Managing Reputation Risk in Supply Chains: The Role of Contract-embedded Insurance

**Context:** Multinationals are increasingly facing “reputation risk” due to their supplier’s noncompliance with social and environmental standards. Violations can often be a response to operational risk faced by the supplier. While striving to mitigate this risk in the easiest manner, suppliers can be oblivious to the potential externality of their actions. One such example is the use of antibiotics in livestock farming. Meat producers routinely administer antibiotics to livestock for non-therapeutic reasons such as disease prevention and growth promotion. While antibiotics help farmers conveniently tackle the risk of low yield, their excessive use can accelerate the development of resistant bacteria in the animals. When humans are exposed to resistant bacteria through contaminated food or environment, they can get drug-resistant infections.

Restaurant chains such as KFC and McDonald’s among others, which source meat raised with antibiotics, have been facing public backlash for their suppliers’ practices. Resolving the issue of supplier responsibility is challenging for these multinational food companies because they face a twin threat. On the one hand, they are exposed to additional costs if the supplier’s operational risk is increased. But, on the other hand, if the supplier’s approach to risk mitigation involves transgressions such as compromising animal welfare or excessive use of antibiotics, it faces pressure from stakeholders and a heightened reputation risk. The challenge for a multinational, therefore, is to incentivize its supplier to mitigate operational risk in a manner that circumvents reputational repercussions down the road.

The problem of supplier non-compliance can be even more daunting for the buying firm’s investors. First, their valuations are affected by both operational and reputational issues occurring in the supply chain and, being owners of the buying firm, their liability due to an adverse event can be unlimited. Second, as they do not have the control rights to directly oversee the day-to-day
affairs of the investee company, they encounter a multi-tier agency problem. In addition to the moral hazard problem due to unobservability of supplier’s actions, a second agency problem is created by delegation (of contracting with the supplier) to the manager. This makes incentive coordination challenging for the investors as they need to design the manager’s compensation in a way that aligns incentives across the three echelons of the supply chain.

**Research Questions:** We assume supplier’s risk mitigation effort to be multidimensional i.e., it can be “bad” (e.g., excessive use of antibiotics) or “good” (e.g., process improvements). Both efforts reduce operational risk in the supply chain, but only bad effort increases reputation risk. A multinational concerned about reputation impact will, therefore, aim to reduce bad effort and increase good effort by the supplier. In this setting, we ask the following research questions:

1. When a firm cannot directly observe the supplier’s actions, what role do contracts and financial tools play in managing reputation risk? Specifically, can insurance be an effective instrument for this purpose? Insurance is normally associated with moral hazard in that it lowers the incentives for risk mitigation. But when the goal is indeed to suppress one kind of supplier action (i.e., bad effort) to mitigate operational risk, can the firm be better off if the supplier has insurance?

2. What is the impact of the supplier’s actions on the investors when the latter are not involved in buyer-supplier contract negotiations?

3. When the task of designing the contract for the supplier is delegated to the manager, what tools can the investors leverage to ensure the manager acts in their best interests?

**Model and Main Results:** To answer the first question, we propose an insurance scheme built into the contract where the buying firm offers to apportion some of the supplier’s operational loss to itself, in exchange for premiums collected implicitly through reduced contract payment when
production ends. This contrasts with insurance obtained through third-parties that collect premiums at the time of policy purchase (before production begins), which can be cost-prohibitive for a wealth-constrained supplier. To facilitate participation, the buyer can only specify minimum coverage requirements from third-party insurers but the actual coverage purchased by the supplier may be inadequate to address reputation concerns. Embedding insurance in the contract allows a firm to choose the coverage rather than recommend a minimum level, and also collect greater than actuarially fair premium by adjusting the transfer payment.

Our analysis reveals that insurance can either decrease both good and bad effort by the supplier, or increase one effort while reducing the other. By leveraging the supplier’s response to insurance, we show that the buying firm can (subject to some conditions) benefit in each case. When bad effort decreases, the buyer can use insurance to reduce reputation risk. And when bad effort increases, the buyer can use insurance to restrict worst-case liability payment to the supplier. This indicates that even when the welfare implication of insurance is negative, it can still be valuable in a contractual relationship.

To answer the second and the third research questions, we consider a stylized three-level supply chain with the investors, the buying firm’s manager, and the supplier. We find that from the investors’ viewpoint, the supplier receives either too much or too little insurance coverage. We show that a standard salary-based compensation for the manager who designs the supplier’s contract is insufficient to align incentives across the three echelons. Moreover, because of limited liability, the investors cannot attain first-best level of coverage by transferring their surplus reputation and operational costs to the manager. In this situation, we propose a risk-based bonus compensation scheme for the manager to facilitate incentive coordination across the three tiers.