Cooperative Approaches to Managing Social Responsibility in Supply Chains

With numerous firms procuring their materials and parts worldwide and outsourcing their manufacturing functions to overseas suppliers, there are many cases in which brand-name firms source from overseas suppliers who violate safety, labor or environmental standards. For example, a building in Bangladesh, which housed factories producing garments for major American and European brands, collapsed in April 2013, only five months after a horrific fire at a similar facility. After the disaster, media attention focused on the brand-name firms who knowingly sourced products from the factories that maintained such poor safety conditions. Similarly, Apple, HP, and Sony were accused of sourcing from suppliers with environmental violations.

Many believe that audits are the best deterrence to such social responsibility violations of a supplier. If a supplier fails an audit from a firm, he may lose business from that firm. This creates incentives for suppliers to conduct production responsibly, especially in emerging economies where regulation and law enforcement are weak. However, audits are not perfect solutions for firms to manage supplier risks. If an audit is not properly conducted, it is not difficult for suppliers with sub-par standards to pass. Furthermore, an audit can also be very costly.

In order to improve the accuracy of audits and reduce audit costs, several firms have started to cooperate with each other in managing their common suppliers. There are two approaches of cooperation that have been implemented. First, under the approach referred to as "joint auditing," multiple firms pool their resources to conduct an audit jointly on their common supplier instead of each conducting an audit individually. For example, after tragic Bangladesh fires, global apparel brands formed the Accord on Fire and Building Safety in Bangladesh and the Alliance of Bangladesh Worker Safety to jointly establish a safety program and conduct factory audits in Bangladesh. Since audit costs are shared among manufacturers, the cost incurred by an individual manufacturer is reduced under joint auditing. Second, under the approach referred to as "audit sharing," firms share the results from the audits that they conduct on their suppliers individually. For example, Rx-360, an international pharmaceutical supply chain consortium, provides a platform for its members to share audit reports with each other. With the results from multiple audits, manufacturers may obtain better
knowledge about suppliers' practices. Despite the apparent benefits of these cooperative approaches, there have been concerns about cooperation for fear of compromising a competitive advantage. As such, industrywide cooperation, like the examples mentioned above, is not very common.

The objective of this paper is to investigate firms' incentives to cooperate and the effectiveness of such cooperation in improving social responsibility. We develop an analytical model in which several manufacturers potentially source a part from a common supplier. Our model is based on a cooperative game in partition function form, which enables us to develop insights into the incentives of multiple competing manufacturers to cooperate in the presence of both negative and positive externalities. Specifically, a social responsibility violation that involves one manufacturer may have negative externalities on other manufacturers. This may happen when consumers lose confidence in the whole market and associate the violation with other manufacturers as well. For example, Bangladesh fires created concerns for poor safety conditions in other factories in Bangladesh and other developing countries. On the other hand, a social responsibility violation of one manufacturer may have positive externalities on other manufacturers if consumers switch from the manufacturer involved in the violation to other manufacturers who have better social responsibility standards. For example, British shoppers increased spending on ethically sourced Fairtrade products after several scandals.

Our analysis shows that, although there has been some concern about cooperation for fear of compromising a competitive advantage, manufacturers have incentives to voluntarily cooperate through joint auditing or audit sharing when the negative externality is high. This explains the formation of the Accord on Fire and Building Safety in Bangladesh, the Alliance of Bangladesh Worker Safety, and the initiative in the pharmaceutical industry. In these examples, a fatal accident can potentially have ripple effects beyond a single firm. We also find that cooperation serves as a win-win solution in this case for both manufacturers and consumers by increasing profits and social responsibility simultaneously. Furthermore, the formation of multiple coalitions such as the Accord and the Alliance makes joint auditing more effective than a single industrywide coalition.

However, when the negative externality is low, manufacturers have little incentives to cooperate
in managing their suppliers even with the substantial risk of social responsibility violations. This is the case when consumers are less sensitive to responsibility violations; for example, no cooperative initiative has been undertaken to address the environmental violations mentioned earlier which involved Apple, HP, and Sony. For this case, our result suggests that a third-party organization such as a government agency or an industry association should intervene, and offer an incentive-compatible mechanism to facilitate industry cooperation. We propose such a mechanism that reallocates profits among manufacturers and specifies the minimum amount of subsidy that a third-party organization needs to provide.

Finally, our analysis reveals, contrary to common belief, that industry cooperation does not necessarily improve social responsibility, especially when one firm can benefit from others' social responsibility violations (i.e., the positive externality of a social responsibility violation is high). This is because cooperation reduces the intensity of competition among manufacturers, and manufacturers reduce their audit efforts significantly under joint auditing or audit sharing when the positive externality is high. Thus, caution must be taken to monitor manufacturers' audit efforts when these cooperative approaches are implemented in the market where competition is fierce and consumers switch easily. When comparing the effectiveness of joint auditing with that of audit sharing, we find that when the risk of social responsibility violations is high, audit sharing is more effective than joint auditing (and vice versa). The reason is that when anticipating higher risk, manufacturers choose higher audit efforts for their individual audits. This makes audits more informative, so that audit sharing, which leverages the value of the information from individual audits, becomes more effective.

In summary, our paper is the first to study cooperation among multiple manufacturers to induce a supplier to behave in a socially responsible manner. Manufacturers in our model compete in their social responsibility levels, and they are influenced by such externalities that a violation incident of one manufacturer not only affects her own profit, but also has an impact on other manufacturers' profits. We employ a cooperative game in partition function form, and highlight a crucial role of externalities in firms' incentives to cooperate, without which all manufacturers always have incentives to cooperate unlike what is observed in reality.