) present a simple stock market model in which a fraction of the consumers is socially conscious. This model is in line with the "green screening" model of Heinkel et al. (2001) and the "incomplete information" model of Merton (1987), in which there is a similar distinction between two groups of investors. However, in the model of Mackey et al. (2007), utility is linear and there is no uncertainty, in contrast to Heinkel et al. (2001) and Merton (1987). The starting point of our model is quite similar to these three approaches. We also present a stock market model with socially responsible investors and uncertainty so that stock value is affected by corporate social responsibility. However, we are able to generalize these models in a number of ways. First, as suggested by Mackey et al. (2007), we allow for *heterogeneity* among investors with respect to their attitude towards social responsibility. Second, we also let firms vary in their *ability* to make socially responsible investments. Third, we specifically model how the *choice* of the firm to behave either socially responsible or socially irresponsible affects financial performance in equilibrium. The choice to behave socially responsible or not is exogenous to our model, but by considering both cases we can compare the outcomes of the decisions. As such, we do not only model the demand for social responsibility (through socially responsible investment) but also the supply of corporate social responsibility. Finally, our analysis does not focus on a single financial performance measure, which usually is stock market value in most of the literature above, but we discuss the implications for three different classes of commonly used financial performance measures. The key result is that by considering external effects in equilibrium, the classes of financial performance measures need no longer have the same interpretation. This offers a solution to the seemingly paradoxical empirical findings in the social and financial performance literature and those on socially responsible investing and financial performance.

Next, we develop a model that links SRI and CSR in a more general economic equilibrium framework. This model shows that in case externalities are made internal to household (i.e. firms, lenders/investors) decisions, different financial performance measures capture different economic effects. Then, we use the model's propositions to assess the empirical literature about the link between corporate social and financial performance.

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### 3. Model

The basic set-up of our model is in line with the stock market model of Diamond (1967). However, we add an externality in production, namely social damage, as defined in the introduction of this study. This damage can relate to environmental pollution, social harm, breaches of trust, etc. We define consumer preferences over these social damages.

**Production technology and financing structure**

We consider $n$ firms. We assume that the production $f_i(k_i)$ by firm $i$ is Cobb-Douglas with parameter $0 < \alpha_i < 1$ and a function of capital intensity $k_i$,

$$f_i(k_i) = k_i^{\alpha_i}. \tag{1}$$

Firm $i$ also generates an economic "bad", labeled social damage $D_i$, which we may think of as environmental pollution. For simplicity, but without losing the general argument, we assume it is proportional to $f(\cdot)$:

$$D_i = \eta_i f_i(k_i). \tag{2}$$

Note that $D_i$ is total social damage and $\eta_i$ is social damage proportional to production. This way social damage will be proportional to both total output and capital intensity, which is a common assumption (see e.g. Dam, 2011). We assume that each firm produces the same good and the same bad.

We assume that the firm finances the production factors by issuing bonds at a risk-free rate $r$. We can thus use the capital stock and total debt of the firm interchangeably. This may seem a very restrictive way to finance real investments, but as we will show later, the value of the firm will only depend on output and not on the financing structure. Since the firm uses all the funds raised via bonds to buy capital $k_i$, this amount is also equal to the book value of the firm and the value of outstanding shareholdings is equal to zero as long as capital is not employed in production. However, we assume that as soon as bonds are issued to buy capital, investment opportunities arise in the form of the production technology. These opportunities create potential (uncertain) profits by employing capital in production, which may increase the value of the

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outstanding shares. Via this simple mechanism we provide the potential for a difference between market values and (historical) book values in a static model.

Profits, $R_i$, for the shareholders of firm $i$ are given by:

$$R_i = g_i(\theta)f_i(k_i) - rk_i. \tag{3}$$

where $g_i(\theta)$ is the price at which output is sold. Uncertain demand for output is reflected by a random vector $\theta$. Consequently, only the price for the output, $g_i(\theta)$, depends on demand shocks, so that output and damage do not depend on the state of nature $\theta$. We assume $g_i(\theta) \sim N(1, \sigma_i^2)$ and we consider the simple case where covariances between the $g_i(\theta)$'s equal zero. The effects of covariances on prices and portfolio selection are well known. Generally, covariances play an important role in asset pricing, but for our purpose we only require a risk premium since we focus on the effect of social preferences on asset prices. Incorporating covariances between the demand shocks would yield higher systematic risk, but qualitatively they do not influence the pricing equations (see Cochrane, 2001).

Expected profits and the variance of profits are:

$$\mu_i = E[R_i] = f_i(k_i) - rk_i, \tag{4}$$

$$\sigma_{R_i}^2 = Var[R_i] = \sigma_i^2 f_i(k_i)^2. \tag{5}$$

**Consumer preferences**

There are $m$ consumers and consumer $j$ has individual preferences for the good and the bad which are represented by a consumer-specific utility function $U^j(c_j, d_j)$, which we assume to exhibit constant absolute risk aversion (CARA):

$$U^j(c_j, d_j) = -\exp(-\delta[c_j - \lambda_j d_j]) \tag{6}$$

where $c_j$ is consumption, $\lambda_i$ is the subjective marginal rate of substitution between social damage and consumption, and $d_j$ is an index of the social damage caused by firms the consumer holds shares in. The social preferences are modeled in line with Dam (2011) and Dam and Heijdra (2011): The consumers experience a "warm glow" from not contributing to total social damages, as argued in Andreoni (1990).

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Therefore, we model social responsible investment by assuming that the consumer feels responsible for a part of the social damage produced by the firms in which she holds shares, and does so simply relative to the total share-weighted damage levels implied by her portfolio of assets, i.e.:

$$d_j = \sum_{i=1}^{n} \omega_{ij} D_i,$$

where $\omega_{ij}$ is the number of shares consumer $j$ holds in firm $i$. Furthermore, we assume that consumers want to maximize their expected utility:

$$V^j = E[U^j(c_j, d_j)]. \tag{7}$$

As equation (6) shows, we assume all consumers exhibit the same level of absolute risk aversion, $-\frac{E[U_{cc}^j]}{E[U_c^j]} = \delta$, for all $j$. However, they differ in their social preferences, $-\frac{E[U_d^j]}{E[U_c^j]} = \lambda_j$, where $\lambda_j$ is the implicit subjective conversion price, or the subjective marginal rate of substitution, of social damage to consumer $j$'s consumption. If $\lambda_j = 0$, the consumer does not care about social damage at all.

**Demand: Portfolio selection**

Consumer $j$ has initial wealth $W_j$, which consists of initial shareholdings and production factors. Assets are indexed by $i = 1, ..., n$ and generate payoffs $R_i$ and damage $D_i$. The consumers receive these cash and social damage flows in proportion to their shareholdings in firm $i$. Asset $i$ can be bought at price $p_i$. Consumers can also buy bonds and the price of a bond is used as the numeraire. One unit of a bond is a commitment to pay a fixed amount of $r$ units of consumption. As such, this asset is risk-free and non-polluting. Let $b_j$ be the total amount of bonds of consumer $j$. Then, an investor chooses a portfolio to maximize expected utility:

$$\max_{\omega_{ij}} E[U^j(c_j, d_j)] \tag{8}$$

subject to

$$c_j = rb_j + \sum_{i=1}^{n} \omega_{ij} R_i, \tag{9}$$

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$$d_j = \sum_{i=1}^{n} \omega_{ij} D_i, \tag{10}$$

$$W_j = b_j + \sum_{i=1}^{n} \omega_{ij} p_i, \tag{11}$$

where $\omega_{ij}$ is the number of shares consumer $j$ holds in firm $i$, and the last equation is the budget constraint. With normally distributed payoffs, the solution satisfies the pricing equation:

$$p_i = \frac{E[R_i]}{r} - \frac{1}{r}\left(\delta cov[c_j, R_i] + \lambda_j D_i\right), \tag{12}$$

With CARA preferences and a constant marginal rate of substitution between consumption and damage, the pricing equation for consumer $j$ becomes:

$$p_i = \frac{1}{r}[\mu_i - \delta \omega_{ij} \sigma_{R_i}^2 - \lambda_j D_i], \tag{13}$$

which can be inverted into a demand function for shares:

$$\omega_{ij} = [\mu_i - p_i r - \lambda_j D_i]\frac{1}{\sigma_{R_i}^2 \delta}. \tag{14}$$

Eq. (10) shows that a consumer with a stronger preference for responsibility (i.e. stronger aversion of social damage, implying a high $\lambda_j$) will hold less of the share if the firm is engaged with more social damage from its production. Furthermore, greater risk will lower the demand proportional to the risk aversion of investors. Then, define $\overline{\lambda} = (1/m)\sum_{j=1}^{m}\lambda_j$ as the average rate of substitution between consumption and social damage of all consumers, and without loss of generality we normalize the number of shares[1] and consumers to one. In equilibrium the stock market value $M_i$ of firm $i$ will be:

$$M_i = p_i = \frac{1}{r}[\mu_i - \delta \sigma_{R_i}^2 - \overline{\lambda} D_i]. \tag{15}$$

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[1] The total number of shares is irrelevant as long as this number is constant. We can always redefine the price per share, in the end it is the total value of the firm that is relevant to the investor. A similar argument can be made for the number of consumers; aggregate consumption is relevant, not the consumption per capita.

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In our model, all the firm's actions are perfectly observable and we do not restrict shortselling, but mechanically this result is related to the partial equilibrium models of Heinkel et al. (2001) and Mackey et al. (2007), and to Merton (1987) in the case of no shortselling. If shortselling is not allowed, the demand for shares cannot become negative. For firms with a lot of social damage related to their production (i.e. high $D_i$), Eq. (14) is a binding constraint. Then, screening for social damage (i.e. environmental, social or governance issues) takes place since some stocks are omitted from the portfolio. If shortselling is not allowed and we have a dichotomous distribution of consumers' preferences (consumers with either a high $\lambda_j$ or with $\lambda_j = 0$), we get the model with screening of Heinkel et al. (2001). Similarly, we arrive at the Merton model of incomplete information if we interpret damage $D_i$ as the "shadow cost of not knowing about security $i$" (Merton, 1987, p.491). Both screening and asymmetric information lower the market value of polluting (less responsible) and "unknown" firms. Hence, we infer that socially responsible investors will require a lower financial return on their investment when the firms they invest in will try to internalize social damage associated with production. These investors value both financial returns and the mitigation of social damage. More demand for responsible stocks implies that their market return is below that on ordinary stock. Here, the main driver is that responsible investors are prepared to accept a lower financial return. Most studies after socially responsible investment take this perspective (for example Heinkel et al., 2001; Bauer et al., 2005; Bello, 2005; Beltratti, 2005; Mackey et al., 2007). However, they appear to neglect the supply side of corporate social responsibility, i.e. corporate conduct, to which we turn next.

**Supply: Corporate conduct**

We define the market value of the firm as the market value of equity plus the book value, which is simply the capital stock, so the market value of the firm is equal to $M_i + k_i$. Using Eq. (2), Eq. (4)-(5), and Eq. (15), we find the value of the firm in equilibrium as:

$$M_i + k_i = \frac{1}{r}[f_i(k_i) - rk_i - \delta\sigma_i^2 f_i^2(k_i) - \overline{\lambda}\eta_i f_i(k_i)] + k_i$$

$$= \frac{1}{r}[f_i(k_i) - \delta\sigma_i^2 f_i^2(k_i) - \overline{\lambda}\eta_i f_i(k_i)]. \tag{16}$$

Without agency problems, taxes, and transaction costs, the value of the firm only depends on output and not on the financing structure (cf. Modigliani and Miller, 1958). The value of the firm is equal

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to its output, $f_i(k_i)$, discounted by $\dfrac{r}{1-\delta\sigma_i^2 f_i(k_i)-\overline{\lambda}\eta i}$. The discount factor includes not only the risk

free rate, $r$, but also the usual risk premium, $\delta\sigma_i^2 f_i(k_i)$, which is the risk aversion times the volatility of

cash flows, and a premium for social damage, $\overline{\lambda}\eta i$, which is equal to the average shadow cost of social

damage times social damage per output. .

To keep the analysis simple, we focus on extreme cases only and consider two types of corporate behavior. The first type of behavior is taking into account the concerns of investors about the production of social damage, and we label this as socially responsible behavior. The second type of behavior is pure profit maximization without taking into account investor's concerns about social damage. We call this irresponsible behavior. This distinction is in line with Heal's (2005, 2008) definition of corporate social responsibility.

A socially responsible firm (SR) sets its capital intensity $k^{SR}$ such that

$$f'^{SR}(k^{SR})=\frac{r}{1-\delta\sigma_{R_{SR}}^2-\overline{\lambda}\eta_{SR}}, \tag{17}$$

in effect, maximizing market value as in Mackey et al. (2007), because it turns out that the socially optimal solution is attained by maximizing firm value, not by maximizing profits (See the Appendix A for a derivation). This result corresponds to the argument made by Michael Jensen: "value is created when a firm produces an output or set of outputs that are valued by its customers at more than the value of the inputs it consumes (as valued by their suppliers) in such production" (Jensen, 2002, p. 239). Naturally, an economy without frictions will optimally allocate resources when the firm maximizes its market value.

An irresponsible firm (IR), maximizes pure profits and sets its capital intensity $k^{IR}$ such that:

$$f'^{IR}(k^{IR})=\frac{r}{1-\delta\sigma_{R_{IR}}^2}, \tag{18}$$

where $\sigma_{R_{SR}}^2:=\sigma_{SR}^2 f^{SR}(k^{SR})^2$ and $\sigma_{R_{IR}}^2:=\sigma_{IR}^2 f^{IR}(k^{IR})^2$ See Lemma 1 of the appendix for the derivation of these results.

We see that the social damage due to production generates a distinction between value maximization and profit maximization. The difference between the two expressions is that the irresponsible

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firm does not consider the shadow cost of the social damage $\overline{\lambda}\,\eta_{IR}$ per output. The irresponsible firm uses a cost of capital that is too low from a social viewpoint, i.e. it takes into account the risk-free rate plus a risk premium, but not the social damage premium.

Note that the choice of being socially responsible or socially irresponsible is exogenous to our model. In our model, there is no economic mechanism that forces firms to be socially responsible (see also Heal, 2008). Incorporating the motivation for this choice explicitly is beyond the purpose of this paper, and potentially requires more complex modelling (see also Bénabou and Tirole, 2010). For example, if shareholders disagree with the policy of a firm, they can either sell the stocks (Exit) or try to influence firm policy at shareholder meetings (Voice), however for this latter option we would have to rely on voting theory, which makes the analysis unnecessarily complex. Besides these direct links between shareholders and corporate policy, there are various potential agency problems between shareholders and management of the firm that may occur, which we acknowledge, but do not model here either.

## 4.        Propositions

We present three equilibrium results showing that for comparison purposes between socially responsible and irresponsible firms it matters what kind of financial performance measure is being used. We discuss the properties of three measures that are widely used in the empirical literature. These three are market-to-book (or Tobin's Q), return on assets (i.e. accounting profit ratios), and stock market returns.

**Proposition 1**

*Define the market-to-book ratio as total market value divided by installed capital, $(M+k)/k$. Then:*

*1. the market-to-book ratio of a socially responsible firm is always larger than the market-to-book ratio of an irresponsible firm with the same degree of homogeneity, irrespective of the level of damage per output;*

*2. the market-to-book ratio of socially responsible firms is constant with respect to damage per output.*

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Note that the result even holds if firm risk levels differ, since the market value is determined by the appropriate discount rate. A responsible firm is maximizing market value, so it will install capital until the unique optimal market-to-book value is obtained.

**Proof of Proposition 1**

First note that $\dfrac{f_i'(k_i)k_i}{f_i(k_i)} = \alpha$. Substituting Eq. (17) in Eq. (16) we find that the total market value of a socially responsible firm is equal to $M^{SR} + k^{SR} = k^{SR}\alpha^{-1}$, so the market-to-book ratio is equal to $(M^{SR} + k^{SR})/k^{SR} = \alpha^{-1}$ which does not depend on the level of social damage. Substituting Eq. (18) in Eq. (16), we find that the total market value of the irresponsible firm is equal to

$$(M^{IR} + k^{IR})/k^{IR} = \alpha^{-1}\left(1 - \frac{\overline{\lambda}}{r}f'(k)\eta_{IR}\right) < \alpha^{-1} = (M^{SR} + k^{SR})/k^{SR}. \tag{19}$$

**Proposition 2**

*Define the return on assets (ROA) ratio as profits divided by installed capital, $\pi/k$. To make a fair comparison, we need to adjust for risk levels, so we compare two types of firms for which $\sigma_{R_{SR}}^2 = \sigma_{R_{IR}}^2 = \sigma^2$. Then:*

*1. the ROA of a socially responsible firm is always larger than the ROA of an irresponsible firm with the same degree of homogeneity;*

*2. the ROA of irresponsible firms is constant with respect to damage per output $\eta_i$, but for socially responsible firms it is increasing in damage per output $\eta_i$.*

Since, in general, there is a risk-return trade-off, we compare two firms with the same risk. Otherwise, a difference in ROA could simply be due to risk and not to social responsibility of the firm. The alternative would be to look at firms with the same expected return and to compare their risk. If each firm is assumed to have the same corporate goal, namely to maximize profits, then observing a higher ROA would indeed imply superior financial performance. However, socially responsible firms do not maximize profits and based on a simple comparison of ROA we would label irresponsible firms as inefficient. According to conventional microeconomic theory, relatively higher *average* profits should induce additional investments, since maximum profits have not yet been attained. With social damage, however,

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socially responsible investors appreciate the internalization of this social damage. In their utility function, this alternative corporate goal compensates for pure profit maximization.

**Proof of Proposition 2**

Again, note that $\dfrac{f_i'(k_i)k_i}{f_i(k_i)} = \alpha$. Using the definition of profits we have $ROA = \mu_i/k_i = f_i(k_i)/k_i - rk_i/k_i = f_i'(k_i)/\alpha - r$. Substituting for $f_i'(k_i)$ using Eq. (1) we see that for the irresponsible firm

$$ROA^{IR} = \frac{r}{\alpha(1 - \delta\sigma_{R_{IR}}^2)} - r \tag{20}$$

which does not depend on damage per output $\eta_i$. For socially responsible firms we substitute for $f_i'(k_i)$ and find that

$$ROA^{SR} = \frac{r}{\alpha(1 - \delta\sigma_{R_{SR}}^2 - \overline{\lambda}\,\eta_{SR})} - r \tag{21}$$

which is increasing in damage per output $\eta_{SR}$. Looking at the difference we see that

$$ROA^{SR} - ROA^{IR} = \frac{r}{\alpha(1 - \delta\sigma_{R_{SR}}^2 - \overline{\lambda}\,\eta_{SR})} - \frac{r}{\alpha(1 - \delta\sigma_{R_{IR}}^2)} > 0 \tag{22}$$

given that risk is identical $\sigma_{R_{SR}}^2 = \sigma_{R_{IR}}^2 = \sigma^2$.

**Proposition 3**

*Define stock market returns as $\mu / M$. To make a fair comparison, we adjust for risk levels, so we compare two types of firms for which $\sigma_{R_{SR}}^2 = \sigma_{R_{IR}}^2 = \sigma^2$. Then:*

*1. whether the risk-adjusted stock market returns are higher for socially responsible firms or irresponsible firms is ambiguous;*

*2. socially responsible firms have lower stock market returns compared to irresponsible firms with the same damage per output.*

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A set of firms that have the same social damage per output can be seen as an industry. As with ROA, otherwise a difference in stock market return could simply be due to risk and not to social responsibility of the firm. Therefore, we find that socially responsible firms have lower stock market returns compared to irresponsible firms that are in the same industry. If we compare socially responsible firms to irresponsible firms at an aggregate level, i.e. we do not correct for industry type, then it is ambiguous whether stock market returns are higher or lower for socially responsible firms. The intuition behind this proposition is that corporate social responsibility relates to the internalization of social damage of production, not just to the extent to which it creates social damage (Heal, 2008). Thus, for example, a more polluting industry has to compensate more for its pollution if it wants to be labeled socially responsible. Unless we identify what drives firms to engage in corporate social responsibility - e.g. polluting industries are relatively more involved in pursuing social responsibility - we are unable to make precise statements concerning the stock market return of socially responsible firms (see Bénabou and Tirole, 2010).

**Proof of Proposition 3**

First we observe that $\mu/M = \dfrac{\mu/k}{M/k} = \dfrac{ROA}{Market-to-Book-1}$. We look at firms for which risk levels are identical $\sigma^2_{R_{SR}} = \sigma^2_{R_{IR}} = \sigma^2$. Using the expression for ROA and market-to-book, we can express the stock market returns of the socially responsible firm as

$$\frac{\mu^{SR}}{M^{SR}} = \frac{A + r\alpha\overline{\lambda}\,\eta_{SR}}{B - (1-\alpha)\overline{\lambda}\,\eta_{SR}},\tag{23}$$

and the stock market returns of the irresponsible firm as

$$\frac{\mu^{IR}}{M^{IR}} = \frac{A}{B - \overline{\lambda}\,\eta_{IR}},\tag{24}$$

with $A = r\big(1-\alpha(1-\delta\sigma^2)\big)$ and $B = (1-\alpha)(1-\delta\sigma^2)$. Note that both are increasing in social damage per unit of output. A higher share of social responsible investors implies a higher $\overline{\lambda}$, which also increases stock returns. If risk aversion $\delta$ increases, investors also require a higher rate of return. When the output elasticity of capital $\alpha$ is higher it means that the marginal product of capital will be higher resulting in higher stock market returns.

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The sign of the difference of these two equations – (23) and (24) – depends on the combination of $\eta_{SR}$ and $\eta_{IR}$. Stock market returns of the irresponsible (IR) and responsible (SR) firm are identical if:

$$\eta_{SR} = \eta_{IR} \frac{1 - \alpha(1 - \delta\sigma^2)}{1 - \alpha(1 + \overline{\lambda}\eta_{IR})}. \tag{25}$$

If $\eta_{SR}$ exceeds the right-hand side of this equation, the socially responsible firm has a higher stock market return, otherwise it will be lower. We see that if $\eta_{SR} = \eta_{IR}$, that is, if we compare within a single industry, stock market returns are lower for socially responsible firms. Ceteris paribus, socially responsible investors are willing to accept a lower rate of return on their investment.

Thus, on the basis of our theoretical framework, we are able to assess the relationship between (indicators of) financial performance and social responsibility. From the demand side, that is the investors, social responsibility is to be associated with higher market-to-book ratios (higher market value in relation to the book value of the assets of the firm). This is because they are priced above conventional or irresponsible firms for whose stock there is less demand. From the supply side, we find that more responsible firms have a higher return on their assets. This is rooted in decreasing marginal returns to production. Combining the demand and supply side leads to an undetermined overall result regarding the profits per share of responsible vis-à-vis irresponsible firms. This is because both the market-to-book ratio and the return of assets of responsible firms are higher than those of irresponsible firms. Then, the overall impact of social responsibility on the profits per market value (stock), i.e. the ratio between the two, is ambiguous. As a result, the stock market return of responsible firms depends on the relative size of the demand and supply side effects. This ambiguity is driven by differences in social damage per output, which does not play much of a role when comparing ROA or market-to-book. However, for the same level of social damage per output, we find the conventional result that the socially responsible firms have a lower stock market return than the irresponsible firms.

In all, on the basis of this 'general' equilibrium framework, we predict that socially responsible firms have a higher market-to-book ratio than irresponsible firms. Furthermore, we predict they have a higher return on assets than irresponsible firms. However, the stock market return of responsible firms can be either higher or lower than that of irresponsible firms.

In the next section of this paper, purely for illustrative reasons, we link the empirical evidence as analyzed in Margolis and Walsh (2001, 2003) to our three propositions.

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**5.    Illustration**

Several studies find a positive association between social and financial performance. However, socially responsible investing does not seem to earn positive abnormal stock market returns (see section 2). We argue that different financial performance measures capture different economic effects. In this section, we relate our propositions to the findings in the empirical literature; in particular paying attention to what type of performance measure is being used. For this purpose, we consulted the widely cited surveys on the link between corporate social responsibility and corporate financial performance of Margolis and Walsh (2001, 2003). We classify the studies discussed in these reviews according to the financial performance measure used. We relate the empirical findings to our three propositions. Therefore, we will only look into studies that use market-to-book, return on assets, or stock market returns. As such, we examine more than 60 studies. Table 1 provides a summary of the results.

[Insert Table 1 about here]

**Market-to-Book**

Table 1 shows that all five studies that use the market-to-book ratio find a strong and positive relationship between corporate social responsibility and market-to-book (the details of the studies can be found in Appendix B. This is precisely what Proposition 1 predicts, namely that market-to-book is relatively lower for irresponsible firms. Heal (2005: 402) also derives this conclusion: *"One robust result seems to be that superior environmental performance is correlated with high values for Tobin's Q."*.

**Return on Assets**

Table 1 shows that 36 studies use return on assets or a comparable accounting profit measure. First note that not one study finds a negative relationship between social and financial performance. Furthermore, 17 out of the 18 studies that are classified as presenting either strong or moderate evidence find a positive relationship, which is in line with Proposition 2. Overall, 27 out of 36 studies find a positive relationship. The studies that are classified as presenting weak evidence find no relationship. Details about these 36 studies are in Appendix C.

There is additional evidence that supports Proposition 2. Spencer and Taylor (1987) note that the relationship is valid at the industry level. This indicates that differences in ROA are not solely due to differences in damaging technologies. This evidence is supported by Griffin and Mahon (1997), who look at a single industry and find a positive relationship between ROA and corporate social responsibility, and

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also by Dooley and Lerner (1994), who use a firm's ROA relative to the industry average ROA as an indicator and find the predicted positive relationship.

**Stock market returns**

Table 1 also shows that 27 studies investigate stock market returns as a financial performance measure. In Appendix D, we grouped these studies into comparative studies and event studies. For the comparative studies (panel A in Appendix D) the findings differ considerably and so at first sight these studies indicate mixed effects (or no effect) on the relation between differences in social responsibility and stock market returns, which is in line with Proposition 3. Event studies (panel B in Appendix D) present a less conflicting picture. However, the problem with event studies is that it may be unclear whether or not the "event" is really providing new value-relevant information to investors (MacKinlay, 1997). If this is not the case, the event will not significantly affect the stock market return. In line with Proposition 3, most event studies find the expected negative relationship. However, three studies find a positive relationship, two of which are on the withdrawal of international firms from South-Africa in the 1980s.

In all, Table 1 clearly shows that the alleged paradoxical empirical findings are fully in line with the propositions of our theoretical framework of responsible investing. Therefore, these findings can be interpreted as strong evidence for a positive association between social responsibility and financial performance. Our investigation of the sixty studies provides results that are very well aligned with the predictions we made on the basis of our equilibrium framework. It appears that socially responsible firms have a higher market-to-book ratio than irresponsible firms. Furthermore, socially responsible firms have a higher return on assets than irresponsible firms. However, the stock market return of socially responsible firms can be either higher or lower than that of irresponsible firms.

**6.     Conclusion**

A large number of studies investigate the connection between corporate social and financial performance and try to find out if firms do good by doing well. The general conclusion is that there is a positive association between the two. However, most empirical studies after socially responsible investing find no statistically significant impact of corporate social responsibility on stock market returns and hence cannot corroborate the findings on the basis of accounting data. There is widespread disagreement about how to interpret these seemingly conflicting observations.

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We offer a coherent theoretical framework of responsible investing from which we can logically derive propositions about the relationship between social and financial performance. Key assumptions are that socially responsible investors value taking account of social damage associated with production. As a result, they accept a lower financial return on responsible stock compared to irresponsible stock. Furthermore, regarding the supply side of the economy, we assume that socially responsible entrepreneurs try to internalize the social damage of their production. This results in less input of capital and a higher return on assets. The implication from the demand side assumption is that responsible firms are characterized by higher market-to-book ratios than irresponsible firms. The implication from the supply side assumption is that more responsible firms are characterized by a higher return on assets. In the equilibrium situation, we arrive at an ambiguous result for the impact of social responsibility on stock market returns: It is not clear beforehand whether stock market returns are higher for responsible than for irresponsible firms. This ultimately depends upon the relative strength of how investors and firms respectively value the internalization of external effects. As a consequence, our framework is able to solve the paradox in the literature on social and financial performance.

We conclude that when firms announce social responsibility, this may lead to lower stock market returns, but not necessarily to lower firm value. From the investor perspective, social responsibility is to be associated with a higher market value in relation to the book value of the assets of the firm. This is because these assets are priced above conventional or irresponsible firms for whose stock there is less demand. From the corporate perspective, we show that more responsible firms have a higher return on their assets. Irresponsible firms refrain from incorporating the effect of social damage (i.e. effects that may results from environmental, social and governance issues) and use a cost of capital that is too low from a social viewpoint. Responsible entrepreneurs do account for social damage and end up with a higher cost of capital. Then, their investment of capital will be lower but given decreasing marginal returns, the reduction in revenues is smaller than the reduction in capital. Combining the demand and supply side leads to an undetermined overall result regarding the profits per share of responsible vis-à-vis irresponsible firms as both the market-to-book ratio and the return of assets of responsible firms are higher than those of irresponsible firms. The stock market return of responsible firms depends on the relative strength of the demand and supply side effects. This ambiguity is driven by differences in damage per output, which does not play much of a role when comparing ROA or market-to-book. Three issues are at stake: the relative amount of responsible investors, the coefficient of absolute risk aversion, and the output elasticity of capital. We derive that ceteris paribus a higher share of responsible investors among the investors increases stock market returns. This also is the case when the risk aversion of investors increases. Furthermore, stock

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market returns are higher when the output elasticity of capital becomes higher at it implies that the marginal product of capital increases.

A limitation of our approach is that we do not explicitly model the choice of the firm with respect to being socially responsible or irresponsible. However, we derive that in equilibrium social responsibility does arise endogenously if firms choose to maximize their value. This works through the changes in the cost of capital due to firms' preferences regarding social damage. Another limitations is that in achieving lower social damage in our setting, the firm simply changes its capital intensity, whereas in practice additional costs may have to be incurred. We could explicitly include another production factor, such as clean capital or clean labor. In this case, the total expenses of clean firms would also be higher given the same output, simply because the firms are choosing again allocations that are "inefficient" from a pure profits perspective. We speculate that the qualitative results would not change substantially in this case, though of course until such an alternative model is investigated one cannot say for sure. To us, this would be a natural extension of our model in future research.

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**Table 1.**

**Overview of empirical findings**

| performance measure | total number of studies | positive relation | | negative relation | | mixed relation | | no relation | |
|---|---|---|---|---|---|---|---|---|---|
| | | number | % | number | % | number | % | number | % |
| market-to-book | 5 | 5 | (100%) | 0 | (0%) | 0 | (0%) | 0 | (0%) |
| accounting profit | 36 | 27 | (75%) | 0 | (0%) | 0 | (0%) | 9 | (25%) |
| stock market-returns | 27 | 7 | (26%) | 9 | (33%) | 3 | (11%) | 8 | (30%) |
| Total | 68 | 39 | (57%) | 9 | (13%) | 3 | (5%) | 17 | (25%) |

Overview of the results of the studies on the relation between corporate social responsibility

and corporate financial performance, classified by financial performance measure.

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**Appendix A**

**MATHEMATICAL APPENDIX**

**Derivation of the pricing equation**

Set up the Lagrangean:

$$E[U^j(rb_j + \sum_{i=1}^{n}\omega_{ij}R_i, \sum_{i=1}^{n}\omega_{ij}D_i)] + \kappa(W_j - b_j - \sum_{i=1}^{n}\omega_{ij}p_i)$$

where $\kappa$ is the Lagrange multiplier. Taking the derivative yields the first-order condition for a maximum:

$$E[U_c^j R_i] + E[U_d^j]D_i - p_i\kappa = 0 \tag{A.1}$$

Taking the derivative for $b_j$ yields an expression for the Lagrange multiplier $\kappa$:

$$\kappa = E[U_c^j r] = E[U_c^j]r \tag{A.2}$$

since bonds pay with certainty.

Consequently, we get the pricing equation:

$$p_i = \frac{1}{E[U_c^j]r}\left(E[U_c^j R_i] + E[U_d^j]D_i\right) \tag{A.3}$$

Use $E[xy] = E[x]E[y] + cov[x, y]$ to get:

$$p_i = \frac{1}{E[U_c^j]r}\left(E[U_c^j]E[R_i] + cov[U_c^j, R_i] + E[U_d^j]D_i\right) \tag{A.4}$$

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$$= \frac{E[R_i]}{r} + \frac{E[U_{cc}^j]}{E[U_c^j]} \frac{cov[c_j, R_i]}{r} + \frac{E[U_d^j]}{E[U_c^j]} \frac{D_i}{r} \tag{A.5}$$

where the last result is obtained by noting that if two random variables $x$ and $z$ are jointly normally distributed, then $cov[g(x), z] = E[g'(x)]cov[x, z]$ due to a Lemma by Cochrane (2001, p. 164). Consequently, we obtain the pricing equation (8).

**Lemma 1** *With production externalities, maximizing the market value of the firm is different from maximizing profits. More specifically, if a firm maximizes its market value, it chooses $k_i$ such that in equilibrium:*

$$f_i'(k_i) = \frac{r}{1 - \delta \sigma_i^2 f_i(k_i) - \overline{\overline{\lambda}} \eta_i}. \tag{A.6}$$

In contrast, if a firm maximizes pure profits subject to the socially preferred fixed risk level, then it chooses $k_i$ such that in equilibrium:

$$f_i'(k_i) = \frac{r}{1 - \delta \sigma_i^2 f_i(k_i)}. \tag{A.7}$$

**Proof**:

*Socially responsible behavior*

We assumed a decomposable production function, so the effect of the state of nature is multiplicative. As a price taker, the firm recognizes that its value will change in proportion to output. In general, when the input level and market value equal $\hat{k}_i$ and $\hat{M}_i$, the firm calculates the market value given an alternative input level $k_i$ as:

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$$M_i = \frac{f_i(k_i)}{f_i(\hat{k}_i)}(\hat{M}_i + \hat{k}_i) - k_i. \tag{A.8}$$

The firm chooses its input level such that the derivative of the market value with respect to $k_i$ equals zero, which at the equilibrium input level where $\hat{k}_i = k_i$ yields:

$$\frac{f_i'(k_i)}{f_i(k_i)}(M_i + k_i) = 1. \tag{A.9}$$

Substituting the expression for the market value of the firm Eq. (15) in Eq. (A.9) we see that in equilibrium:

$$\frac{f_i'(k_i)}{f_i(k_i)} \frac{1}{r}[f_i(k_i) - \delta\sigma_i^2 f_i^2(k_i) - \overline{\lambda}\,\eta_i f_i(k_i)] = 1 \tag{A.10}$$

which simplifies to

$$f_i'(k_i)[1 - \delta\sigma_i^2 f_i(k_i) - \overline{\lambda}\,\eta_i] = r. \tag{A.11}$$

We see that the socially responsible firm takes into account the social damage it creates.

*Socially irresponsible behavior*

We consider a firm to be irresponsible if it does not take social damage related to production into account. So we define an irresponsible firm as a firm that maximizes pure profits (pay-offs to the shareholder). A pure profit maximizing firm faces the following problem:

$$\max_{k_i} E[\mu_i] \; subject \; to \; cov(\pi_i, R^m) = \overline{\rho} \tag{A.12}$$

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where $R^m$ is the market return and $\overline{\rho}$ a fixed risk level. The restriction is on the covariance of profits with respect to market return, since the firm acknowledges that only systematic risk is priced. Rewrite, substitute, and set up the Lagrangean:

$$f_i(k_i) - rk_i - \xi(f(k_i)cov(g_i(\theta), R^m) - \overline{\rho}) \tag{A.13}$$

Here, $\xi$ is the Lagrange multiplier. Maximizing with respect to $k_i$ yields the following first-order condition:

$$f'(k_i)(1 - \xi cov(g_i(\theta), R^m)) = r \tag{A.14}$$

Covariances between the $g_i(\theta)$'s are assumed equal to zero, so that in equilibrium we have $cov(g_i(\theta), R^m)) = \sigma_i^2 f_i(k_i)$. To find the equilibrium solution we directly substitute consumers' risk attitude $\delta$ for the shadow cost of risk $\xi$:

$$f_{i'}(k_i)[1 - \delta\sigma_i^2 f(k_i)] = r \tag{A.15}$$

Rewrite and we obtain Eq. (A.7).

*Q.E.D.*

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**Appendix B**

**Studies using market-to-book ratio**

| Authors | Relationship | Strength of result |
|---|---|---|
| Brown and Perry (1994) | Positive | strong |
| Dowell, Hart and Yeung (2000) | Positive | strong |
| Fombrun and Shanley (1990) | Positive | strong |
| King and Lenox (2001) | Positive | strong |
| Hamilton, Jo and Statman (1993) | Positive | strong |

Studies using market-to-book (Tobin's Q) find a positive relation between corporate social responsibility and corporate financial performance.

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**Appendix C**

**Studies using accounting profit ratios**

| Authors | Relationship | Strength of Result |
|---|---|---|
| Berman, Wicks, Kotha and Jones (1999) | Positive | Strong |
| Brown and Perry (1994) | Positive | Strong |
| Dooley and Lerner (1994) | Positive | Strong |
| Judge Jr. and Douglas (1998) | Positive | Strong |
| Preston and O'Bannon (1997) | Positive | Strong |
| Simerly (1994) | Positive | Strong |
| Waddock and Graves (1997) | Positive | Strong |
| Graves and Waddock (1994) | Positive | Moderate |
| Graves and Waddock (2000) | Positive | Moderate |
| Hart and Ahuja (1996) | Positive | Moderate |
| Heinze (1976) | Positive | Moderate |
| Herremans, Akathaporn and McInnes (1993) | Positive | Moderate |
| McGuire, Sundgren and Schneeweis (1988) | Positive | Moderate |
| Russo and Fouts (1997) | Positive | Moderate |
| Spencer and Taylor (1987) | Positive | Moderate |
| Turban and Greening (1997) | Positive | Moderate |
| Abbott and Monsen (1979) | Positive | Weak |
| Anderson and Frankle (1979) | Positive | Weak |
| Bowman (1978) | Positive | Weak |
| Bragdon Jr. and Marlin (1972) | Positive | Weak |
| Griffin and Mahon (1997) | Positive | Weak |
| Marcus and Goodman (1986) | Positive | Weak |

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Parket and Eilbirt (1975)                                     Positive            Weak

**Appendix C – continued –**


Pava and Krausz (1995)                                        Positive            Weak

Wokutch and Spencer (1987)                                    Positive            Weak

Preston (1978)                                                Positive            N/A

Greening (1995)                                               Positive            N/A

Johnson and Greening (1999)                        No Effect/Positive        Moderate

Cochran and Wood (1984)                              No Effect/Mixed          Weak

Patten (1991)                                                 No Effect          Strong

Aupperle, Carroll and Hatfield (1985)                         No Effect          Weak

Chen and Metcalf (1980)                                       No Effect          Weak

Freedman and Jaggi (1982)                                     No Effect          Weak

Ingram and Frazier (1983)                                     No Effect          Weak

O'Neill, Saunders and McCarthy (1989)                         No Effect          Weak

Rockness, Schlachter and Rockness (1986)                      No Effect          Weak

Studies using accounting profit ratios (i.e. return on assets, return on equity, return on investments, return on sales) find a positive relationship between corporate social responsibility and corporate financial performance.

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**Appendix D**

**Studies using stock market returns**

*A) Average return studies*

| Authors | Relationship | Strength of result |
| --- | --- | --- |
| Freedman and Stagliano (1991) | Positive | Strong/Moderate |
| McGuire et al. (1988) | Positive | Moderate |
| Ingram (1978) | Positive | Moderate |
| Brown (1998) | Positive | Moderate |
| Vance (1975) | Negative | Strong |
| Newgren, Rasher, LaRoe and Szabo (1985) | Negative | Moderate |
| Guerard Jr. (1997b) | Mixed | Moderate |
| Davidson III and Worrell (1992) | Mixed | Weak |
| Brown (1997) | No effect/Positive | Weak |
| Hamilton, Jo and Statman (1993) | No effect | Moderate |
| Alexander and Buchholz (1978) | No effect | Weak |
| Guerard Jr. (1997a) | No effect | N/A |
| Chen and Metcalf (1980) | No effect | Weak |

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**Appendix D – continued –**

*B) Event Studies*

| Authors | Relationship | Strength of result |
|---|---|---|
| Blacconiere and Northcut (1997) | Negative | Moderate |
| Blacconiere and Patten (19940 | Negative | Moderate |
| Klassen and McLaughlin (1996) | Negative | Moderate |
| Shane and Spicer (1983) | Negative | Moderate |
| Stevens (1984) | Negative | Moderate |
| Posnikoff (1997) | Negative** | Moderate** |
| Belkaoui (1976) | Negative | Weak |
| Meznar, Nigh and Kwok (1994) | Positive** | Strong** |
| Wright and Ferris (1997) | Positive** | Moderate** |
| Boyle, Higgins and Rhee (1997) | Positive | Moderate |
| Diltz (1995) | Mixed | Weak |
| Freedman and Jaggi (1986) | No effect | Moderate |
| Patten (1990) | No effect | Weak |
| Pava and Krausz (1995) | No effect | Weak |

Studies using stock market returns find an ambiguous relation between corporate social responsibility and corporate financial performance.

*Other than the usage of the researchers, the results are given the interpretation "negative",

if news on increased social responsibility increases the stock price significantly in the event

window. In the context of our model, a correction of the stock price results in lower stock

market returns for these firms, given that operating profits are not affected by the news.

This way, our interpretation makes it possible to compare event studies with studies that

use average stock market returns.

**These are studies on the effect of announcing withdrawal from South-Africa, with conflicting

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results.

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# Towards a Theory of Responsible Investing:

# On the Economic Foundations of Corporate Social Responsibility

# Highlights

- We develop a model that links socially responsible investing and corporate social responsibility.

- Responsible firms have higher market-to-book ratios and higher return on assets.

- The overall effect on stock market returns depends on the relative strength of demand and supply side effects.

- Our framework reconciles the contradictory findings from the empirical literature.

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# Towards a Theory of Responsible Investing:

# On the Economic Foundations of Corporate Social Responsibility

Lammertjan Dam[a] & Bert Scholtens[a,b]

ABSTRACT

Studies that link corporate social and financial performance usually find a positive association between the two. However, the literature does not establish a significant impact of socially responsible investing on stock market returns. We develop a coherent economic framework of responsible investing to address this paradox. The framework offers theoretical underpinnings for all research on responsible investment as it provides the theoretical underpinnings for the actual behavior of market participants. We associate corporate social performance with key financial accounting ratios like the market-to-book ratio (market value of the firm in relation to accounting value), return on assets, and stock market return. We conclude that there is a strong theoretical foundation for a positive relationship between corporate social responsibility and financial performance, though the relation is conditional on which financial performance measure is considered. We illustrate that the empirical literature about responsible investing is well in line with our model's propositions.

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