

**Caught Red-Handed:
Corporate Labor Practices and the Investigatory
Media, a New Look at Corporate Social
Responsibility**

Jessica M. Lohrman*

Faculty Advisor: Professor Huseyin Yildirim

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* Jessica M. Lohrman is currently completing a Bachelor of Science degree in Economics at Duke University. She will be employed by Bain & Company as an Associate Consultant beginning in the fall of 2009. The author can be reached at jessica.lohrman@gmail.com. She would like to thank Professor Huseyin Yildirim for his indispensable guidance, feedback, and support. The author is also grateful for the encouragement and advice of her classmates in Economics 201 and 202 seminars

Abstract

Firm self-regulation with regards to illegal and unethical labor practices has become a significant trend recently, as firms face possible negative exposure from the investigatory media. This paper provides a theoretical analysis of the determinants corporate labor practices and the role played by the investigatory media in firm self-regulation. The model finds that firms, when facing a media investigation, are no more likely to use unethical labor regardless of how cost effective it is. Instead, the firm is actually driven towards certain labor choices based upon the parameters of the investigatory media's profitability. This communicates the importance of outside monitoring bodies on the road towards improved global labor standards.

I. Introduction

In today's business environment, the socially beneficial actions of firms have become increasingly important. The term corporate social responsibility (CSR) has been coined by firms and academia alike to represent such activities, yet a clear and consistent definition of CSR proves difficult to ascertain. McWilliams and Siegel (2001) define CSR activity as "actions that appear to further some social good, beyond the interests of the firm and that which is required by law"; however, this eliminates the possible alignment of CSR practices with firm interests. As profit-maximization is undoubtedly critical in evaluating firm decisions, CSR should not be examined as entirely isolated from firm incentives. Therefore, meaningful theoretical analysis requires an adapted definition of CSR, which in this paper shall be firm behavior that furthers a social good.

CSR manifests itself in a variety of firm actions, such as philanthropy donations and environmental sustainability improvements. Furthermore, CSR plays an increasingly important role as a risk management tool. Kytte and Ruggie (2005) explain how firms reaping the benefits of globalization also incur increased social risk, which "occurs when an empowered stakeholder takes up a social issue area and applies pressure on a corporation." Many multinational firms utilize cheaper labor in developing countries, and such labor is necessary for firm survival in competitive markets, especially in the consumer products sector (Kytte and Ruggie, 2005). However, if a firm's foreign subcontractor uses child labor or sweat shops, the firm can be linked to these unethical practices and experience harmful consequences, be it negative publicity or a consumer boycott. Unless a firm has complete certainty about its many labor subcontractors'

practices, it runs the risk of the media or other watchdog organizations uncovering its involvement in exploitive labor practices.

Instances of such discoveries regarding firms' labor practices are not in short supply. Nike provides one of the most notable examples. Beginning in the 1980s, criticism arose regarding Nike's outsourcing production to foreign facilities with unethical labor conditions. Such attention heightened in the 1990's, as Nike faced public scrutiny and consumer protests in reaction to its use of sweatshops. Nike's "offenses" included, "underpaid workers in Indonesia, child labor in Cambodia and Pakistan, and poor working conditions in China and Vietnam" (Locke, 2002). Public scrutiny became so intense that Philip Knight, Nike's CEO, stated, "The Nike product has become synonymous with slave wages, forced overtime and arbitrary abuse...I truly believe that the American consumer does not want to buy products made in abusive conditions" (Quoted in Cushman, 1998). After facing such negative public response, Nike initiated strict monitoring of its suppliers on its own behalf and through hiring outside monitors such as PriceWaterhouseCoopers (Locke, 2002). Even as recently as October 2007, Gap was linked to child labor, which was discovered in the factories of one of its Indian subcontractors.

Firms are facing increased public expectations about foreign, exploitive labor. No longer are these solely protectionist arguments about outsourcing jobs, instead the concerns reflect the public's objections to exploitive labor use (Schwartz and Gibb, 1999). While consumers may not want to support firms with unethical labor practices, in the absence of an information provider, they are unaware if child labor or sweat shop conditions contributed to their new sweater or running shoes. In the age of ever-

increasing global communications, the mass media serves as an obvious link between such unknown practices and the concerned consumer base.

Therefore, operating in developing countries presents firms with an interesting ethical dilemma. Consumers at home may demand a ban on child labor and expect the firm to take responsibility for monitoring compliance within its broad supply chain; however, in the developing country where manufacturing facilities are located, governmental support and regulatory infrastructure may be severely lacking (Kolk and van Tulder, 2002). While on the other hand, global competition puts tremendous price pressure on firms. As a result of such regulatory inadequacies, firms have increasingly begun self-regulating and adopting codes of conduct for labor usage. Christopherson and Lillie explain that the labor standards deregulation in the global economy has resulted in multinational firms shouldering the responsibility of upholding ethical labor standards (2005). Notable examples include Levi Strauss's program that makes certain no child labor is involved in its affiliates factories and Timberland's monitoring of its overseas factories' labor conditions (O'Callaghan, 2007).

For business, the international media is playing a more important role than ever before (Schwartz and Gibb, 1999). Global media outlets, despite being large corporations themselves, have proven their willingness to highlight corporate shortcomings (O'Callaghan, 2007). Furthermore, the mass media has rendered the firms' claims of being unable to track their diverse supply chains insufficient. If the media is able to discover a firm's subcontractors and censor labor conditions, firm excuses of ignorance are no longer valid in the public eye (Kletz and Pesqueux, 2005). Dyck and Zingales (2002) contest that the media reduces the costs of information acquisition and verification,

and that the media plays an important role in affecting corporate policy. Hence, the media increasingly presents itself as the link between hidden exploitive labor practices and a concerned consumer population.

As the responsibility falls increasingly on firms' shoulders to support ethical labor standards, understanding the drivers of firm labor decisions becomes not only relevant but also imperative. Such understanding provides insight into how to positively shape the future of global labor conditions. In what ways do a firm's conflicting incentives extend into its labor choices? How do the levels of exploitive wages and costly ethical labor affect firm decisions? In what ways does the investigatory media correct firm incentives to use exploitive labor, and how exactly does the consumer fit into the puzzle? This paper provides a theoretical model that analyzes these questions.

The Model

In this paper I present a theory to explain how the threat of media investigation and other factors affect a firm's decision to employ ethical legal labor instead of child and exploitive labor and how the media's role in shaping corporate practices changes in different situations. For simplicity's sake, the model will focus on two production conditions: child labor or legal labor. Since both child labor and sweat shops imply cheaper labor costs for the firm, the model and its implications may be applied to sweat shop labor as well. The higher legal wage in this model reflects both the higher wage of ethical labor and the firm's cost of knowing that ethical labor is actually being used. The firm's labor decisions are a form of asymmetric information; therefore, consumers and the media do not know whether or not child labor has been used.

Firms have been incredibly responsive to reports of exploitive labor use. In the face of public pressure, firms have increased their efforts in self-regulation of their labor practices. For example, when reports exposed that Reebok was selling soccer balls made by Pakistani children, Reebok established an independent monitoring system of its labor practices (Spar, 1998). To reconcile their wrong-doings and to prevent future missteps, firms have established expensive monitoring programs. These firm actions shed light on the profit trade-offs the firms anticipate. If the cheaper labor costs and negative public exposure were consistently more profitable for the firm than using more costly labor, one would not expect to see firms spring into action when facing exposure. Therefore, real world examples provide evidence that firms should expect more profitable results from more expensive ethical labor use than an uncovering of exploitive labor paired with cheaper production costs. Since in many cases a firm anticipates a decrease in profit if its child labor is publicized by the media, the threat of an investigation may incentivize the firm to make the “safe” decision of legal labor. On the other hand, the media would only waste resources, as investigations are costly, if it investigates a firm employing legal labor. Therefore, the media bases its investigation decision on its perceptions of whether or not the firm is likely to use child labor.

Initially, the monopoly case is considered. The firm makes a decision about whether to use child or legal labor, which is unknown to the public and the media. Legal labor is more costly for the firm, and the firm maximizes its expected profit by choosing its labor type, child or legal. It is assumed that a consumer’s valuation of the good is known. Creyer (1997) explains how consumers use an aspiration-based reference point for firm ethical behavior. Therefore, ethical labor practices, what the consumer would

ideally like to happen, are the benchmark against which firm activity is judged, and unethical behavior can be viewed as a loss. Following this reasoning, if the consumer does not know child labor is involved, the consumer will pay a price equal to his or her value of the good. However, if the consumer finds out through the media that child labor is involved, he or she will now pay less than their initial value of the good. For the consumer, knowing that child labor was involved generates a disutility in consuming the good. The consumer's disutility arises from being associated with a good produced by children or from financially supporting a firm engaged in unethical labor practices. In such a case, the consumer will pay a price that reflects this disutility, which is less than their initial value for the good. Hence, if a firm chooses to employ child labor, the price at which the good is sold is an expected value, dependent on the media's actions.

The model considers one major media outlet, such as CNN, which must decide whether or not to investigate the firm. If the media does not investigate the firm, its profits are unaffected and are normalized to zero. Investigating the firm is costly as it requires journalists' time, travel, etc. The model assumes a fixed cost of investigation, which is incurred regardless of the investigation's results. Even if the firm is using child labor, the diverse and diffusely distributed production facilities in the multinational firm's supply chain result in imperfect investigation accuracy. Assuming the firm has chosen to employ child labor, the media finds evidence of child labor only probabilistically.

If child labor is uncovered, the media will experience high profits as the issue is relevant to consumers and is "headline material". However, if the media investigation yields no results, the model assumes a negative payoff. This negative payoff reflects how in such a scenario the media outlet risks being seen as biased toward the firm, unable to

produce meaningful news, and ineffective investigators. Schwartz and Gibb (1999) explain how journalists prefer scandals to positive news. Furthermore, they explain how stories uncovering exploitive practices are much more profitable as they make the front page while news about good corporate conduct gains much less attention in the business section. Furthermore, if the investigation yields no headline news, further resources must be expended to obtain a replacement story. Hence, the media's profits should it choose to investigate depend first on whether the firm chose child labor and secondly on the precision of investigation.

By making the firm's choice of child labor and the media's decision to investigate probabilities, the model presents a mixed strategy Nash Equilibrium that provides insight into the different parameters that affect child labor and investigation decisions. The firm's decision to hire child labor becomes a function entirely of the factors that drive the media's payoff. This provides important implications about the role of an independent monitor in correcting firm incentives and mitigating unethical labor practices.

II. Literature Review

While the range of literature on corporate social responsibility is very broad, research has paid attention to the benefits a firm may receive from CSR. Some literature has examined the interactions between firms and information-supplying agents and firm self-regulation. However, no literature exists that poses a theoretical examination of the cost-benefit decisions made by firms regarding costly self-regulation and the threat of exposure. Furthermore, existing research on child labor generally focuses on country-specific parameters instead of firm hiring decisions. Literature relevant to this paper is presented below as well as my theory's important extension

Freeman (1984) presented a seminal theory on CSR, coined stakeholder theory. Stakeholder theory maintains that a firm must satisfy the many constituents affected by its practices, such as employees, consumers, and local communities. Since these stakeholders could withdraw their support of the firm, it is in the firm's interests to engage in CSR that could maintain such support. Accordingly, Stakeholder theory attests that engaging in CSR is beneficial for the firm.

Initially, research regarding CSR and profitability focused on empirical analysis. This literature examined whether CSR was correlated with better financial performance; however, the results were very mixed with no conclusive trend arising (Aupperle et al., 1985; Russo and Fouts, 1997; McWilliams and Siegel, 2000). In a new attempt to study the profitability of CSR, McWilliams and Siegel (2001) presented a theory of the firm perspective on CSR and used a supply and demand framework. They contributed a new theoretical approach to analyzing CSR where the firm uses a cost-benefit analysis to decide upon optimal CSR spending. In their model, CSR is embodied in the good, and the firm must decide on how much capital to spend on embodying CSR into its products. By using the cost-benefit approach, "the firm meets the demands of relevant stakeholders—both those that demand CSR (consumers, employees, community) and those that 'own' the firm (shareholders)." Hence, McWilliams and Siegel presented an important theoretical connection between stakeholder theory and firm value-maximization.

Feddersen and Gilligan (2001) address this issue of asymmetric information by introducing a theoretical approach with credence goods. By definition, credence goods have important characteristics that cannot be discovered even after consumption, such as unobservable firm operating practices. In their non-cooperative game-theory model, an

activist may investigate a firm and provide information regarding the firm's operating practices to consumers prior to their consumption of the good. They conclude that an information-supplying activist can increase the information available to consumers and incentivize firms to choose socially desirable operating methods. However, the model only analyzes situations where there are at least two firms, and the effects of competition and product-substitutability on firm operating choices are included in the initial baseline model.

Baron (2005) presents a model in which the specifically the news media assumes the role of communicating information about a product's negative externality to consumers. An activist and an industry compete for the public opinion through the news media. The model's results show that the media's bias serves to decrease consumer demand for goods associated with a negative externality and affect their preferences for regulation. This provides important theoretical insight into how the media can affect consumer demand and regulation preferences. However, the media's role on the firm's decision to regulate remains unanswered. By incorporating both the media's and the firm's goals of profit-maximization, my paper proposes a theoretical explanation for this interaction.

In order to present an explanation of firm self-regulation, Baron and Diermeier (2007) provide a model explaining how the threat of activists' actions against the firm incentivizes the firm to self-regulate. Activists seek to change a firm's practices and attempt to do so through the threat of launching a campaign against the firm. Baron and Diermeier identify that, in an activist-rich environment, firms must adopt a proactive strategy to avoid or lessen the severity of activist's campaigns, which may involve a

change in operating practices. Their model also addresses the possibility of firm reputation building. While Baron and Diermeier make a significant theoretical contribution towards understanding firm self-regulation, the exact mechanisms which punish the firm in a campaign remain unclear. As firm self-regulation is costly, a clearer theoretical explanation is needed regarding the trade off between the costs of self-regulation and the costs of negative exposure.

Immordino (2008) expands the relevant literature tremendously by presenting a theory to explain the interactions between a firm, governments, and consumers that incorporates firm labor decisions and asymmetric information. In his model, an information-supplying agent alerts consumers about the inequality between labor standards in a developed country and a less developed country; however, this agent is not an active participant in the model. The consumers gain a disutility in consumption due to the inequity of labor conditions between the two countries of production. According to the model, public disclosure to the consumer actually lowers the working conditions in both countries, as the two countries' governments pressure each other down to lower and lower wages in an attempt to win the international firm's production. While Immordino addresses the important issues of consumer reaction to unethical labor practices, the need for an information-supplying agent, and the firm's ability to choose its labor practices, his model rests heavily on government legislation. This is incongruent with the real life trend towards firms taking responsibility for labor regulation. Furthermore, the higher labor standards in developing countries that result from firm self-regulation cannot exist within this theoretical framework.

Current literature regarding child labor mainly stresses the conditions within a country that affect its child labor (Basu, 2000; Brown, et al., 2002; Dessy & Pallage, 2001). For example, Basu and Van (1998) present a theoretical model that analyzes family decisions on sending their children into the workforce. This is based on their “luxury axiom”, which states that a family will only send its children to work if other streams of income become very low. They find that if certain relationships between the levels of adult wages and child wages exist, children will not be sent into the workforce. While this research in child labor provides insight into the implications of wage levels of a country, it leaves open the discussion on why firms might choose to bypass exploitive or child labor altogether, even if the firm would be operating legally if it chose to use such labor.

As a survey of past literature has shown, the true cost-benefit decisions made by firms regarding self-regulation and possible exposure has not been addressed while simultaneously addressing the role an information-supplying agent. While Feddersen and Gilligan (2001) provide wonderful insight into this issue, the effects of competition and product-substitutability cloud the more intrinsic drivers of firm self-regulation. My paper serves to fill in this gap in the current literature by examining firm self-regulation regarding labor practices and the role of the investigatory media as an information-supplying agent in both the monopoly and duopoly cases.

III. Theoretical Framework

In the monopoly case of the model, there are three players, one firm, one media outlet, and a continuum of identical consumers, which will be represented by a single consumer for simplicity's sake. These players interact strategically in a multi-stage game that occupies only one period.

The variables in the model are as follows:

w_C = child labor wage

w_L = legal labor wage

f = cost of media investigation

b = media's payoff resulting from an unsuccessful investigation

B = media's payoff resulting from a successful investigation

γ = precision of the media's investigation

k = consumer disutility resulting from a firm's use of child labor

In stage one, the firm decides whether to employ child labor, at a cost of w_C , or legal labor, at a cost of w_L .

$$0 \leq w_C < w_L$$

Following the firm's decision, in stage 2 the media outlet decides whether or not to investigate the firm's labor practices. The cost of investigation is $f > 0$.

If the firm has decided against using child labor, the investigation will yield no evidence; however, if the firm is using child labor, the investigation yields evidence with probability γ , and no evidence with probability $1 - \gamma$. Hence, γ represents the precision of investigation.

If the media's investigation finds evidence of child labor, the media's payoff is B . However, if the investigation finds no evidence, the payoff is $-b$. The media's payoff from not investigating is normalized to 0. The model assumes:

$$0 < b < f < B$$

In stage 3, after observing the media's information, the firm sets the price of the good produced. In stage 4, seeing the media's report and the price, the consumer decides whether or not to purchase the good. The consumer's value for the good, v , is known by the firm. If child labor is reported, the consumer experiences a disutility, k , from consumption, which essentially reduces the consumer demand for the firm's good.

Let α_M = the probability that the firm uses child labor

Let β_M = the probability that the media investigates the firm

If no child labor is detected, the firm can charge the same price as when it chooses to employ legal labor, p_L . If child labor is detected, the firm must charge a lower price, p_C , that acknowledges the consumer's disutility. Hence,

$$p_L = v \quad \text{and} \quad p_C = v - k$$

Thus, the firm's expected profit from hiring child labor is:

$$\Pi_C^F = \beta^* [\gamma(p_C - w_C) + (1 - \gamma)(p_L - w_C)] + (1 - \beta^*)(p_L - w_C)$$

The firm's profit when using legal labor is simply:

$$\Pi_L^F = p_L - w_L$$

The media's expected payoffs for investigating and not are as follows:

$$\Pi_I^M = \alpha^* [\gamma B - (1 - \gamma)b] - (1 - \alpha^*)b - f$$

$$\Pi_{NI}^M = 0$$

By analyzing the firm and media's actions in the context of this model, different parameters and their effects on the firm's predicted use of child labor and the media's investigation decisions may be analyzed. The role of asymmetric information may be eliminated for a first-best scenario.

IV. Analysis

First-Best Scenario

The first-best scenario arises when no asymmetric information is involved and all costs are accurately reflected in the market. This case serves to confirm one's intuition of what the optimal solution would look like. If the firm uses child labor, it is always observable by consumers and the media. As discussed before, the profits generated under reported child labor use are strictly less than those earned by employing legal labor.

$$p_C - w_C < p_L - w_L \quad \therefore \quad k > w_L - w_C$$

In the situation of no asymmetric information, it is strictly more profitable for the firm to employ legal labor. To this strategy, the media's best response is not investigating and thereby saving the cost of investigation, f . Hence, the pure strategy Nash Equilibrium is the firm hires legal labor and the media conducts no investigation.

Asymmetric Information Case

Results

In order to find the firm's and the media's mutual best responses, the probabilities α_M^* and β_M^* must be found. Solving for a mixed strategy Nash Equilibrium yielded:

$$\alpha_M^* = \frac{f+b}{\gamma(B+b)}$$

$$\beta_M^* = \frac{w_L + w_C}{\gamma k}$$

Both α_M^* and β_M^* are strictly greater than zero. These solutions are valid if:

$$\frac{f+b}{\gamma(B+b)} < 1 \quad \& \quad \frac{w_L + w_C}{\gamma k} < 1$$

$$\text{If } \frac{f+b}{\gamma(B+b)} \geq 1, \quad \text{then } \alpha_M^* = 1$$

$$\text{If } \frac{w_L + w_C}{\gamma k} \geq 1, \quad \text{then } \beta_M^* = 1$$

In conclusion,

$$\alpha_M^* = \min \left\{ \frac{f+b}{\gamma(B+b)}, 1 \right\}$$

$$\beta_M^* = \min \left\{ \frac{w_L - w_C}{\gamma k}, 1 \right\}$$

The corner solution where $\alpha_M^* = 1$ and $\beta_M^* = 1$ arises when

$$\frac{f+b}{\gamma(B+b)} \geq 1 \quad \text{and} \quad \frac{w_L - w_C}{\gamma k} \geq 1 .$$

In this case, the firm always hires child labor, and the media always chooses to investigate. The other corner solution, where $\alpha_M^* = 0$ and $\beta_M^* = 0$, will never actually occur. Along one line of reasoning, this solution seems like a possible Nash equilibrium. If the firm is never going to use child labor, then the media will indeed choose to never investigate the firm. However, the logic does not work in the reverse. One more iteration leads to the firm's decision under the circumstance of the media never investigating. In the model, if there is no threat of investigation the firm would much rather employ child labor, with a payoff of $v - w_C$, than employ legal labor, with the lower payoff of $v - w_L$. Hence, $\alpha_M^* = 0$ and $\beta_M^* = 0$ will never be a Nash Equilibrium in the case of asymmetric information.

Proof:

$$\begin{aligned}
\Pi_C^F &= \Pi_L^F \\
\Rightarrow \beta_M^* [\gamma(p_C - w_C) + (1 - \gamma)(p_L - w_C)] + (1 - \beta_M^*)(p_L - w_C) &= p_L - w_L \\
\Rightarrow \beta_M^* [\gamma(p_C - w_C) + (1 - \gamma)(p_L - w_C) - (p_L - w_C)] + p_L - w_C &= p_L - w_L \\
\Rightarrow \beta_M^* [\gamma(p_C - w_C) - \gamma(p_L - w_C)] &= w_C - w_L \\
\Rightarrow \beta_M^* &= \frac{w_C - w_L}{\gamma(p_C - p_L)} \\
\Rightarrow \beta_M^* &= \frac{w_L - w_C}{\gamma k}
\end{aligned}$$

$$\begin{aligned}
\Pi_I^M &= \Pi_{NI}^M \\
\Rightarrow \alpha_M^* [\gamma B - (1 - \gamma)b] - (1 - \alpha_M^*)b - f &= 0 \\
\Rightarrow \alpha_M^* [\gamma B - (1 - \gamma)b + b] - b - f &= 0 \\
\Rightarrow \alpha_M^* [\gamma(B + b)] &= f + b \\
\Rightarrow \alpha_M^* &= \frac{f + b}{\gamma(B + b)}
\end{aligned}$$

Economic Analysis

The mixed strategy equilibrium presented provides many important insights. In analyzing the components of α_M^* , the model provides insight into how the different variables affect a firm's decision to hire child labor. As f , the media's cost of investigating, increases, the firm is more likely to use child labor. This makes sense and reflects how the firm anticipates a lesser threat of investigation if it is increasingly costly to the media. If the media's investigation yields no results, they face a negative payoff of $-b$. As this payoff becomes more negative, the firm is more likely to use child labor since one of the media's possible payoffs from investigation is becoming lower. Similar logic explains why an increase in B , the media's payoff from a successful investigation, decreases the likelihood of a firm using child labor. If the expected payoff for the media's investigation increases, the firm anticipates a greater threat of investigation and therefore has less incentive to choose unethical labor practices. Finally, an increase in γ , the precision of investigation, leads to a decrease in the probability of the firm using child labor. This makes sense since if investigations are more likely to yield high payoffs to the media, the threat of investigation increases as does the chance of the investigation finding something.

The media's decision of whether or not to investigate the firm, β^* , depends on the levels of legal and child wages, the precision of investigation, and the level of disutility a consumer faces in consuming child-produced goods. The most interesting result is how the magnitude of the gap between w_C and w_L affects the media's likelihood of investigating a firm. As the gap between w_C and w_L increases, the relative

profitability of the firm using child labor increases. The media realizes that the firm therefore has a much higher incentive to use child labor and will investigate the firm with a higher probability than before. This has important policy implications related to minimum wage regulations in a country, which effectively represent the “legal wages” considered in this model. By increasing the minimum wage, countries provide stronger incentives for firms to substitute towards use of child labor. Furthermore, as globalization “shrinks” the world, child labor in developing countries becomes more accessible to the firms, which can be represented in the model by a decrease in child wages. Hence, globalization provides further incentives to the firm to use child labor. This model communicates the importance of an outside monitor, in this case the media, in helping correct the firm’s incentives. The media increases the threat of investigation in response to such increased firm incentives to use child labor. With regards to policy implications, the model shows that the minimum wage level’s effect on firm incentives to use child labor becomes irrelevant in the presence of a monitoring agent like the media.

The precision of investigation, γ , affects the likelihood of the media launching an investigation in an identical fashion to its effect on the firm’s labor decisions. Initially this result appears counterintuitive when one only considers the media’s payoff function. A higher gamma should increase the chance of the media receiving B instead of $-b$. However, the firm’s response to an increased precision of investigation is to hire child labor less often, i.e., with a lower probability. This outweighs the intuitive positive effects of γ on the media’s decision and instead causes a decrease in the likelihood of the media investigating. Finally, as the consumer’s disutility from child labor increases, the media is less likely to investigate the firm. This makes sense because as k increases, the firm

recognizes the greater risk to its profits posed by child labor. Hence the media recognizes that this incentivizes the firm to avoid child labor and therefore investigation is predicted to be less profitable for the media.

This model presents intriguing insight into the determinants of the firm's labor choices and the importance of the media in affecting corporate labor decisions. The decision to use child labor is completely independent of the firm's profit drivers, such as child wages, legal wages, and the different prices consumers will pay. Instead, α^* is a function of the media's profit drivers. This initially appears counterintuitive; however, this result makes sense because any increase in firm profits resulting from the dynamics of wages or prices is offset by an increased threat of media investigation. Hence, the threat of exposure alone is responsible for firm's choices to use ethical labor practices. This supports the dilemma discussed earlier of how firms face both an operating environment in which they try to maximize profits and consumers who hold beliefs about the negative externality resulting from unethical labor practices. This model suggests that ultimately firms will make ethical labor decisions entirely upon the level of "social risk" they face in being exposed by the media. Furthermore, the results communicate the effectiveness of an outside monitor, in this case the media, in helping correct firm incentives about using ethical labor practices. One very important implication of these results is that in the presence of an outside monitor, labor regulations do not affect a firm's labor decisions. As research on exploitive labor has focused heavily on wage regulations in the past, this model highlights the importance of considering other drivers of labor decisions, namely those that increase rewards to the outside monitor.

V. Extension: Duopolistic Competition

As previously discussed, globalization creates an increasingly competitive market for firms. Such heightened competition arises on two fronts. First, consumer markets are open to an increasing number of firms as globalization allows foreign firms to reach new customer bases with increasing ease. This leads to more firms competing for a certain base of consumers than was previously the case. Second, globalization has allowed many firms in developed countries to use cheaper labor in developing foreign countries. As markets have continued on the trend towards increasing openness, more cost-effective labor markets have become more plentiful and easier for multinational firms to access. Hence, globalization creates a playing field with not only more players but also more cost-effective labor. In such a competitive market, firm's suffer great downward price pressure, and, as previously noted, survival often rests on the firm's ability to cut costs and maintain pace with the competition. Such cost-cutting pressures would logically seem to increase firm incentives to use the cheapest labor possible, which, in the absence of costly self-regulation, may turn out to be child labor.

Competition clearly presents an integral piece of the discussion on corporate labor practices. In order to analyze how competition affects firms' incentives to use child labor and how the investigatory media responds to these incentives, I now introduce an extension to the model that includes duopolistic competition.

Similar to the original model, this is a multi-stage game in one period. There is still one media outlet, for example, CNN, and one consumer, which again represents a continuum of identical consumers. However, there are now two firms competing in the market, for example, Adidas and Nike. It is reasonable to consider a case with two firms

but only one media outlet since the real world illustrates how there are proportionately more firms than major media outlets.

Duopolistic Competition Model Overview

In stage one, the two firms make their labor decisions of either employing cheap child labor, w_C , or more costly legal labor, w_L . The firms are assumed to be symmetric. Their labor decisions still function as asymmetric information to the consumer and the media; however, each firm knows the labor practices employed by the other. It makes logical sense that the two firms would be aware of what each other are doing, as they are competing in the same market and likely using similar locations of labor and possibly even the same labor subcontractors. However, this knowledge only enters the problem in each firm's expectation of their payoffs; it does not allow a firm to expose the other firm's practices to the public. Since formally investigating and gathering proof is costly, one firm's labor practices are not verifiable by the other firm.

In stage two, the media decides whether or not to launch an investigation on one, both, or neither of the firms. The parameters in the media's payoff remain the same. The media experiences constant returns to scale in this model with respect to cost of investigation f , payoffs $-b$ and B , and precision of investigation γ . Hence, the number of investigations launched does not affect the cost or the possible payoffs from each individual investigation.

In stage three, after observing the media's actions and findings, each firm sets the price for its good. The prices of each firm may differ. Finally, in stage four, the consumer observes both the media's report(s) and the firms' prices. The consumer then makes his or her purchasing decision.

The Firms' Problem

In order to assess all possible payoffs, each firm must consider its labor decisions, the labor decisions of the opposite firm, and all possible media investigation outcomes. Six different cases are possible in this model and are discussed below. In developing the equilibrium prices and firm profits in each case, the following is assumed:

$$w_L - w_C < k < v - w_C$$

The consumer's disutility, k , is exclusively greater than the wage gap. This important assumption ensures that a firm caught using child labor will not be able to steal all of the market from a firm operating with legal labor. Otherwise, the guilty firm would be able to lower the price to its marginal cost, w_C , and the legally operating firm would not be able to lower its price below w_L . Furthermore, the assumption makes certain that a market for the good exists even if child labor is discovered. Table 1 summarizes the following six cases.

Case 1: Both firms use child labor, and the media finds no evidence on either firm

Since consumers will not know that child labor was used in production, the firms may charge the marginal cost perceived by the consumer, w_L . The firms' profits in this case are especially interesting, as this is an example of Bertrand competition where the firms make profits above zero.

$$p_1^* = p_2^* = w_L$$
$$\Pi_1 = \Pi_2 = \frac{1}{2}(w_L - w_C)$$

Since the firms are selling the good above the marginal cost of production, the possibility of price undercutting must be considered. Consumer expectations become very important in this case. For instance, if Firm 1 charges below w_L , the consumer will assume that Firm 1 is using child labor since the firm would otherwise be operating at a loss. Now the consumer is internalizing the disutility k into his or her value of the good. In order for the consumer to purchase the good from Firm 1, $p_1 < w_L - k$. However, Firm 1 can only drop its price as low as w_C , and from the assumption we know that k is larger than the gap between the two wages. Therefore, Firm 1 would lose all market share if it attempted to undercut on price, so this is not a possible outcome. Accordingly, neither firm would charge a price lower than w_L .

Case 2: Both firms use child labor, and the media finds positive evidence on both firms

Now both firms will compete on price until they are down to their marginal cost of production. This case is just like normal Bertrand competition where prices are set to marginal cost and profits are normalized to zero.

$$p_1^* = p_2^* = w_C$$

$$\Pi_1 = \Pi_2 = 0$$

Case 3: Both firms use child labor, and the media finds positive evidence only on Firm 1

Following the logic in Case 1, Firm 2 can price Firm 1 out of the market. Firm 2 is able to charge a price greater than w_L and still capture all of the market by lowering its price an infinitely small amount below the child wage plus the consumer's disutility.

$$p_1^* = w_c, \quad p_2^* = w_c + k - \varepsilon$$

recall: $w_L - w_c < k$

$$\Pi_1 = 0$$
$$\Pi_2 = w_c + k - \varepsilon - w_c = k$$

If a firm uses child labor, this is the most desirable case, where the other firm uses child labor and is caught. This is the highest possible profit attainable in the duopoly case.

Case 4: Only Firm 1 uses child labor, and the media finds no evidence

Following previous logic, the firms' prices and profits are as follows:

$$p_1^* = p_2^* = w_L$$

$$\Pi_1 = \frac{1}{2}(w_L - w_c)$$
$$\Pi_2 = 0$$

Case 5: Only Firm 1 uses child labor, and the media finds positive evidence

If a firm is using legal labor, this is the most desirable case, where the other firm uses child labor and is caught. Now Firm 2 can charge above its marginal cost and earn a profit above the normalized amount of zero.

$$p_1^* = w_C, \quad p_2^* = w_C + k - \varepsilon$$

recall: $w_L - w_C < k$

$$\Pi_1 = 0$$
$$\Pi_2 = w_C + k - \varepsilon - w_L = k - (w_L - w_C)$$

Case 6: Both firms use legal labor, and the media finds no evidence

This case is essentially the normal Bertrand competition model where the firms compete on price down to their marginal costs, and profits are normalized to zero.

$$p_1^* = p_2^* = w_L$$

$$\Pi_1 = \Pi_2 = 0$$

Table 1: Summary of Cases

	Labor Choice	Media Report	Firm Prices	Firm Profits
Case 1	Firm 1: Child	No Evidence	$p_1^* = w_L$ $p_2^* = w_L$	$\Pi_1 = \frac{1}{2}(w_L - w_c)$ $\Pi_2 = \frac{1}{2}(w_L - w_c)$
	Firm 2: Child	No Evidence		
Case 2	Firm 1: Child	Evidence	$p_1^* = w_C$ $p_2^* = w_C$	$\Pi_1 = 0$ $\Pi_2 = 0$
	Firm 2: Child	Evidence		
Case 3*	Firm 1: Child	Evidence	$p_1^* = w_C$ $p_2^* = w_C + k - \varepsilon$	$\Pi_1 = 0$ $\Pi_2 = k$
	Firm 2: Child	No Evidence		
Case 4	Firm 1: Child	No Evidence	$p_1^* = w_L$ $p_2^* = w_L$	$\Pi_1 = \frac{1}{2}(w_L - w_c)$ $\Pi_2 = 0$
	Firm 2: Legal	No Evidence		
Case 5*	Firm 1: Child	Evidence	$p_1^* = w_C$ $p_2^* = w_C + k - \varepsilon$	$\Pi_1 = 0$ $\Pi_2 = k - (w_L - w_c)$
	Firm 2: Legal	No Evidence		
Case 6	Firm 1: Legal	No Evidence	$p_1^* = w_L$ $p_2^* = w_L$	$\Pi_1 = 0$ $\Pi_2 = 0$
	Firm 2: Legal	No Evidence		

* Case 3 is the best possible outcome for a firm that is using child labor. Case 5 is the most desirable outcome for a firm that is using legal labor.

Expected Payoffs

Going forward, $w_L - w_C = \Delta$, as the importance of the wage levels in the analysis rests in the magnitude of the gap between the child labor wage and the legal wage. By assembling all the cases above, each firm's expected payoff from using child labor or legal labor is as follows:

$$\Pi_C^F = \alpha_D^* \left[\beta_D^* \left(k\gamma[1-\gamma] + \frac{\Delta[1-\gamma]^2}{2} \right) + (1-\beta_D^*) \frac{\Delta}{2} \right] + (1-\alpha_D^*) \left[\beta_D^* \left(\frac{\Delta[1-\gamma]}{2} \right) + (1-\beta_D^*) \frac{\Delta}{2} \right]$$

$$\Pi_L^F = \alpha_D^* [\beta_D^* \gamma(k-\Delta)]$$

The Media's Problem

The media outlet's strategy is to investigate one firm, both firms, or neither firm. However, due to the constant returns to scale previously discussed, the media's expected payoffs from each individual investigation are the same as in the monopoly case. Therefore, the media will never decide to investigate only one firm. If the media expects an investigation of one firm to yield a positive payoff, then the media would expect investigating both firms to be twice as profitable. The same argument applies to the decision to not investigate.

Therefore, in the duopoly case, the media decides between two strategies, to investigate both firms or to not investigate at all. The media's expected payoffs are

almost identical to those in the monopoly case and differ only by a multiple of two. The media views the firms as identical and therefore believes: $\alpha_{D,1}^* = \alpha_{D,2}^* = \alpha_D^*$

$$\prod_I^M = 2\alpha_D^*[\gamma B - (1 - \gamma)b] - 2(1 - \alpha_D^*)b - 2f$$

$$\prod_{NI}^M = 0$$

Results

In order to find the firms' and the media's best responses, the probabilities α_D^* and β_D^* must be found. Solving for a mixed strategy Nash Equilibrium yields:

$$\alpha_D^* = \min\left\{\frac{f + b}{\gamma(B + b)}, 1\right\}$$

$$\beta_D^* = \min\left\{\frac{\Delta}{\gamma\left[\frac{2k(f + b)}{B + b} - \Delta\left(\frac{f + b}{\gamma(B + b)} + \frac{f + b}{(B + b)} - 1\right)\right]}, 1\right\}$$

For β_D^* to possibly be less than one and for the media to have a mixed strategy, the following inequality must be satisfied:

$$2k\gamma > \Delta + \gamma\Delta$$

In order to analyze the isolated effects of each parameter on the probabilities α_D^* and β_D^* , partial derivatives of each probability with respect to each parameter were calculated and yielded the following:

	Parameters of β_D^* :
Parameters of α_D^* :	
	$\partial_\Delta (\beta_D^*) > 0$
$\partial_b (\alpha_D^*) > 0$	$\partial_k (\beta_D^*) < 0$
$\partial_B (\alpha_D^*) < 0$	$\partial_\gamma (\beta_D^*) < 0$
$\partial_\gamma (\alpha_D^*) < 0$	$\partial_B (\beta_D^*) > 0$
$\partial_f (\alpha_D^*) > 0$	$\partial_b (\beta_D^*) > 0$
	$\partial_f (\beta_D^*) < 0$

Economic Analysis

The probability with which one of the firms uses child labor, α_D^* , surprisingly has not changed from the monopoly case. This result seems highly counterintuitive, as competition and the resulting downward price pressure would logically increase the incentives of the firm to cut costs and use child labor.

Instead, the results show that the media is the only player that adjusts its strategy to the firm's new incentive to use child labor. A firm is not more likely to engage in child labor, even when facing competition, because of the threat of a media investigation. This result provides important insight into the dynamics between firms and investigatory organizations. As long as the media has enough resources to investigate more firms without decreasing returns to scale, then firms will not be any more likely to use child labor, even when facing increasing incentives to do so.

Since $\alpha_D^* = \alpha_M^*$, the effects of f , b , B , and γ on a firm's probability of employing child labor have not changed from the monopoly case. Each of these parameters affect the media's profitability, and therefore as each increases, the firm recognizes that the media has a higher incentive to launch an investigation. The exception is b , which is the magnitude of the media's negative payoff of finding no evidence, so an increase of b instead lowers the media's incentive to investigate and therefore increases the likelihood of the firm employing child labor.

The effects of Δ , k , and γ on the probability of the media investigating are the same as in the monopoly case as well. As the wage gap becomes larger, the media realizes firms will have more incentive to use the cheaper child labor and therefore becomes increasingly likely to investigate. Likewise, consumer's disutility and the precision of investigation increase the probabilistic damage to a firm that is caught using child labor and decrease a firm's incentive to hire child labor. Realizing this, the media becomes less likely to investigate.

Unique to the duopoly case, f , b , and B , the parameters of the media's payoff, now enter into the media's probability of investigation. As explained before, the media takes into account the parameters of firms' payoffs in its strategy of whether or not to investigate. In the duopoly case, each firm must consider the likelihood of the other firm's actions when evaluating its labor decisions and possible payoffs. As the other firm is evaluating the parameters of the media's payoffs, these parameters thereby find their way into the media's probability of investigation.

An increase in f , the cost of an investigation, or B , the positive payoff from finding evidence, changes the media's probability of investigation as would be expected

when the media considers its own expected payoffs. However, it is very interesting that as b , the magnitude of the negative payoff from finding no evidence in an investigation, increases, the media is actually more likely to launch an investigation. This suggests that the firms are increasing their probabilities of using child labor in response to a higher b by a high enough margin that it actually becomes more profitable for the media to investigate despite the worse outcome if no evidence is found. This parameter in particular highlights the central importance of the media internalizing the firm's incentives, which keeps the likelihood of a firm using child labor unchanged in the face of competition. In addition, this result provides an optimistic note for the future of global labor standards because the monitor's important investigations are not discouraged even in situations of higher possible punishments.

Monopoly and Duopoly Comparison

Although a firm's strategy with respect to labor choices does not change in a duopoly despite increased incentives, the media's actual probability of investigating is not necessarily higher in the duopoly case than in the monopoly case. The probabilities β_M^* and β_D^* are compared below.

$$\beta_M^* = \frac{\Delta}{\gamma k} ; \quad \beta_D^* = \frac{\Delta}{\gamma \left[\frac{2k(f+b)}{B+b} - \Delta \left(\frac{f+b}{\gamma(B+b)} + \frac{f+b}{(B+b)} - 1 \right) \right]}$$

A close analysis of the denominators suggests that for a certain critical value of k , the media's probability of investigating in the monopoly case will equal that in the duopoly case. Solving for this critical value yields:

$$\beta_M^* = \beta_D^* \text{ when :}$$

$$k = \frac{\Delta [\gamma(f - B) + f + b]}{\gamma(2f - B + b)}$$

If k is less than this critical value, then the media will have a higher probability of investigating in the duopoly case than in the monopoly case. Hence, an interesting relationship between k and the media's probability of action in the two cases arises. It would seem intuitive for the media to exclusively investigate more often in the duopoly case to correct for firms' incentives; however, the magnitude of the consumer's disutility plays a large enough role that this is not always necessary.

Consider the following three numerical cases that highlight the different possibilities:

Case 1: k is greater than the critical value

$$\Rightarrow \beta_M^* > \beta_D^*$$

$$\begin{array}{ll} f = 100, -b = -50, B = 200 & \beta_M^* = 0.50 \\ \Delta = 4, \gamma = 0.8, k = 10 & \beta_D^* = 0.47 \end{array}$$

Case 2: k is equal to the critical value

$$\Rightarrow \beta_M^* = \beta_D^*$$

$$\begin{array}{ll} f = 100, -b = -50, B = 200 & \\ \Delta = 4, \gamma = 0.8, & \beta_M^* = \beta_D^* = 0.71 \\ k = \frac{\Delta [\gamma(f - B) + f + b]}{\gamma(2f - B + b)} = 7 & \end{array}$$

Case 3: k is less than the critical value

$$\Rightarrow \beta_M^* < \beta_D^*$$

$$\begin{array}{ll} f = 100, -b = -50, B = 200 & \beta_M^* = 0.83 \\ \Delta = 4, \gamma = 0.8, k = 6 & \beta_D^* = 0.86 \end{array}$$

From the above analysis and numerical examples, the importance of the consumer's disutility from child labor becomes clear. The media's role in maintaining the firm's likelihood of employing child labor in the duopoly case is actually determined by the size of this disutility. This makes intuitive sense as the consumer's disutility punishes firms who are caught, and a sufficiently high punishment can correct for the higher incentives to use child labor in a competitive setting. This result provides important implications in the real world regarding consumer knowledge. If consumers are more aware of the harmful conditions present in exploitive labor, their disutility resulting from firms' bad practices could actually lessen the role of the media, the monitoring agent. In real world application, this result may prove extremely important, as there are many firms and the mass media cannot likely investigate them all without decreasing returns or running out of resources. Hence, if activist organizations or governments targeted consumer knowledge and disutility surrounding unethical labor practices, further strides towards better global labor standards may be realized.

VI. Conclusion

In today's business environment, corporate social responsibility (CSR), particularly self-regulation with regards to labor standards, has become a major strategy of firms. In light of globalization, multinational firms specifically face many conflicting incentives regarding labor practices and public pressure to operate in ethical ways. In this paper I have provided a model that addresses the importance of the media, acting as an outside monitor of firm labor practices, in mitigating firm incentives to use cheap exploitive labor.

The monopoly case highlighted how, in the presence of the media, firms are no more likely to use unethical labor regardless of how cost effective it is. Instead, the model communicates that a firm is actually driven towards certain labor choices based upon the parameters of the investigatory media's profitability. This communicates the importance of outside monitoring bodies on the road towards improved global labor standards, and these implications provide important guidance to government legislation surrounding the support of the investigatory media. In the duopoly case, the importance of the consumer base's dislike for unethical corporate labor practices really comes to light. If consumers react negatively enough to reports of poor corporate labor practices, the media's role becomes less important when firms face competition. This provides important insight into the integral role of consumer awareness regarding the brutality of unethical labor. By focusing on increasing consumers' distaste for bad labor practices, activist groups can help reduce the burden on the media, which in reality is likely to be greater in an environment with many firms.

One limitation of this study is that it does not consider product substitutability between the firms in the case of competition. Nor does it consider brand loyalty. These present interesting avenues for future research. This study could be extended by considering a case in which the game is repeated indefinitely. This would provide insight on the importance of building consumer confidence, which is clearly an important issue in the real world of multinational corporations.

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