# Why don't all firms do 'good' equally?

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**Abstract**

This paper shows that difference in equity holding structure leads to heterogeneous firm preference for investing in social capital. We present a model where managerial preference and customer preference jointly influence the level of social investments. Managerial preference is high in firms with concentrated stakeholding. We show that if managerial preference is high, social investments of firms are independent of customer preference. We test the theoretical predications using data from Indian firms, and report empirical evidence in support of our theory. Indian firms with concentrated shareholding make higher social investments, whilst firms with dispersed shareholding increase social investments if they export to the United States and the European Union. These results highlight a possible mechanism of strategic decision making in firms with different levels of control.

**Key Words:** Controlling Stakeholding, Public Goods, Corporate Social Responsibility

**JEL Codes**: D13, G28, J12, G32

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## 1 Introduction

"*The social responsibility of business is to increase its profits*" *(Friedman, 1970)*

There is an increasing focus on the social behaviour of private firms beyond their profit maximizing role. Investments in corporate social responsibility (henceforth CSR) has grown significantly over the period 2010-2013: average CSR spend of Fortune 100 firms in that time period was US$ 58.78 million.

This can be partially attributed to increasing institutional pressure on firms to be more socially and environmentally responsible. CSR is increasingly becoming an investment criteria. In 2013, socially responsible investments were estimated to total US$ 6.5 trillion in the US and 237.9 billion euros in the EU. Social and environmental concerns also influence consumer preference, particularly in the developed economies.

Empirical evidence on how CSR investments affect firm profits has been inconclusive. The traditional view in economics is that private firms aim to maximize wealth whereas governments and non-profit institutions are concerned with the creation of social capital and public goods. The case for private provision of public goods is premised on the inability of the government to produce the socially optimal level of public goods. Besley and Ghatak (2007) show that CSR can be the Pareto optimal and produce second-best outcome to government provision. If the government provision of public goods is imperfect, firms can gain in profits and goodwill by investing in CSR. These investments can be in the form of donations to community infrastructures and sponsoring social events, or form a part of the production process (renewable energy sources, ethical sourcing etc.).

The financial case for firms to invest in social capital is not established. CSR entails sacrificing short-term profit to create social goods, and is likely to leave firms with a competitive disadvantage (Baumol, 1991). On the other hand, firms can gain from CSR that is manifest in better reputation, reduced threat of regulation and institutional intervention, and ability yo attract high-skilled workers (Turban and Greening, 1997; Baron, 2001; Maxwell, Lyon and Hackett, 2000). In that sense CSR is implicitly a profit-maximizing tool. Firms may invest in social capital in reaction to demands from consumers to engage in delegated philanthropy on their behalf. If the consumers are endowed with social or environmental preferences, CSR investments are no different from profit maximizing strategies like advertisement. In such cases, the firms are likely to pass on the cost of CSR to the consumers. Becker (The Becker-Posner Blog February 10, 2008 "On Corporate Altruism") suggests that firms combining the usual profit motive with some social preferences (e.g. CSR) can only succeed in a competitive environment if there exist consumers that also have social preferences. Besley and Ghatak (2007) show that two profit-equivalent sectors emerge with some firms selling to consumers who care about CSR and charge a price premium, and others selling to neutral consumers at a lower price. A crucial question is why identical firms (as in Besley and Ghatak, 2007 model) would choose different levels of investment in CSR? Some papers suggest that CSR can be used as an advertising tool (e.g. Ariely, Bracha, and Meier, 2009; Arora and Gangopadhyay, 1995; Conrad, 2005; Bagnoli and Watts, 2003). Generally, these papers assume two profit-maximising

firms with similar objective functions choosing their level of CSR as a way to differentiate their product.

All of economic literature assumes homogeneous firm preferences in public goods provision, even though they account for heterogeneity in consumer preference. But public goods provision by firms can differ with the willingness of the manager(s) to invest in CSR (Bénabou and Tirole 2010; Adams, Almeida, and Ferreira, 2009; Fahlenbrach, 2009). CSR can form part of an optimal firm strategy if managers themselves have social or environmental preferences. All else being equal, some managers are more likely to invest in CSR than others, driven by their planning horizon, or their private benefits from doing so. Either way, there is little theoretical and empirical justification that firm preferences for investing in public goods are homogeneous.

This paper is about the heterogeneity in firm preference in the private provision of public goods. We present a model where incentives of private firms to invest in CSR is simultaneously influenced by both firms' and consumers' preferences. Specifically, we examine the impact on CSR of the ownership structure of firms. The difference in investment strategies of family-owned firms, and firms with founder-CEOs is well documented (Adams, et al., 2009; Fahlenbrach, 2009). In our model, firms with concentrated shareholding invest more in CSR compared to widely-held firms with managers having short-term profit targets, irrespective of consumer preferences. The theoretical underpinning is that firms investing in CSR can compete as long as shareholders have a longer planning horizon to account for the time-lag in the returns from CSR; which is the case if the shareholding is concentrated. The controlling stakeholding and the related temporal dimensions of profits ease the participation constraint of firms with social preferences. This model extends the theoretical literature on CSR by incorporating heterogeneity in firm preferences. This is consistent with Bénabou and Tirole's (2010) managerial preference hypothesis. In equilibrium, firms with concentrated shareholding invest more in CSR compared to firms with dispersed shareholding, irrespective of consumer preference. Firms with dispersed shareholding will invest in CSR only when the consumers care about CSR.

Having proposed these, we empirically verify the predictions of our model using a sample of Indian listed firms for the period 2006-2013. 36% of the 500 large Indian firms are affiliates of family-owned business groups with concentrated shareholding, and 53% are firms with dispersed shareholding. This allows us to compare the investment strategies of firms with different ownership structures within the same institutional and legal frameworks. The empirical findings are consistent with the theoretical implications: firms with concentrated shareholding invest more in social capital on average than firms with dispersed shareholding, notwithstanding consumer preferences. It is important to note that social

and environmental preferences of consumers are likely to be correlated with demographic characteristics, like education and technological development (Fleishman Hilard and the National Consumer League, 2007). This, combined with higher purchasing power of consumers in the developed economies, makes it more likely for them to have higher preferences for CSR compared to consumers in the developing economies. In an emerging economy (like India) the government provision of public goods can often be sub-optimal and hence private provision of public goods may be required (Dasgupta, et al. 2002). At the same time, emerging market firms can export to developed countries where the consumer preference for CSR is, on average, higher compared to the domestic market. Therefore, we investigate how exports impact upon CSR investments, controlling for the ownership structure.

CSR investments are positively associated with exports for both types of firms, but the association is only statistically significant for widely-held firms. Firms with concentrated shareholding invest in social capital even when they are not heavily reliant on export earnings. This is probably driven by longer planning horizons for such firms where the concentrated shareholding partially trades off short term profit for longer term returns (we call it *legacy effect*). On the other hand, CSR investments of widely-held firms are driven by the preference of consumers in the export markets to invest in responsible business practices (we call it *supply-chain effect*). These results are robust to firm and industry level heterogeneity, and endogeneity in firm characteristics and CSR investments.

The paper unfolds as follows: Section 2 reviews the emerging literature on CSR, and performance implications of such investments. In Section 2, we lay out the model, and the main result which shows that firms with concentrated shareholding will invest more in CSR, relative to firms with dispersed shareholding. Section 3 presents the institutional background and the data used for the empirical analysis. Section 4 is a discussion on our methodology and empirical results, and section 5 concludes.

# 2 The Model

We present a duopoly model of differentiated products in which firms have the possibility to invest in CSR. In our model, firms are completely identical (i.e. same marginal costs) expect that one firm values CSR investments and the other is purely profit-maximising. Consumers are ready to pay a higher price to the firm if it invests in CSR. We model the effect of ownership structure on CSR investments.

## 2.1 The Environment

Two firms produces a private good and are located at each end of a Hotelling line, with locations (or goods' characteristics) $x_0 = 0$ and $x_1 = 1$. The level of the private good is denoted by $q_i$, $i = 0, 1$. They face the same constant marginal cost $c$ and charge a price $p_i$.[1] Besides the production of the private good, firms also invest in CSR; the level of which is $\theta_i$. Also assume that $\theta_i \in [0, \bar{\theta}]$.

CSR is a broad term that encompasses a wide range of activities. In general, it is concerned with private provision of public goods, or reduction of public bads. Some CSR investments such as social and community expenses, and environmental and pollution control expenditures may involve a large fixed cost that does not depend directly on the quantity sold by the firm, e.g. providing a safe workplace, making a large donation to a social cause, *et cetera*.[2] In that context, $\theta_i$ can be interpreted as the share of profits allocated to CSR investments and the objective function of firm $i$ can be written as:

$$U_i = (p_i - c)q_i - \theta_i + \alpha_i\theta_i \tag{1}$$

Where $\pi_i = (p_i - c)q_i$ is the firm's profit and $\alpha_i$ can be interpreted as a measure of firms' preferences for CSR. We assume that $\alpha_0 = 0$ (firm 0 is pure profit-maximising firm) and $\alpha_1 > 1$ (firm 1 derives utility from CSR investments and the marginal utility, $\alpha_1$, is higher than the marginal cost of CSR). Hereafter, firm 0 is the neutral firm and firm 1 is the socially responsible firm.

There is a continuum of consumers of mass 1, uniformly distributed on the interval $[0, 1]$. Consumers buy up to one unit of output from one of the firms. A consumer located at $x$ pays the price $p_i$, charged by firm $i$ and a transportation cost $t|x - x_i|$, where $x_i$ is the location of firm $i = 0, 1$. This transportation cost can be interpreted in a broader sense as the disutility of a consumer, located at $x \in [0, 1]$, to purchase her preferred good with characteristics $x_i$. In other words, the transportation cost parameter $t$ measures the strength of personal preferences.

By buying one unit of good from firm $i$, a consumer of type $x \in [0, 1]$ derives utility:

$$V_i(x) = R - t|x - x_i| - p_i + \beta\theta_i$$

Where $R$ is the reservation value, identical for all consumers, and $\beta$ (the same for all consumers) is a

[1] We assume that firms sell differentiated products because when consumers are not willing to pay for CSR, firms will be able to invest in CSR only if they are earning a positive profit.

[2] In Appendix 1, we also consider the case in which CSR activities involve variable costs and show the implications in terms of equilibrium prices and quantities.

parameter expressing the consumers' level of concern about CSR, which is positive if the consumers care about CSR and zero otherwise.

Demand functions facing each firm reflect the location of the marginal consumer. The marginal consumer $\tilde{x} \in (0,1)$ is indifferent between the products of the two firms, given their prices $(p_0, p_1)$ and their choices of CSR $(\theta_0, \theta_1)$: $\tilde{x}$ must satisfy $V_0(\tilde{x}) = V_1(\tilde{x})$. This implies that $\tilde{x}$ is defined by:

$$\tilde{x} = \frac{p_1 - p_0 + t + \beta(\theta_0 - \theta_1)}{2t}$$

Consumers located at $x < \tilde{x}$ (resp. $> \tilde{x}$) buy the product of firm 0 (resp. firm 1) and firms' demand functions are given by:

$$D_0(p_0, p_1) = q_0 = \begin{cases} 0 & \text{if} \quad p_0 > p_1 + t + \beta(\theta_0 - \theta_1) \\ \frac{p_1 - p_0 + t + \beta(\theta_0 - \theta_1)}{2t} & \text{if} \quad p_1 - t + \beta(\theta_0 - \theta_1) \leq p_0 \leq p_1 + t + \beta(\theta_0 - \theta_1) \\ 1 & \text{if} \quad p_0 < p_1 - t + \beta(\theta_0 - \theta_1) \end{cases} \tag{2}$$

And

$$D_1(p_0, p_1) = q_1 = 1 - D_0(p_0, p_1) \tag{3}$$

Our model consists of two stages: In the first stage, the firms simultaneously choose and commit to their respective CSR policy $(\theta_i)$. In the second stage they compete in prices. At this stage, CSR characteristics are fixed and firms maximise their payoff (1) given these characteristics. We solve this model backwards.

Before turning to the general case where $\beta > 0$ (i.e. consumers are willing to pay for CSR), we first analyse the special case where $\beta = 0$ to examine CSR investments where consumers do not care, and are unwilling to pay for it.

## 2.2 Consumers are not willing to pay for CSR ($\beta = 0$)

In stage 2, given $(\theta_0, \theta_1)$, each firm chooses its price $p_i$ in order to maximise its objective function (1). Note that as consumers do not care about CSR ($\beta = 0$ in equations (2) and (3)) and the objective function (1) is separable in $\theta_i$ and $p_i$, this amounts to choosing the price $p_i$ that maximises the firm's profit $\pi_i = (p_i - c)q_i$.

At the equilibrium in stage 2, $p_i = t + c$ with $q_i = 1/2$. Maximizing profits are identical for both firms

and given by $t/2$. Given this maximum level of profit, firms choose their level of CSR in stage 1.

The optimal level of CSR will be $\theta_0 = 0$ for the neutral firm and $\theta_1 = \min\{\overline{\theta}, t/2\}$ for the socially responsible firm.

## 2.3 Consumers are willing to pay for CSR ($\beta > 0$)

Now assume that consumers are willing to pay for CSR where the intensity of their valuations of CSR is given by $\beta > 0$. In **stage 2**, firm's objective functions are given by (1). Let's first assume that both firms have positive demands (i.e. interior solution). The objective functions can be rewritten as:

$$\begin{aligned} U_0 &= \underbrace{(p_0 - c)\frac{p_1 - p_0 + t + \beta(\theta_0 - \theta_1)}{2t}}_{\pi_0} - \theta_0 \\ U_1 &= \underbrace{(p_1 - c)\frac{p_0 - p_1 + t + \beta(\theta_1 - \theta_0)}{2t}}_{\pi_1} - \theta_1 + \alpha_1\theta_1 \end{aligned}$$

Where $\pi_i$ denotes profits for $i = 0, 1$. First order conditions for $p_0$ and $p_1$ imply that:

$$\begin{aligned} p_0 &= c + t + \frac{\beta}{3}(\theta_0 - \theta_1) \\ p_1 &= c + t + \frac{\beta}{3}(\theta_1 - \theta_0) \end{aligned}$$

This will be the equilibrium in stage 2 if the conditions for an interior solution are satisfied: $0 \leq q_i \leq 1$ for both firms, or equivalently

$$-\frac{3t}{\beta} \leq (\theta_1 - \theta_0) \leq \frac{3t}{\beta} \tag{4}$$

The difference in terms of CSR is between the limits defined above. Consumers care about CSR and, if one firm chooses to spend a lot on social causes, all consumers will prefer to buy from this firm even if they are located far away from it. We have two potential corner solutions.

First, if $(\theta_1 - \theta_0) > \frac{3t}{\beta}$, the level of CSR chosen by firm 1 is higher than the level chosen by firm 0. As a consequence, all consumers buy from firm 1 (i.e. $q_1 = 1$ and $q_0 = 0$). Prices are given by $p_0 = c$ and $p_1 = c - t + \beta(\theta_1 - \theta_0)$. The case in which $(\theta_1 - \theta_0) < -\frac{3t}{\beta}$ is completely symmetric.

Turning to **stage 1** and substituting equilibrium prices in the objective functions, we get:

$$U_0(\theta_0,\theta_1)=\begin{cases}\beta(\theta_0-\theta_1)-t-\theta_0 & \text{if} \quad \theta_1-\theta_0<-\frac{3t}{\beta}\\ \frac{\left(t+\frac{\beta}{3}(\theta_0-\theta_1)\right)^2}{2t}-\theta_0 & \text{if} \quad -\frac{3t}{\beta}\leq(\theta_1-\theta_0)\leq\frac{3t}{\beta}\\ -\theta_0 & \text{if} \quad \theta_1-\theta_0>\frac{3t}{\beta}\end{cases} \tag{5}$$

And

$$U_1(\theta_0,\theta_1)=\begin{cases}-\theta_1+\alpha_1\theta_1 & \text{if} \quad \theta_1-\theta_0<-\frac{3t}{\beta}\\ \frac{\left(t+\frac{\beta}{3}(\theta_1-\theta_0)\right)^2}{2t}+(\alpha_1-1)\theta_1 & \text{if} \quad -\frac{3t}{\beta}\leq(\theta_1-\theta_0)\leq\frac{3t}{\beta}\\ \beta(\theta_1-\theta_0)-t+(\alpha_1-1)\theta_1 & \text{if} \quad \theta_1-\theta_0>\frac{3t}{\beta}\end{cases} \tag{6}$$

Firms will maximise these objective functions subject to the constraint that their CSR expenditures ($\theta_i$) must be covered by their profits ($\pi_i$), where profits are given by:

$$\pi_i(\theta_i,\theta_j)=\begin{cases}0 & \text{if} \quad \theta_i-\theta_j<-\frac{3t}{\beta}\\ \frac{\left(t+\frac{\beta}{3}(\theta_i-\theta_j)\right)^2}{2t} & \text{if} \quad -\frac{3t}{\beta}\leq(\theta_i-\theta_j)\leq\frac{3t}{\beta}\\ \beta(\theta_i-\theta_j)-t & \text{if} \quad \theta_i-\theta_j>\frac{3t}{\beta}\end{cases}$$

$U_0(\theta_0,\theta_1)$ and $U_1(\theta_0,\theta_1)$ are both convex functions. Moreover, $U_1(\theta_0,\theta_1)$ is increasing in $\theta_1$ for all levels of CSR chosen by firm 0. This is due to the fact that firm 1 enjoys some utility from CSR investments (i.e. $\alpha_1>1$) Therefore, the best response of firm 1 is to choose the maximum level of CSR that is affordable. By contrast, depending on the level of investment chosen by firm 1, $U_0(\theta_0,\theta_1)$ may be decreasing in $\theta_0$ for some levels of CSR. As a consequence, the optimal investment decision of firm 0 is either (i) not to invest in CSR, $\theta_0=0$ or (ii) to choose the maximum level of CSR that is affordable

To solve for the equilibrium in stage 1, we will first assume that $\bar{\theta}\leq\frac{3t}{\beta}$. With this assumption, we are sure to have an interior solution in stage 2, even if one country does not invest in CSR. We will then analyse potential corner solutions if $\bar{\theta}>\frac{3t}{\beta}$. Our main results are summarized in the next proposition:

**Proposition** The equilibrium of the two-stage game, in which firms first choose their level of investment in CSR and then their pricing strategy is as follows:

1. If $\beta\geq 3$, $\bar{\theta}\leq\min\{\frac{t}{2},\frac{3t}{\beta}\}$ and $2t\left(\frac{\beta}{3}-1\right)>\frac{\beta^2}{9}\bar{\theta}$ or if $\beta>6$ and $\frac{3t}{\beta}<\bar{\theta}<\frac{t}{2}$, the optimal level of CSR in stage 1 is $\theta_i=\bar{\theta}$

with equilibrium prices and quantities in stage 2 given by:

$$p_i = t + c, q_i = 1/2$$

2. In all other cases, the optimal level of CSR in stage 1 is $\theta_0 = 0$ and $\theta_1$ given by (7)

with equilibrium prices and quantities in stage 2 given by:

$$p_0 = \max\left\{c; c + t - \frac{\beta}{3}\theta_1\right\}, q_0 = \max\left\{0; \frac{1}{2t}\left(t - \frac{\beta}{3}\theta_1\right)\right\}$$

$$p_1 = \min\left\{c - t + \beta\theta_1; c + t + \frac{\beta}{3}\theta_1\right\}, q_1 = \min\left\{1; \frac{1}{2t}\left(t + \frac{\beta}{3}\theta_1\right)\right\}$$

**Proof.** Case 1:

$\bar{\theta} \leq \frac{3t}{\beta}$.

Because $U_1(\theta_0, \theta_1)$ is increasing in $\theta_1$ for all levels of CSR chosen by firm 0, the best response of firm 1 is to choose the maximum level of CSR that is affordable, i.e.

$$\theta_1 = \begin{cases} \bar{\theta} & \text{if} \quad \bar{\theta} \leq \frac{\left(t + \frac{\beta}{3}(\bar{\theta} - \theta_0)\right)^2}{2t} \\ \theta_1^{\max} & \text{if} \quad \bar{\theta} > \frac{\left(t + \frac{\beta}{3}(\bar{\theta} - \theta_0)\right)^2}{2t} \end{cases} \tag{7}$$

where $\theta_1^{\max} < \bar{\theta}$ is defined as: $\theta_1^{\max} = \frac{\left(t + \frac{\beta}{3}(\theta_1^{\max} - \theta_0)\right)^2}{2t}$.

By contrast, the optimal investment decision of firm 0 is either (i) not to invest in CSR, $\theta_0 = 0$ or (ii) to choose the maximum level of CSR that is affordable $\theta_0 = \bar{\theta}$ or $\theta_0^{\max}$, where $\theta_0^{\max}$ is defined in the same way as $\theta_1^{\max}$. The choice between these two strategies will obviously depend on the utility firm 0 can achieve under each strategy, the level of which will be determined by the parameters of the model, $\beta$, $t$ and $\bar{\theta}$.

If both firms choose the maximum level of CSR, they will invest the same amount because profit functions are symmetric. This implies that either both firms choose $\theta_i = \bar{\theta}$ or $\theta_i = t/2$ (i.e. their entire profit) and firm 0 gets a utility of:

$$U_0(\theta_0, \theta_1) = \begin{cases} t/2 - \bar{\theta} & \text{if} \quad \bar{\theta} \leq t/2 \\ 0 & \text{if} \quad \bar{\theta} > t/2 \end{cases} \tag{8}$$

On the other hand, if firm 0 does not invest in CSR while firm 1 invests as much as possible, firm 0's utility is given by:

$$U_0(0,\theta_1) = \frac{\left(t - \frac{\beta}{3}\theta_1\right)^2}{2t} \geq 0 \tag{9}$$

Where $\theta_1$ is either $\bar{\theta}$ or $\theta_1^{\max}$.

To derive the equilibrium in stage 1, we compare equations (8) and (9). First, if $\bar{\theta} > t/2$, firm 0 will always choose $\theta_0 = 0$. Second, for $\bar{\theta} \leq t/2$, firm 0 will invest in CSR if (8) $\geq$ (9):

$$t/2 - \bar{\theta} \geq t/2 - \frac{\beta}{3}\theta_1 + \frac{1}{2t}\frac{\beta^2}{9}\theta_1^2$$

Or equivalently,

$$\bar{\theta} \leq \frac{\beta}{3}\theta_1(1 - \frac{\beta}{6t}\theta_1)$$

Clearly, as $\theta_1 \leq \bar{\theta}$, firm 0 will never invest in CSR if $\beta < 3$. This is not the case if $\beta \geq 3$. Note first that $\theta_1 = \bar{\theta}$ when $\theta_0 = 0$ because $\pi_1(0,\bar{\theta}) = \frac{\left(t+\frac{\beta}{3}\bar{\theta}\right)^2}{2t} > \bar{\theta}$. We can then substitute $\theta_1$ by $\bar{\theta}$ in the previous condition and we get that firm 0 will invest in CSR when $\beta \geq 3$ and $\bar{\theta} \leq t/2$ if and only if:

$$2t\left(\frac{\beta}{3} - 1\right) > \frac{\beta^2}{9}\bar{\theta} \tag{10}$$

Case 2:

$\bar{\theta} > \frac{3t}{\beta}$.

Note that because $U_1(\theta_0,\theta_1)$ is increasing in $\theta_1$ when $-\frac{3t}{\beta} \leq (\theta_1 - \theta_0) \leq \frac{3t}{\beta}$, a corner solution in which the optimal levels of CSR would be such that $\theta_1 - \theta_0 < -\frac{3t}{\beta}$ can be ruled out. Indeed, if $\theta_1 - \theta_0 < -\frac{3t}{\beta}$, firm 1 has a profit of 0, which imposes that $\theta_1 = 0$ and $U_1(\theta_0, 0) = 0$. By choosing any level of CSR such that $\theta_1 - \theta_0 > -\frac{3t}{\beta}$ and the constraint on CSR expenditures is satisfied, firm 1 can always get a positive utility. This reasoning cannot be applied to the other corner solution $\theta_1 - \theta_0 > \frac{3t}{\beta}$ because, as we have shown previously, $U_0(\theta_0,\theta_1)$ is not necessarily increasing in $\theta_0$.

As in case 1, firm 1 will always choose the maximum level of CSR because $U_1(\theta_0,\theta_1)$ is increasing in $\theta_1$ for all values of $\theta_0$, while the decision of firm 0 will depend on the values of the parameters.

If both firms choose to invest in CSR, we have an interior solution and firm 0's utility is given by (8)). When firm 0 does not invest in CSR, either (i) firm 1 invests $\bar{\theta}$ and we have a corner solution in which firm 0 gets a utility of 0, or (ii) firm 1 invests less than $\bar{\theta}$ (due to the profit constraint) and $U_0 \geq 0$ (where $U_0$ is given by (8) if we have an interior solution or 0 if we have a corner solution.

Note that if $\beta > 6$, we have $\frac{3t}{\beta} < t/2$ and $\theta_1 = \bar{\theta}$ when $\theta_0 = 0$ (i.e. from (6) $\pi_1(0, \bar{\theta}) = \beta\bar{\theta} - t > \bar{\theta}$ ). Therefore the utility of firm 0 is either given by (8) if firm 0 chooses the maximum amount of CSR or $U_0(0, \bar{\theta}) = 0$ if firm 0 does not invest in CSR. The optimal decision of firm 0 is then $\theta_0 = \bar{\theta}$ if $\bar{\theta} \leq t/2$ and $\theta_0 = 0$ if $\bar{\theta} > t/2$.

Finally, if $\beta \leq 6$, we have that $\bar{\theta} > \frac{3t}{\beta} \geq t/2$ and $\theta_0 = 0$ because whatever $\theta_1$, $U_0 \geq 0$ (while by choosing $\theta_0 = \bar{\theta}$, $U_0 = 0$ as shown in (8)). ■

The first obvious prediction of the theoretical model is that the socially responsible firm will always invest a positive amount in CSR, irrespective of consumers' willingness to pay, and the neutral firm will invest in CSR *only if* the consumer demand for CSR is sufficiently high (i.e. $\beta$ is sufficiently large). Due to our linear setting, the level of investment chosen by the socially responsible firm does not depend on the intensity of firm's preferences over CSR (i.e. $\alpha$). These preferences only determine what is the firm that will always choose a positive investment in CSR at the equilibrium.

For a given $\beta > 3$, the decision of a neutral firm to invest in CSR depends on $\bar{\theta}$ and $t$. On the one hand, a large $\bar{\theta}$ implies that the socially responsible firm will invest a lot. In that case, the neutral firm will prefer not to incur the costs of CSR and try to attract consumers by lowering its prices. On the other hand, when $t$ is low, competition between firms is very fierce because consumers are ready to buy a product that is farther away from their ideal specification $x$ if the price of this product is relatively low. In that case, even if the neutral firm does not invest in CSR, it will be easier to attract consumers by lowering prices.

To conclude, the determinants of CSR investments are not the same for neutral and socially responsible firms. For socially responsible firms, the only important factor determining the level of CSR is the level of profit. For the neutral firm, the investment in CSR is driven by consumers' preferences (i.e. how much they value CSR, *beta*, relative to low prices $t$), the amount of CSR chosen by the other firm.

Regarding the performance in terms of profits, the socially responsible firm perform better than the firm with dispersed ownership ($q_1 > q_0$ and $p_1 > p_0$) when only this firm invests in CSR. Indeed, consumers are ready to pay for CSR, and as firm 1 is the only firm investing in CSR, it can charge a higher price but is still able to increase its market share thanks to its level of CSR. When both firms are

identical in terms of their investment in CSR, they share the market equally.

# 3 Heterogeneous Preference, Ownership Structure and CSR

As discussed in the theoretical model, firms with different objective functions will adopt different CSR strategies. A socially responsible firm will invest in CSR whatever the attitude of the consumers regarding corporate giving. A profit-maximising firm will use CSR as product positioning when consumers are willing to pay for it: if competition is fierce or if the level of CSR chosen by the socially responsible firm is already very high, the profit-maximising firm will offer a good that has a lower price but will not invest in CSR (maximum differentiation in terms of CSR). An important question then asks why may firms have heterogeneous preferences for CSR? The literature suggests that this may be related to the firms' ownership structure.

Concentrated share-ownership, often at the hands of a family, and affiliation to business groups through cross-holdings are common in the industrial organization of the emerging economies. Firm ownership impacts upon the strategic choices, and family firms with concentrated ownership structure can differ from other firms with dispersed ownership in investment decisions, diversification strategies, and performance. The strategic choices and financial outcomes for family firms are well-documented *(*Schleifer and Vishny, 1997*).* As firms with different ownership structures will have heterogeneous strategic choices, they will also have different views on CSR. Why and how should we expect ownership structure to impact upon CSR? First, CSR can be viewed as a long-term investment, trading off current profitability, with long term sustainability. Therefore, it is plausible that firms will differ in their preference for such investments. Firms with concentrated shareholding may invest more CSR because of stronger long-term incentives for the founding family. For example, Oh et al. (2011) argue that given the limited efficiency of financial markets, long-term shareholders are more likely to drive CSR efforts in South Korean firms. On the other hand, the controlling shareholder in a family firm can expropriate rent at the expense of the minority shareholders through CSR investments (Bertrand et al., 2002; Chang, 2003).

Another perspective views CSR as an alternative channel for shareholders to derive social satisfaction. This is related to Andreoni (1989) who compares different ways to contribute to a social cause and asks whether they are imperfect substitutes. In the case of CSR, Baron (2007) suggests that if shareholders enjoy some warm-glow effect from giving to social causes, they have two possibilities to derive social satisfaction: personal or corporate giving, i.e. CSR investments. In that context, a share constitutes a

charity-investment bundle incorporating social and monetary considerations of investors. Firms' decisions regarding CSR will depend on the 'substitutability' of private and corporate giving for the shareholders. If the ownership is concentrated or if the firm is owned by a specific family, the warm-glow effect derived from CSR by the majority shareholder will be very similar to the warm-glow effect from personal giving. In contrast, corporate giving in dispersed shareholding firms will only be an imperfect substitute of personal giving for individual shareholders, i.e. it is less obvious that an individual shareholder with a few shares of the firm will derive utility from the CSR investments of the firm.

The difference in firm preferences for CSR can also be influenced by the incentives of the manager to invest in social capital. In this case, CSR investments can reflect agency problems (see Baron, 2008) and such managerial incentives are likely to be associated with firm ownership structure. For example, a family firm with concentrated ownership may be less affected by agency problems if the managers are themselves part of the family. Similarly, managers in dispersed shareholding firms are likely to have shorter planning horizons, and will tend to under-invest in CSR (Narayanan, 1985). On the contrary, Cespa and Cestone (2007) suggest that CSR investments of firms are positively associated with managerial entrenchment, i.e. inefficient managers will use CSR as an effective entrenchment strategy to protect their job. Thus, the CSR investment of firms with concentrated shareholding of a family may be partially driven by the self-interests of the managers.

Therefore, there are various channels through which ownership structure will impact upon firms' preferences over CSR, and so on their decisions to invest in such activities. This remains an open question which lends itself well to empirical analysis. Another strand of research suggests that institutional ownership is positively associated with CSR investments (Schleifer and Vishny, 1997; Sethi, 2005; Siegl and Vitaliano, 2007). Institutional shareholders own significant proportion of firm's stocks and cannot sell their shares very easily. Therefore long-term oriented institutional shareholders are likely to have a longer planning horizon and drive CSR investments (Hoskisson et al. 2002). Foreign investments in firms are is positively associated with higher CSR investments (Oh et al, 2011). This could be driven by CSR standards in the home country of the importing firms, stakeholder demands for socially responsible supply chains and the need to differentiate in a mature market.

# 4 Institutional Background and Data

In this section we present details of the institutional context of our empirical analysis, discuss the uniqueness of the Indian firm ownerships, and descibe the data and the key variables.

## 4.1 Institutional Background

The institutional framework for corporate governance in India dates back to 1875 with the setting up of the Bombay Stock Exchange (BSE). The Companies Act of 1956 governs the activities of listed firms in India. Since the liberalization of the economy in 1991, Indian firms are increasingly being reliant on external sources of finance and the role of government has decreased. There has been a shift away from the traditional interventionist approach to a more Anglo-American style of governance. Similar and spirit to the Sarbanes-Oxley Act of US, in 2001 the Securities and Exchange Board of India (SEBI) implemented Clause 49 for all firms listed in BSE 200 index and to all listed firms subsequently. Clause 49 lays down a range of governance imperatives for listed firms, ranging from board composition, independence of audit committee, to enhanced disclosure norms.

Dispersed shareholding pattern, as is common in U.S. and U.K. are not widely prevalent in India so far. About 16% of the firms listed in BSE is wholly or significantly controlled by the government, federal and state, and 3 of the top 6 Indian firms in 2014 are public sector firms. On the other end of the spectrum, about a third of the listed firms have Western-style diversified shareholding and professional managers. However, diversified business groups, mostly having a family-centric controlling stake, dominates the Indian private sector.

A common characteristics of these business groups is the presence and influence of "promoters". The term is commonly used to mean "controlling stakeholder" and can be an individual or a family. These promoters, collectively hold about 54% of the shares in the business-group firms. Consequently, tunneling of assets can be a potential source of inefficiency and loss of profitability. Bertrand, Mehta and Mullainathan (2002) finds that firms with concentrated shareholding are 30% more likely to suffer earnings loss during industry shocks compared to Western-style standalone firms in the same industry. Also, firms down the pyramid are less affected by shocks as their buffered using the assets of the firms nearer the top of the pyramid. This suggests that the controlling stakeholders benefits in business groups at the expense of minority shareholders. On the other hand, Khanna and Palepu (2000) find that affiliate firms of diversified business groups outperforms stand-alone firms in the same industry.

Although Indian business groups share some characteristics of the pyramidal structures in Japanese *keiretsu*, there are several key differences that makes it unique. Similar to *keiretsu*, individual firms within an Indian business group are legally separate entities, are primarily responsible to its own shareholders and its accounts are audited separately. However, unlike in *keiretsu* where the affiliate firms are connected and coordinated through a common group-specific bank, the affiliate firms within an Indian business groups are coordinated by interlocked boards and by members of the "promoter" family, similar to the holding structure of Korean *chaebols* (Khanna and Palepu, 2000). A typical Indian business group will have dozens of firms with complex cross-holdings. The complexity of cross holdings make it difficult to compute the conventional cash-flow rights and voting rights measures.

India provides a unique setting to compare different ownership structures within the same institutional framework and macroeconomic structure. The governance system in India is a combination of the dispersed shareholding, like the US and the UK, and the insider dominated Chinese and Japanese structure. About 32% of the largest Indian firms are parts of diversified family-owned business groups, 16% are controlled by the state and about 52% are Anglo-American style firms with dispersed equity shareholding and outside investors. Moreover, market and non-market institutions in India have evolved over a long period of time and are relatively stable, allowing for results that are comparable with extant corporate social responsibility and corporate governance literature which is based predominantly on evidence from US and UK firms (Sarkar and Sarkar, 2000). The presence of stand-alone firms with dispersed shareholding and South Korean *chaebol*-type business group affiliates with complex cross-holdings within the same regulatory and accounting framework allows us to overcome many shortcomings of the cross section comparisons of the first generation studies on CSR. In doing so, we also add to the nascent literature on the effectiveness of corporate governance is in emerging economies.

## 4.2 Data

### 4.2.1 Data Sources

A major challenge to research on corporate governance in emerging economies is availability of reliable and consistent data. However, India has a matured capital market where it is relatively straightforward to obtain information on financial performance and industry classifications. The data are obtained from Prowess, maintained by the Centre for Monitoring the Indian Economy (CMIE). The sample was obtained as follows:

- The sample period is from 2006 to 2013. Although data on Indian firms are available before that, the coverage and the consistency of the data is better 2006 onwards. For example, Siegel and Choudhury (2012) notes that historical Prowess data had survivor bias, that is corrected for in the later years. Moreover, the Indian Companies Act of 2013 mandates firms to spend on CSR a minimum of 2 per cent of the average net profit made during the three immediately preceding financial years. By limiting our sample period up to 2013, we do not contaminate our results with the enforcement of this act from 1st April, 2014.

- For every year, we take the top 500 listed firms in the Bombay Stock Exchange (BSE) Collectively, these firms represent over 95% of the total market capitalization. We follow firms from the time they first enter BSE 500 within our sample period till the end of the sample period, even if it drops out of BSE 500 listings. Firms that are delisted, taken private or are acquired are dropped from the sample.

- We exclude all publicly-owned and foreign-owned firms from our sample. These firms lend themselves poorly to comparison in our context.[3]

- We also exclude firm-year observations with missing data on ownership, and firm performance measures.

Our final sample is an unbalanced panel of 677 firms with 4,143 firm/year observations, although sample sizes vary due to missing observations for some firms. Table 1 presents the summary statistics on firm and board characteristics, and CSR investments. All monetary values are winsorized at 1% levels and presented in terms of year 2000 US$.

[Insert Table 1 around here]

#### 4.2.2 Ownership Measures

The measurement and classification of shareholding structure of these firms lie at the heart of our empirical strategy. Prowess provides information to accurately identify the shareholders who control a firm either directly through their own shareholding, or indirectly through cross-holdings. These controlling stakeholders, either an individual but often a family, are called 'promoters'. We create a

[3] For example, CEOs or Managing Directors of public sector firms are fixed term bureaucratic appointments and the pay is contingent on tenure and rank.

variable,$\%Shareholding - Promoters$ which combines the direct shareholding by promoters, and proportion of shares held by persons acting in concert with the controlling shareholders. This gives us a measure of direct and indirect control on a firm by the promoters. Classifying firms into concentrated and dispersed shareholding is an inexact science. It is neither entirely defined by a certain percent of equity ownership with a particular individual or family, nor is it by the appointment of a family member as the CEO/Chairman. We use a threshold concentration of equity holdings of promoters: if promoters hold 25% or more of the shares outstanding, we classify the firm to have concentrated shareholding. Whilst this is not a measure, it is consistent with the measures used in the literature on emerging market finance (Khanna and Palepu, 1999; Bertrand, Mehta, Mullainathan, 2002; Siegel and Choudhury, 2012). We also check for the robustness of our classification by using 20%, 30% and 50% as thresholds.

Of the 677 firms in our sample, 267 (39.44%) have concentrated shareholding and 410 (60.56%) firms have dispersed shareholding. The firms with concentrated shareholding often have family ownership or are affiliates of business groups. They are also more likely to have a member of the promoter-family as the CEO. Throughout this paper, the top executive of the firm is identified as the CEO. However, 'Managing Director' and 'Chief Executive Officer' are interchangeably used as job titles for the top executive. Prowess identifies the top executive of each firm throughout the sample period but doesn't provide information on whether the CEO is a member of the founding family. These information are carefully hand collected from various filings (annual reports, statutory filings with the stock exchange, etc.) of each individual firm. We also control for institutional shareholding by the percentage of equity shares held by financial institutions like mutual funds, banks, insurance companies and venture capital funds.

One concern is that firms with concentrated shareholding may be structurally different from widely-held firms. In Table 2 we compare the key variables for firms with different ownership structure, where in columns 1 and 2 we present the mean values of key variables for firms with concentrated and dispersed shareholding respectively, and in column 3 the difference in means with * indicating that the difference is statistically significant at conventional levels.

[Insert Table 2 around here]

Firms with concentrated share holding are on average larger than widely-held firms in terms of sales revenue and total assets. However, there seems to be no statistically significant difference in performance between business group firms with concentrated shareholding and widely-held private stand-alone firms. There are also no statistically significant differences in board-level characteristics.

#### 4.2.3 Corporate Social Responsibility

The measure of CSR investments is the natural logarithm of the annual spending on CSR initiatives. This information is filed by the firms to the Securities and Exchange Board of India with the financial filings. CSR investments include spending on building and maintenance of public services (parks, primary schools, etc.), environmental and pollution control related expenses and donation to local authority or an institution in a social or humanitarian cause. Investments in all these categories are reported separately. This allows us to examine the actual CSR investments and not score-based KLD-type measures. CSR investment is zero in 38% of the firm-year observations. The mean CSR investment is US$ 18,450. An average firms spends about 3% of its total sales on CSR. Further, we use three disaggregated measures of CSR investments-donations to social causes[4], investment in social and community infrastructure, and expenses for environmental and pollution control. Donations form a large part of the total CSR spend: mean donation is US$ 12,668. The means for social and community investments, and environmental and pollution control investments are US$ 3,388 and US$ 2,400 respectively. From Table 2, firms with concentrated share ownership seems to invest more in CSR compared to widely held firms.

However, firms investing in CSR may be different than firms that do not. In Table 3, we compare the characteristics of firms for firm-years with and without CSR investments. It seems that the firms that invest in CSR are, on average, bigger in terms of total assets, have higher profits, higher proportion of exports to sales, and higher shareholding of promoters and institutions. There is no significant difference in the size and the proportion of independent directors on the board. It seems that CSR investment is associated with firm characteristics and we need to control for these in our empirical analysis.

[Insert Table 3 around here]

About 30% concentrated shareholding firm-years, and about 40% dispersed shareholding firrm-years have no CSR investments. The mean CSR investment for firms with concentrated shareholding are US$ 19,402, and that for firms with dispersed shareholding is US$ 17,866.[5] Prima facie, the prediction of our model that firms with concentrated shareholding invest more in CSR is validated. Whilst charitable donations form a large part of CSR spending for firms with concentrated shareholding (mean of donations is US$ 9,200 compared to US$ 5,118 and US$ 3,548 for social and community investments, and environmental and pollution control expenses, respectively), for firms with dispersed shareholding, it is

[4] Donations do not include donation to election funds or other political donations.
[5] The difference between the means is statistically significant at 5% levels.

spread more evenly (mean of donations is US$ 18,209 compared to US$ 628.40 and US$ 564.70 for social and community investments, and environmental and pollution control expenses, respectively).

#### 4.2.4 External Environment

In addition to heterogeneity in firms' preferences, we want to investigate the role of heterogeneity in consumers' behaviour. As seen from Table 1, about 80% of sales revenues of the sample firms come from the domestic market. We use export revenues (as percentage of sales) to control for the export-orientation of a given firm. A firm with higher export revenues is likely to be more influenced by consumers' preferences in the countries they export to. Prima facie, firms with dispersed shareholding have higher export revenues compared to firms with concentrated shareholding. We will use this information in our empirical analysis to examine how firms' preferences and consumers' preferences simultaneously impact upon CSR investments.

#### 4.2.5 Control Variables

A range of firm and board level characteristics are used to mitigate omitted variable bias. We use accounting information from stand-alone annual financial statements reported in Prowess. This is cross-checked with information collected from Datastream using a string-matching algorithm by firms' names.[6] A firm's performance is measured by returns on assets ($ROA$), and we control for firm size using natural log of sales[7]. Information on board size, and number of independent directors are collected from Prowess. Following the Clause-49 of SEBI, the mean proportion of independent directors on the board is expected to be at least 0.5 for all firms.

## 5 Results

This section is about the empirical analysis used to examine the theoretical predictions. We discuss the econometric issues, and present the results for our baseline models, and robustness tests.

[6] In cases where the data from the two sources did not match exactly, we keep the financial data from Prowess.

[7] We also check the robustness of our estimates with alternate measures of firm performance (Tobin's Q approximated by MTBV) and firm size (total assets).

### 5.1 Ownership Structure and CSR Investments

The central focus of our empirical analysis is to examine the impact on CSR investments of shareholding structure. To begin with we undertake an univariate analysis where we compare CSR spending of firms with concentrated shareholding and firms with dispersed shareholding. Since firms endogenously choose to invest in CSR, one concern could be that firm ownership and CSR spending are both driven by some unobserved variables. Ideally, we would want firms to switch between the two ownership structures in response to exogenous factors, and observe the change in CSR investments. In absence of such counterfactuals, we address this concern in a number of ways. First, we use a sample of matured firms for which the ownership structure is historically determined. So for the sample period, the ownership structure can be considered to be exogenously given. Second, in all our specifications we control for firm and board characteristics. Finally, we examine if the CSR investment of a firm with concentrated ownership at time $t$ will be different if it was to switch to dispersed ownership within the same industry at $t+1$. To do so, we measure the difference between the firm's actual CSR investment and the imputed value of CSR as dispersed shareholding entities following the procedures described in Berger and Ofek (1995, 1996). We calculate the imputed value for a firm $i$ with concentrated ownership by multiplying the median ratio of annual CSR investment to accounting parameters (assets or sales), for firms with dispersed shareholding in the same industry, by the $i's$ level of the accounting item. The description of the procedure is included in Appendix 2. The industry medians are calculated using the narrowest grouping with at least five firms. The results are reported in Table 4. The difference between the imputed CSR and the actual CSR is positive and statistically significant at 5% levels. This suggests that, for a given firm $i$ with concentrated ownership, the CSR investment will fall if it could switch to be a dispersed shareholding firm in the same industry. Therefore, it seems that the ownership structure of firm impacts upon the CSR investments.

[Insert Table 4 around here]

In gist, not controlling for any firm-level characteristics, firms with concentrated shareholding invests more in CSR compared to widely-held firms. We further investigate the differences in corporate governance, firm strategy, and firm performance using multivariate analysis. We regress annual CSR investments on the proportion of shareholding by promoters, and controls for firm and board characteristics (size, performance, board size, proportion of independent directors, *et cetera*):

$$\begin{aligned}\ln CSR_{it} &= \alpha + \beta_1 \%Shareholding - Promoters_{it} + \beta_j X_{it} \\ &\quad + \zeta PCEO_{it} + \sum_{n=1}^{N} \gamma_n I_n + \sum_{k=1}^{K} \delta_k T_k + \epsilon_{it} \end{aligned} \tag{11}$$

The dependent variable in equation (1) is the natural logarithm of the annual CSR investment, which is defined as the linear summation of the spending on building and maintenance of public services (parks, primary schools, etc.), environmental and pollution control related expenses, and donation in a social or humanitarian causes. All expenses are audited independently and are expressed in '000 US$. $\%Shareholding - Promoters_{it}$ is the percentage share-ownership of the promoter family. $X_{it}$ is a vector of all firm and board characteristics of firm $i$ in time $t$. To control for the difference in consumers' preferences, $X_{it}$ also includes the proportion of exports in the total sales. $PCEO_{it}$ is a dummy variable with a value of 1 if the CEO is from the promoter family. $I_n$ and $T_k$ are sets of industry, and year dummies. To further investigate the impact on CSR investments of ownership, we estimate the above formulation separately on sub-samples of firms with different ownership structure.[8]

Table 5 presents the basic results for the impact of firm ownership on firm performance. Results are presented for ordinary linear regression models with industry and time dummies, and with robust standard errors. Column (1) reports the estimates of the baseline model with the pooled sample of firms with both types of shareholding. The estimate of $\%Shareholding - Promoters_{it}$ is positive and statistically significant: CSR investments increase with increasing concentration of shareholding, but firms with $Promoter - CEO$s has no significant difference in CSR investments compared to firms without a promoter-CEO. These results are consistent with the theoretical proposition that ownership structure is a source of heterogeneity in firm preference for investing in social capital.

We investigate the determinants of CSR investment for firms with concentrated shareholding (column 2) and dispersed shareholding (column 3) separately. The parameter estimate on $\%Shareholding - Promoters_{it}$ needs to be interpreted with caution because widely-held firms have dispersed shareholding by construction. However, interesting difference that emerges from estimating the models separately for the two types of firms. Firms with concentrated shareholding and $Promoter - CEO$s invest more in CSR compared. Exports (as % of Sales) is positively and statistically significantly associated with

[8] We do not employ a firm fixed effects model because our key variable of interest, $\%Shareholding - Promoters_{it}$, is a slow-moving variable and firms do not move across the thresholds we discuss in the previous section.

CSR investments of widely-held firms. For firms with concentrated shareholding, the parameter estimate of exports is not statistically significant at conventional levels. This is consistent with the hypothesis that consumer preference is also a source of heterogeneity in firm preference for CSR. Export-oriented firms will be interacting with consumers with different private valuations for CSR investments, and hence seems to invest more in CSR. Our results show that the heterogeneity of firm preference is driven by the ownership structure: in firms with a controlling stakeholder, firms will invest more in CSR, irrespective of consumer demand, whereas CSR investments of widely-held firms are driven by consumer preference.

[Insert Table 5 around here]

Next we examine whether firms with different ownership structure choose different modes of CSR investments, driven by their objectives for such investments. If legacy-building and longer-term profitability are the dominant objectives, firms are likely to invest more in charitable donations and social infrastructure. Therefore we estimate our baseline model with the disaggregated measures of CSR as the dependent variables. In Table 6, the dependent variables in columns (1), (2) and (3) are charitable donations, social and community infrastructure expenses, and environmental and pollution control expenses, respectively. All results are for the pooled sample, with year and industry controls. From columns (1) and (2), increasing concentration of equity holdings is associated with higher investments in charitable donations, and social and community infrastructure. On the other hand, the estimate of $\%Shareholding - Promoters_{it}$ is negative and statistically significant in column (3). This suggests that widely-held firms invest more in environmental and pollution control projects. It is difficult to definitively claim that the negative coefficient is driven by the export-orientation of firms, but there is some evidence that firms with different ownership structures differ in the modes of CSR investment.

[Insert Table 6 around here]

The results presented in Table 5 may be biased. Not all firms in our sample invests in CSR, and the distribution of CSR spending is skewed. Using a censored dependent variable is likely to underestimate the parameter estimates. We check for the robustness of our baseline results using Tobit regressions. However, the OLS estimates are only likely to be biased in the censored region. Therefore we compare the Tobit results with the OLS estimates for the sub-sample of firms with non-zero CSR investments, the results of which are presented in Table 7. In specification (1), we report the marginal effects from the Tobit regression with the pooled sample; in specifications (2) and (3) we report the OLS estimates

with the sub-sample of firms investing in CSR, and the full sample for the sake of comparison. There key variable of interest is $\%Shareholding - \Pr omoters_{it}$, the coefficient for which is of similar magnitude across all the specifications. Therefore it does not seem that our baseline results are affected by the choice of estimation technique.

[Insert Table 7 around here]

## 5.2 Economic Significance

Our results have broad economic significance. If CSR investments were to result in enhanced financial performance, we would expect all firms, irrespective of the ownership structure to invest in it. Similarly if such investments drive consumers' choice, firms in competitive market will suffer losses for not investing in CSR. Since the firms incur a short term cost for socially responsible initiatives with uncertain longer-term results, firms with more concentrated shareholding and longer planning horizon invest more in CSR, especially where the consumers' demand for delegated philanthropy is weak. If private provision of public goods are the second-best outcome to public provision, it is important to understand the incentives of firms to invest in social capital. Firms with dispersed shareholding will tend to invest in CSR when the consumers' preferences are high. To quantify, a one standard deviation change in equity ownership of the controlling shareholders leads to a 4.9% increase in CSR investment. To compare, a one standard deviation change in ROA leads to a 5.21% increase in CSR investments. For widely-held firms, a one standard deviation in exports leads to a 3.8% change in CSR investments. In gist, heterogeneity in firms' preferences over CSR investments and so heterogeneity in terms of CSR spending seem to be associated with differences in ownership structure. This has implications, particularly in the emerging economies where public provision is not always efficient or adequate.

## 5.3 Endogeneity and Alternate Explanations

The results above could suffer from endogenous selection of shareholding and CSR investments. For example, firms in certain industries may tend to have over-representation of both firms with concentrated equity ownership and CSR investments. We address that concern by including industry dummies in our regression models. However, there can be other possible channels of endogeneity. We use propensity score matching to address this concern further. For that we define the treatment group as firms with concentrated share ownership and widely-held as the control group, with the difference in CSR investment

as the outcome. To compare CSR investment of firms across the two groups with similar characteristics, we match firms from the two groups on the following observables: sales, $ROA$, Tobin's Q, exports, industry and year dummies. The results are presented in Table 8. Panel A: nearest neighbour match, Panel B: radius match, Panel C: Gaussian kernel match, and Panel D: Mahalanobis Distance Match.

[Insert Table 8 around here]

The results are presented for sub-samples of firms with high (above the 50th percentile) and low exports. In both the sub-samples, the difference in CSR investment of firms with concentrated shareholding and widely held firms are positive and statistically significant. However, the difference in outcomes is much larger in the subsample of firms with low exports. Firms with concentrated ownership invest more in CSR in comparison to firms with dispersed holding, notwithstanding of the consumer preference. Widely-held firms respond to consumer preference to invest in CSR, which can explain the smaller difference in outcomes for the high exports subsample. This is consistent with our theoretical model and the regression results.

A more robust way to attenuate endogeneity concerns is to use an exogenous shock that is correlated with CSR investment, but not with the ownership structure. In this paper, we use anti-dumping measures against sample firms initiated by other countries as an exogenous demand shock. Antidumping measures are imposed by importing countries, on a particular product of a specific firm, or a product produced by all firms from a given exporting country. Faced with a demand shock, firms face a choice of reconsidering investment decisions given that an average firm in the sample spends about 3% of sales on CSR. If the CSR investments of firms with dispersed shareholding are driven primarily by the supply-chain effect, we will expect firms to reduce CSR investments, conditional on having anti-dumping restrictions imposed on them. We collect data on antidumping measures against Indian firms from the Global Antidumping Database maintained by the World Bank. We construct an indicator for antidumping, which is equal to 1 for all years when the anti-dumping penalty is in effect. In the sample period, we have 67 instances of antidumping penalties against sample firms which gives us 280 firm-year observations (6.2% of the total sample)[9]. In Table 9, we present the results with a lagged indictor for antidumping penalties.[10] Consistent with our hypothesis, we find that firms with dispersed shareholding reduce CSR investments when faced with an anti-dumping penalty, but firms with concentrated shareholding do not change their's

[9] A stronger measure is to use anti-dumping penalties imposed by the United States and the European Union only. We use this as robustness check. The results are qualitatively similar but are less precise due to smaller number of observations.

[10] The correlation coefficient of the lagged anti-dumping measure with $\%Shareholding-Promoters_{it}$ and CSR investment are 0.003 and 0.153, respectively.

significantly. Firms with dispersed shareholding, with stronger incentives to maximize short-term profits, reduces their investment in social capital when faced with a demand shock. This result is consistent with the supply-chain effect hypothesis.

[Insert Table 9 around here]

### 5.4 Robustness checks

We test for the robustness of our baseline results. First, we investigate if firm's binary choice of investing in CSR is associated with the ownership structure. We present the results from logistic regressions in Appendix 2, where the dependent variable is an indicator which is equal to 1 if a firm chose to invest in CSR. It seems that the ownership structure, as measured by the promoters shareholding, and the presence of a promoter-CEO are positively associated with the choice of investing in CSR. This complements our baseline results.

Next, we examine if there are differences in firm's investment in the three disaggregated measures of CSR. From Appendix 3, the association of promoter shareholding to donation is much stronger for firms with concentrated shareholding. For dispersed shareholding firms, the association of exports to environmental and pollution expenses are stronger. Once again, these results support our central hypothesis. Finally, we use alternate classification algorithms of concentrated shareholding, using 20% and 15% shareholding of promoter(s) as the threshold. The results are robust to all these checks. For the interests of brevity, the tables are not presented here but are made available as online appendices.

## 6 Conclusion

Firms make strategic choice of investing in CSR. The choice depends not only on consumer preference, but on firm specific characteristics. In this paper we model firm's choice of investing in CSR conditional on the ownership structure. In equilibrium, firms with dispersed shareholding will only invest in CSR in reaction to consumer preference, but firms with concentrated shareholding will invest in CSR, notwithstanding consumers' choice. The concentration of holdings, often in the hands of a family, strongly aligns the interests of the firm and the shareholder and also allows the shareholders to have a longer planning horizon. Using information from listed firms in India, where we find both types of firms within the same legislative environment, we provide empirical evidence in favour of our theoretical predictions. This is the first paper to incorporate heterogeneous firm preference for CSR investments. At the same time,

it is important to highlight what our paper does not do. We do not seek to establish that one type of ownership structure is associated with more altruism over the other. We merely investigate the incentives for firms to invest in social capital, and how ownership structure is associated with such incentives. We also do not comment on the welfare implications of heterogeneous firm preference for CSR investment. Besley and Ghatak (2007) documents the welfare implications of private provision of public good, and finds that private provision is the second-best outcome to public provision. Within that premise, this paper shows that firms differ in their preference for CSR investments and that private provision of public goods depend on both firm and consumer preference for CSR.

Our results are robust to firm and industry characteristics and doesn't seem to be susceptible to endogeneity concerns. The association of CSR investments to ownership structure is important because the rationales for such investments are not fully understood. There is no conclusive evidence to suggest that CSR investments enhance firm performance. If CSR is not only driven by profit-motives, then the question of why firms invest in CSR gain more importance.

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**Table 1**

Descriptive Statistics of Key Variables

This table presents the descriptive statistics of the key variables used in the empirical analysis. All monetary values in US$, adjusted to 2010 US$.

| Variable | N | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| *ROA* | 5311 | 0.083 | 0.1110 | -0.847 | 1.826 |
| *MTBV* | 5311 | 1.419 | 2.917 | 0.187 | 13.521 |
| *EPS* | 5311 | 0.547 | 8.373 | -5.740 | 550.34 |
| *Sales (/1,000)* | 5311 | 522.592 | 2229.181 | 0.011 | 68215.143 |
| Total Assets (/1,000) | 5311 | 77.121 | 264.824 | .210 | 6332.593 |
| *Exports/Sales (%)* | 5311 | 22.538 | 42.663 | 0.00 | 93.51 |
| *%Shareholding-Promoters* | 5311 | 41.577 | 20.847 | 0.000 | 88.911 |
| *%Shareholding-Institutions* | 4395 | 17.806 | 14.4962 | 0.000 | 88.194 |
| *Promoter CEO* | 5311 | 0.375 | 0.484 | 0.000 | 1.000 |
| *Board Size* | 5311 | 9.949 | 3.328 | 4.000 | 33.000 |
| *% Outside Directors* | 5311 | 51.799 | 16.181 | 48.330 | 93.500 |
| *CSR* | 3762 | 15.061 | 38.722 | 0.000 | 2880.000 |
| *Donations* | 3762 | 13.044 | 86.515 | 0.000 | 2880.000 |
| *Social and Community Exp* | 3762 | 0.487 | 8.046 | 0.000 | 327.500 |
| *Environment and Pollution* | 3762 | 1.544 | 16.799 | 0.000 | 469.000 |

**Table 2:** Comparison of Firms with Concentrated and Dispersed Shareholding

We compare performance, size, board characteristics and CSR investments of firms with concentrated and dispersed shareholding structures. Firms with concentrated shareholding are, on average, larger, invest more in charitable donations and social and community expenditure, but spend less in environmental and pollution control. There is no statistically significant difference in firm performance and board characteristics. All variables are winsorized at 1% levels.

| Variable | *Firms with Concentrated Shareholding* | *Firms with Dispersed Shareholding* | Difference |
|---|---|---|---|
| *%Shareholding-Institutions* | 19.652 | 15.967 | 3.685* |
| *ROA* | 0.080 | 0.089 | -0.009 |
| *MTBV* | 1.510 | 1.488 | 0.022 |
| *EPS* | 0.462 | 0.605 | -0.143 |
| *Sales (/1,000)* | 697.781 | 404.465 | 293.316* |
| *Total Assets (/1,000)* | 114.964 | 51.611 | 63.353* |
| Export/Sales (%) | 20.781 | 23.723 | -2.942 |
| *Board Size* | 10.137 | 9.195 | 0.222 |
| *% Outside Directors* | 51.020 | 51.764 | -0.744 |
| *CSR* | 20.441 | 11.248 | 9.193* |
| *Donations* | 19.180 | 8.675 | 10.505* |
| *Social and Community Exp* | 0.664 | 0.360 | 0.304* |
| *Environment and Pollution* | 0.596 | 2.216 | -1.620* |
| Number of Firms | | | |

**Table 3:** Comparisons of Firms with and without CSR Investment
This table compares firm-years with no CSR investment and firm years with non-zero CSR investment. Larger and more profitable firms invest more in CSR. All variables are winsorized.at 1%.levels.

| Variable | Mean-*No CSR* | Mean-*CSR* | Difference |
|---|---|---|---|
| *Return on Assets* | 0.080 | 0.086 | -0.006 |
| *MTBV* | 1.545 | 1.763 | -0.218 |
| *EPS* | 0.513 | 0.558 | -0.045 |
| *Sales (/1,000)* | 667.104 | 650.722 | 16.372 |
| *Total Assets (/1,000)* | 91.030 | 68.940 | 22.09* |
| *%Shareholding-Promoters* | 19.551 | 49.854 | -30.303* |
| *%Shareholding-Institutions* | 16.705 | 18.518 | -1.813* |
| *Exports/Sales (%)* | 17.660 | 21.924 | -4.264* |
| *Board Size* | 9.548 | 10.210 | -0.662 |
| *% Non-Executive* | 50.656 | 50.892 | -0.236 |

**Table 4:** Comparison of Actual and Imputed CSR
This table compares imputed and actual CSR of firms with dispersed shareholding. The difference of imputed and actual CSR is statistically significant. This suggests that firms with dispersed shareholding will invest more in CSR, if it were to be a firm with concentrated shareholding in the same industry.

| Variable | Imputed CSR-Dispersed | Actual CSR-Dispersed | Difference |
|---|---|---|---|
| *Sales-Multiplier* | 18.30 | 11.28 | 7.02* |
| *Asset-Multuplier* | 19.04 | 11.28 | 7.76* |

**Table 5:** Ownership Structure and Investment in Corporate Social Responsibility
In this table we present the baseline results. The dependent variable is mentioned at the top of each column. All monetary values are winsorized.at 1%. The main variable of interest is $\%Shareholding - Promoters_{it}$. This is positively associated with the dependent variables in all specifications. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.01(***) levels.

| | *Dependent Variable: ln(CSR)* | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Variables | Full Sample | Concentrated Shareholding | Dispersed Holding |
| *% Shareholding-Promoters$_{it}$* | 0.051** | 0.064** | 0.002 |
| | (0.023) | (0.017) | (0.002) |
| *Sales* | 0.486*** | 0.519*** | 0.419*** |
| | (0.035) | (0.042) | (0.037) |
| *ROA* | 0.390*** | 0.472*** | 0.392*** |
| | (0.045) | (0.069) | (0.82) |
| *Board Size* | 0.087*** | 0.075*** | 0.084*** |
| | (0.013) | (0.010) | (0.019) |
| *% Independent Directors* | 0.001 | -0.004 | 0.005 |
| | (0.003) | (0.005) | (0.004) |
| *Promoter CEO* | 0.024 | 0.118** | -0.060 |
| | (0.037) | (0.047) | (0.102) |
| *%Shareholding-Institutions* | 0.017 | 0.019 | 0.013* |
| | (0.013) | (0.016) | (0.006) |
| *Export / Sales (%)* | 0.002* | -0.004 | 0.007*** |
| | (0.001) | (0.004) | (0.001) |
| *Year Dummies* | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes |
| *Constant* | -3.413*** | -3.049** | -3.413 |
| | (0.299) | (0.433) | (0.401) |
| *Observations* | 3,762 | 1,582 | 2,180 |
| Adjusted-$R^2$ | 0.314 | 0.307 | 0.285 |

**Table 6: Ownership Structure and Spend on Different CSR Initiatives**

In this table we present the results for different measures of CSR investments. The dependent variable is mentioned at the top of each column. All monetary values are winsorized.at 1%. The main variable of interest is % Shareholding-Promoters. This is positively associated with the dependent variables in all specifications. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.01(***) levels.

| | (1) | (2) | (3) |
|---|---|---|---|
| | *Dependent Variable* | | |
| | Donation | Social and Community | Environmental/Pollution |
| Variables | | Expenses | Control Expenses |
| *% Shareholding-Promoters$_{it}$* | 0.634*** | 0.212*** | -0.0488** |
| | (0.220) | (0.077) | (0.022) |
| *Sales* | 0.516*** | 0.122** | -0.000 |
| | (0.018) | (0.013) | (0.000) |
| *ROA* | 0.559*** | 0.250*** | 0.242* |
| | (0.152) | (0.103) | (0.127) |
| *Board Size* | 0.113*** | 0.018** | 0.065** |
| | (0.043) | (0.0.008) | (0.030) |
| *% Independent Directors* | -0.002 | 0.000 | -0.001 |
| | (0.003) | (0.000) | (0.000) |
| *Promoter CEO* | 0.058* | 0.033 | -0.017 |
| | (0.030) | (0.019) | (0.025) |
| *% Shareholding-Institutions* | 0.098 | 0.000 | 0.008 |
| | (0.210) | (0.002) | (0.007) |
| *Export / Sales (%)* | -0.008 | -0.013 | 0.020*** |
| | (0.005) | (0.013) | (0.004) |
| *Year Dummies* | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes |
| *Constant* | -3.520*** | -0.848*** | -1.730** |
| | (0.304) | (0.094) | (0.924) |
| *Observations* | 3,762 | 3,762 | 3,762 |
| Adjusted-$R^2$ | 0.310 | 0.187 | 0.172 |

**Table 7: Ownership Structure and CSR Controlling for Bias**

In this table we present the results with different approaches to control for possible bias induced by firms which do not invest in CSR. In column (1) we estimate a Tobit model, in column (2) we estimate a OLS model for firms that invest in CSR, and column (3) presents the OLS estimates with the full sample for comparison.

| | (1) | (2) | (3) |
|---|---|---|---|
| | *Dependent Variable: ln(CSR)* | | |
| | Tobit | OLS | OLS |
| Variables | | Non-Zero CSR | Full sample |
| *% Shareholding-Promoters$_{it}$* | 0.086** | 0.074** | 0.051** |
| | (0.035) | (0.022) | (0.023) |
| *Sales* | 0.535*** | 0.511*** | 0.486*** |
| | (0.029) | (0.018) | (0.035) |
| *ROA* | 0.441*** | 0.426*** | 0.390*** |
| | (0.140) | (0.052) | (0.045) |
| *Board Size* | 0.067*** | 0.066** | 0.087*** |
| | (0.012) | (0.019) | (0.013) |
| *% Independent Directors* | 0.009 | 0.004 | 0.001 |
| | (0.006) | (0.003) | (0.003) |
| *Promoter CEO* | 0.049 | 0.031 | 0.024 |
| | (0.033) | (0.024) | (0.037) |
| *% Shareholding-Institutions* | 0.023 | 0.017 | 0.017 |
| | (0.016) | (0.011) | (0.013) |
| *Export / Sales (%)* | 0.003** | 0.002* | 0.002* |
| | (0.01) | (0.001) | (0.001) |
| *Year Dummies* | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes |
| *Constant* | -3.901*** | -3.417*** | -3.413*** |
| | (0.337) | (0.291) | (0.299) |

**Table 8:**
We match concentrated shareholding firms in our sample with dispersed shareholding firms using nearest neighbourhood (Panel A), radius=0.1 (Panel B), Gaussian kernel (Panel C), and Mahalanobis (Panel D) matching methods. The variables used in the matching are firm size, firm performance, market-to-book, ratio, exports, industry and year dummies. Firms are divided into sub-samples of high and low export as percentage of sales. The average treatment to the treated is higher is consistently higher for the subsample for the low export sub-sample. This suggests that the difference in CSR between firms with concentrated and dispersed shareholding can be partially attributed to consumer preference. *, **, and *** denote significance at the 10%, 5%, and 1% level respectively.

| | *Dependent Variable: Difference in CSR between firms with concentrated and dispersed shareholdings* | |
|---|---|---|
| | Subsample of firms with high exports | Subsample of firms with low exports |
| *Panel A: Nearest Neighbourhood Match* | | |
| Average Treatment to Treated | 3.42** | 10.19** |
| No. of Observations | 2289 | 2197 |
| *Panel B: Radius Match (0.1)* | | |
| Average Treatment to Treated | 15.27** | 18.60** |
| No. of Observations | 2210 | 2053 |
| *Panel C: Kernel Matching* | | |
| Average Treatment to Treated | 9.72** | 15.71** |
| No. of Observations | 2289 | 2197 |
| *Panel D: Mahalanobis Distance Matching* | | |
| Average Treatment to Treated | 9.20** | 15.08* |
| No. of Observations | 1962 | 1998 |

**Table 9: Anti-Dumping and CSR**
In this table we present the results of the impact on CSR of antidumping penalty imposed on firms. The main variable of interest is $Anti\text{-}Dumping_{it-1}$, a lagged indicator for antidumping penalty. The indicator is negatively associated with CSR investment, specially for firms with dispersed shareholding.

| | (1) | (2) | (3) |
|---|---|---|---|
| | *Dependent Variable: ln(CSR)* | | |
| Variables | Full Sample | Concentrated | Dispersed |
| $Anti\text{-}Dumping_{it-1}$ | -0.014* | 0.008 | -0.033** |
| | (0.007) | (0.006) | (0.011) |
| Dispersed Shareholding | -0.211** | | |
| Dummy | (0.082) | | |
| $Anti\text{-}Dumping_{it-1}$* | -0.012** | | |
| *Dispersed Shareholding* | (0.005) | | |
| *% Shareholding-Promoters*$_{it}$ | | 0.064** | 0.003 |
| | | (0.017) | (0.002) |
| *Sales* | 0.311*** | 0.519*** | 0.281*** |
| | (0.025) | (0.042) | (0.037) |
| *ROA* | 0.296*** | 0.472*** | 0.194*** |
| | (0.011) | (0.069) | (0.082) |
| *Board Size* | 0.087*** | 0.075*** | 0.075*** |
| | (0.013) | (0.010) | (0.019) |
| *% Independent Directors* | 0.001 | -0.004 | 0.005 |
| | (0.003) | (0.005) | (0.004) |
| *Promoter CEO* | 0.024 | 0.118** | -0.060 |
| | (0.037) | (0.047) | (0.102) |
| *% Shareholding-Institutions* | 0.017 | 0.019 | 0.013* |
| | (0.013) | (0.016) | (0.006) |
| *Export / Sales (%)* | 0.002* | -0.004 | 0.007*** |
| | (0.001) | (0.004) | (0.001) |
| *Year Dummies* | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes |
| *Constant* | -3.417*** | -50.99** | -53.28*** |
| | (0.2999) | (19.41) | (17.19) |
| *Observations* | 3,762 | 3,762 | 3,762 |
| Adjusted-$R^2$ | 0.314 | 0.307 | 0.311 |

**Appendix 1**

CSR can be treated as *variable* costs: for each unit sold, $\theta_i$ is donated to a social cause. The total amount spent on CSR is therefore given by $\theta_i q_i$ and firm $i$'s objective function is:

$$U_i = (p_i - c - \theta_i)q_i + \alpha_i \theta_i q_i \tag{12}$$

**A. Consumers are not willing to pay for CSR** .

In stage 2, given their CSR characteristics, firms will set their prices in order to maximise their objective function (12), with demand functions given by (2) and (3) and subject to the constraint that $p_i - c \geq \theta_i$, i.e. the amount given to the charity cannot exceed the firm's mark-up.

Due to this constraint on the level of prices, corner solutions in stage 2 can be ruled out. Consider, for example firm 0. At the corner solution $q_0 = 0$, firm 0 gets a zero payoff. The condition to have $q_0 = 0$ is that $p_0 > p_1 + t$, with $p_0 > c + \theta_0$ and $p_1 > c + \theta_1$. Therefore, by choosing a sufficiently low level of CSR in stage 1, firm 0 can easily avoid corner solutions in stage 2 and enjoy a positive payoff. The same reasoning applies for firm 1.

Assuming positive demands for both firms, first-order conditions will lead to the following prices:

$$\begin{aligned} p_0 &= t + c + \frac{(1-\alpha_1)}{3}\theta_1 + \frac{2}{3}\theta_0 \\ p_1 &= t + c + \frac{2}{3}(1-\alpha_1)\theta_1 + \frac{1}{3}\theta_0 \end{aligned}$$

With these prices, firm 1's profit will cover its CSR expenditures if $(\theta_1 - \theta_0) < 3t - 2\alpha\theta_1$.[11]

If this condition is not satisfied, firm 1 is constrained to set a price equal to $p_1 = c + \theta_1$. The price set by firm 0 is then given by $p_0 = c + \frac{t+\theta_1+\theta_0}{2}$.

We are then able to derive the firms' payoffs as functions of CSR characteristics $(\theta_0, \theta_1)$:

$$U_0(\theta_0, \theta_1) = \begin{cases} \frac{1}{2t}\left[t + \frac{1-\alpha}{3}\theta_1 - \frac{1}{3}\theta_0\right]^2 & \text{if} \quad \theta_1 - \theta_0 \leq 3t - 2\alpha\theta_1 \\ \frac{1}{2t}\left[\frac{t+\theta_1-\theta_0}{2}\right]^2 & \text{if} \quad (\theta_1 - \theta_0) > 3t - 2\alpha\theta_1 \end{cases} \tag{13}$$

And

$$U_1(\theta_0, \theta_1) = \begin{cases} \frac{1}{2t}\left[t + \frac{\alpha-1}{3}\theta_1 + \frac{1}{3}\theta_0\right]^2 & \text{if} \quad \theta_1 - \theta_0 \leq 3t - 2\alpha\theta_1 \\ \frac{\alpha\theta_1}{4t}\left[3t + \theta_0 - \theta_1\right] & \text{if} \quad (\theta_1 - \theta_0) > 3t - 2\alpha\theta_1 \end{cases} \tag{14}$$

[11] The condition for firm 0 is similar to the condition for an interior solution and so is automatically satisfied.

In stage 1, whatever the CSR characteristics $(\theta_0, \theta_1)$, the utility of firm 0, $U_0$ is decreasing in $\theta_0$. Indeed, neither consumers nor firm 0 care about CSR. As a consequence, the best response of firm 0 will be to choose $\theta_0 = 0$. By contrast, the firm with concentrated ownership cares about CSR. For $\theta_1 - \theta_0 \leq 3t - 2\alpha\theta_1$ or equivalently $\theta_1 < \frac{3t}{2\alpha+1}$, $U_1$ is strictly increasing in $\theta_1$ and convex. For higher levels of CSR, $U_1$ is concave and reaches a maximum at $\theta_1 = \frac{3t}{2}$.

The intuition is as follows: as long as $\theta_1$ is sufficiently small, firm 1 is able to increase its payoff by reducing the price (and still earning a mark-up higher than the cost of CSR) and increasing the quantity sold. For higher levels of CSR, the mark-up will be exactly equal to the cost of CSR, which implies that increasing $\theta_1$ has two effects: it increases directly the utility derived from CSR and it induces an increase in price, which reduces the quantity sold and decrease both profits and utility derived from CSR. These two effects balance each other at $\theta_1 = \frac{3t}{2}$.

As a consequence, when consumers are not willing to pay for CSR and CSR is characterised by variable costs, the equilibrium is given by $\theta_0 = 0$ and $\theta_1 = \frac{3t}{2}$. Prices are set such that

$$\begin{aligned} p_0 &= c + \frac{5t}{4} \\ p_1 &= t + \theta_1 = c + \frac{3t}{2} \end{aligned}$$

With quantities $q_0 = \frac{5}{8}$ and $q_1 = \frac{3}{8}$.

If firm 1 would leave the price unchanged compared to the situation without CSR (in which firms share the market equally and prices are given by $t + c$), firm 1 has increased its price in order to be able to commit to a higher level of CSR ($\frac{3t}{2}$ rather than $t$). Note that the total amount of CSR ($\theta_1 q_1$) is higher than when keeping the price at $t + c$ and devoting the entire profit to CSR spending.

**B. Consumers are willing to pay for CSR** .

In stage 2, given their CSR characteristics, firms will set their prices in order to maximise their objective function (12), with demand functions given by (2) and (3) and subject to the constraint that $p_i - c \geq \theta_i$.

Using the same type of argument as for the case where $\beta = 0$, we can readily show that at the equilibrium of the two-stage game, both firms sell a positive quantity.

Assuming positive demand for both firms, first-order conditions will lead to the following prices:

$$\begin{aligned} p_0 &= c + t + \frac{1-\beta-\alpha}{3}\theta_1 + \frac{\beta+2}{3}\theta_0 \\ p_1 &= c + t + \frac{1-\beta}{3}\theta_0 + \frac{\beta-2\alpha+2}{3}\theta_1 \end{aligned}$$

With these prices, firm 1's profit will cover its CSR expenditures if $(1-\beta)(\theta_1-\theta_0) \leq 3t - 2\alpha\theta_1$.[12] If this is not the case, prices will be given by:

$$\begin{aligned} p_0 &= c + \frac{t}{2} + \frac{\beta}{2}(\theta_0-\theta_1) + \frac{\theta_0+\theta_1}{2} \\ p_1 &= c + \theta_1 \end{aligned}$$

Turning to stage 1, we are then able to derive the firms' payoffs as functions of CSR characteristics $(\theta_0, \theta_1)$:

$$U_0(\theta_0,\theta_1) = \begin{cases} \frac{1}{2t}\left[t + \frac{1-\alpha-\beta}{3}\theta_1 + \frac{\beta-1}{3}\theta_0\right]^2 & \text{if} \quad (1-\beta)(\theta_1-\theta_0) \leq 3t - 2\alpha\theta_1 \\ \frac{1}{2t}\left[\frac{t+(1-\beta)(\theta_1-\theta_0)}{2}\right]^2 & \text{if} \quad (1-\beta)(\theta_1-\theta_0) > 3t - 2\alpha\theta_1 \end{cases} \tag{15}$$

And

$$U_1(\theta_0,\theta_1) = \begin{cases} \frac{1}{2t}\left[t + \frac{1-\beta}{3}\theta_0 + \frac{\alpha+\beta-1}{3}\theta_1\right]^2 & \text{if} \quad (1-\beta)(\theta_1-\theta_0) \leq 3t - 2\alpha\theta_1 \\ \frac{\alpha\theta_1}{4t}\left[3t + (1-\beta)(\theta_0-\theta_1)\right] & \text{if} \quad (1-\beta)(\theta_1-\theta_0) > 3t - 2\alpha\theta_1 \end{cases} \tag{16}$$

Depending on the intensity of consumers' preferences, two cases can be distinguished:

**Case 1:** $\beta < 1$

This case is very similar to the case where $\beta = 0$: $U_0$ is strictly decreasing in $\theta_0$, while $U_1$ is first increasing in $\theta_1$ and then decreasing in $\theta_1$. Therefore the equilibrium of the two-stage game will be:

$$\theta_0 = 0 \qquad And \qquad \theta_1 = \frac{3t}{2(1-\beta)}$$

And

$$\begin{aligned} p_0 &= c + \frac{5t}{4} \\ p_1 &= c + \theta_1 = c + \frac{3t}{2} \end{aligned}$$

[12] The condition for firm 0 is similar to the condition for an interior solution and so is automatically satisfied.

With quantities $q_0 = \frac{5}{8}$ and $q_1 = \frac{3}{8}$.

**Case 2:** $\beta \geq 1$

In this case, each firm's payoff is increasing in the difference $\theta_i - \theta_j$. Firms will thus try to overtake the CSR investment of the other firm. In the end, both firms will invest $\bar{\theta}$. In stage 2, equilibrium prices are:

$$p_0 = \begin{cases} c + t + \frac{3-\alpha}{3}\bar{\theta} & \text{if} \quad \bar{\theta} \leq \frac{3t}{2\alpha} \\ c + \frac{t}{2} + \bar{\theta} & \text{if} \quad \bar{\theta} > \frac{3t}{2\alpha} \end{cases} \tag{17}$$

And

$$p_1 = \begin{cases} c + t + \frac{3-2\alpha}{3}\bar{\theta} & \text{if} \quad \bar{\theta} \leq \frac{3t}{2\alpha} \\ c + \bar{\theta} & \text{if} \quad \bar{\theta} > \frac{3t}{2\alpha} \end{cases} \tag{18}$$

with equilibrium quantities given by:

$$q_0 = \begin{cases} \frac{1}{2t}\left[t - \frac{\alpha}{3}\bar{\theta}\right] & \text{if} \quad \bar{\theta} \leq \frac{3t}{2\alpha} \\ \frac{1}{4} & \text{if} \quad \bar{\theta} > \frac{3t}{2\alpha} \end{cases} \tag{19}$$

And

$$q_1 = \begin{cases} \frac{1}{2t}\left[t + \frac{\alpha}{3}\bar{\theta}\right] & \text{if} \quad \bar{\theta} \leq \frac{3t}{2\alpha} \\ \frac{3}{4} & \text{if} \quad \bar{\theta} > \frac{3t}{2\alpha} \end{cases} \tag{20}$$

It is worth noting that when consumers' willingness to pay for CSR is relatively small (i.e. $\beta < 1$), the level of CSR chosen by firm 1 does not depend on its preferences for CSR ($\alpha$). By contrast, when consumers' willingness to pay is sufficiently high, the total amount of CSR $\theta_1 q_1$ will depend on firm 1's preferences over CSR.

As for the case where CSR is characterized by fixed costs, when the consumers' willingness to pay for CSR is low, only the firm with concentrated ownership will invest in CSR and the amount invested is fixed (i.e. does not depend on $\alpha$). By contrast, when the consumers' willingness to pay is sufficiently high, the total amount chosen by the firm with concentrated ownership is greater than the amount chosen by the firm with dispersed shareholding and this total amount increases with $\alpha$.

The performance in terms of profits depends on the consumer's behavior. If the willingness to pay for CSR is low, the firm with a dispersed shareholding has a higher profit: as consumers do not care sufficiently about CSR, they will not necessarily buy more from the firm with concentrated shareholding. Therefore, to increase the total amount of CSR, this firm will increase its price in order to be able to

choose a very $\theta_1$. This choice reduces the market share of the firm with concentrated ownership.

If the willingness to pay for CSR is high, the firm with dispersed shareholding may have a higher or a lower profit than the firm with concentrated shareholding. Both firms choose the same $\theta_i$, but the firm with concentrated will charge a lower price in order to increase its market share and be able to invest more in CSR activities.

**Appendix 2**

The imputed value of CSR is calculated following the procedure described below:

$$I(CSR) = \sum_{i=1}^{n} AI_i * (Ind_i(\frac{CSR}{AI})_{mf})$$

where $I(CSR)$ = The imputed CSR of a firm $i$ with concentrated shareholding as dispersed shareholding firms

$AI_i$ = Firm $i's$ value of the accounting item (sales or assets) used in the valuation multiple.

$Ind_i(\frac{CSR}{AI})_{mf}$ = The multiple of CSR to an accounting item (sales or assets) for the median firm with dispersed shareholding in firm $i's$ industry.

For example, to calculate using sales as the accounting item, we multiply the industry median CSR-to-sales ratio for the dispersed shareholding firms in firm $i's$ industry, by firm $i's$ sales. The product is the imputed value of the CSR for firm $i$ using a sales-multiplier. The imputed values using the asset-multiplier is calculated similarly.

**Appendix 3: Probability of Investing in CSR**

| VARIABLES | (1) Full Sample | (2) Concentrated Shareholding | (3) Dispersed Shareholding |
|---|---|---|---|
| *% Shareholding-Promoters* | 0.002** | 0.005** | 0.000 |
| | (0.001) | (0.002) | (0.001) |
| *Sales* | 0.016 | 0.008 | 0.018 |
| | (0.014) | (0.021) | (0.020) |
| *ROA* | 0.082 | 0.502 | 0.088 |
| | (0.208) | (0.388) | (0.271) |
| *Board Size* | 0.027*** | 0.041*** | 0.012 |
| | (0.007) | (0.011) | (0.009) |
| *% Independent Directors* | 0.002* | -0.005** | 0.005*** |
| | (0.001) | (0.002) | (0.001) |
| *% Shareholding-Institutions* | 0.001 | 0.000 | 0.001 |
| | (0.001) | (0.002) | (0.002) |
| *Promoter CEO* | 0.269*** | 0.279*** | 0.243*** |
| | (0.040) | (0.065) | (0.053) |
| *Export / Sales (%)* | -0.000* | -0.003 | 0.005** |
| | (0.000) | (0.002) | (0.000) |
| *Year Dummies* | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes |
| *Constant* | -1.087*** | -1.492*** | -0.690*** |
| | (0.201) | (0.352) | (0.264) |
| *Observations* | 4,223 | 1,703 | 2,513 |

**Appendix 4: Types of CSR Investments and Ownership Structure**

| Variables | (1) Donation | | (2) Social and Community Expenses | | (3) Environmental/Pollution Control Expenses | |
|---|---|---|---|---|---|---|
| | Concentrated | Dispersed | Concentrated | Dispersed | Concentrated | Dispersed |
| *% Shareholding-Promoters* | 0.759** | -0.186** | 0.007* | 0.130*** | 0.009* | 0.054** |
| | (0.339) | (0.063) | (0.004) | (0.030) | (0.005) | (0.021) |
| *Sales* | 7.192*** | 8.718** | 0.280** | 2.146** | 0.105** | 0.007 |
| | (1.435) | (2.814) | (0.112) | (0.722) | (0.050) | (0.196) |
| *ROA* | 7.518 | 1.560 | -1.096 | 15.326** | -1.158* | 5.497 |
| | (12.261) | (1.804) | (1.125) | (7.694) | (0.791) | (4.481) |
| *Board Size* | 2.738*** | 0.073 | -0.224** | 1.171*** | 0.026 | 0.270** |
| | (0.607) | (0.249) | (0.098) | (0.417) | (0.024) | (0.123) |
| *% Independent Directors* | 0.298 | 0.246** | 0.033 | 0.082* | -0.031** | 0.007 |
| | (0.240) | (0.091) | (0.021) | (0.043) | (0.009) | (0.016) |
| *Promoter CEO* | 15.176*** | 12.456** | 0.553** | -1.739** | -0.290 | 1.163 |
| | (6.927) | (5.344) | (0.278) | (0.684) | (0.257) | (0.851) |
| *% Shareholding-Promoters* | 0.759** | -0.186** | 0.007* | 0.130*** | 0.009* | 0.054** |
| | (0.339) | (0.063) | (0.004) | (0.030) | (0.005) | (0.021) |
| *% Shareholding-Institutions* | 0.822** | 0.091 | 0.029* | -0.075 | 0.028** | 0.097 |
| | (0.378) | (0.082) | (0.017) | (0.051) | (0.011) | (0.059) |
| *Export / Sales (%)* | -0.192 | 0.147** | -0.001 | 0.027** | 0.003 | 0.030** |
| | (0.143) | (0.059) | (0.002) | (0.011) | (0.002) | (0.009) |
| *Year Dummies* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Industry Dummies* | Yes | Yes | Yes | Yes | Yes | Yes |
| *Constant* | -21.447* | -58.126** | 1.688 | -34.25*** | -0.771* | -10.926*** |
| | (12.95) | (16.887) | (1.425) | (7.29) | (0.626) | (2.499) |
| *Observations* | 1,516 | 2,505 | 1,516 | 2,505 | 1,516 | 2,505 |
| $R^2$ | 0.167 | 0.107 | 0.035 | 0.201 | 0.060 | 0.067 |