When the Tail can Wag the Dog:
Common-Pool Risk Management and Market Power

Carolyn Fischer, Resources for the Future

As the marketplace for resource-based commodities is increasingly globalized, risks related to local production can have effects on global markets. For example, disease outbreaks in acquaculture that decimate enough production can drive up global prices, as occurred with the infectious salmon anemia outbreak in Chile and the emergence of early mortality syndrome in the Southeast Asian shrimp industry. Outbreaks of listeria, cyclospora, and salmonella tied to packaged salads have prompted widespread recalls for multiple brands and safety concerns depressed demand for the products, at least for a time. High-profile environmental and health and safety disasters among suppliers (such as the 2012 garment factory fire in Dhaka, Bangladesh or scandals revealing illegal labor or environmental practices in China) can also affect the perception and profits of multiple well-known brands. Multinationals may thus have particular interests in the management of risks across a portfolio of locations. Meanwhile, regulatory regimes and enforcement can differ vastly across countries.

In this paper, we develop a model of multinational risk management, market structure, and asymmetric environmental regulation. Profit outcomes depend on both production and process measures across multiple jurisdictions. We propose a general model, but the essential components are (1) multinational (or multi-region) producers; (2) world product price consequences of major risky events in a given location (which may require spillover effects across firms within a given location to have a big enough output effect); and (3) meaningful differences in regulation across jurisdictions. The relevance is heightened for (4) industries with a high degree of market concentration.

The model suggests several mechanisms that lead to suboptimal risk management behavior that could contribute to problems like disease outbreaks. The basic intuition is that, in the event of a major supply disruption in one location, multinational firms will receive some price compensation on production in other locations as long as market demand is not perfectly elastic. This possibility creates incentives to invest less in risk avoidance. Furthermore, when risk avoidance is inherently collective in nature—a common-pool problem—investments in risk management are already underprovided.

A novel contribution of this paper is demonstrating the interaction between the common-pool problem and market power: even if a firm does not have market power in the traditional sense of being able to price above marginal cost, a disease outbreak affects the production of all firms in the location in a non-marginal way, which decreases industry supply and results in a higher equilibrium price. Production risks are hedged by having production in multiple, unconnected locations, and the collective action nature of risk can mean a small, price-taking firm can exert power over the entire market—the tail can wag the dog.

In this context, strict regulation in one country can have spillover effects in another country. When regulation protects against risks in one location, it further decrease incentives for a multinational firm to undertake preventive measures in the other country, because the firms expect countervailing benefits in the event of an outbreak in the other country. The necessary conditions for this to occur are that market demand has some downward slope and there is potential for a supply disruption to move the market price. This logic may help explain why multinational firms with experience managing risk in highly regulated environments do not bring those practices to countries with laxer standards.

Thus, traditional measures of competitive output markets are not sufficient to rule out market power that manifests through common-pool risk management. Even small firms have the potential to influence global prices if their lack of care contributes to a major disruption in supply or in consumer confidence. At the same time, market power is a double-edged sword. Within a location, market concentration increases incentives to avoid disease by reducing the free rider problem in disease avoidance. But across countries, a firm with greater market power can use the highly regulated market as a hedge and has less incentive to avoid disease in the less regulated market. Firms that are not multinational do not have this hedge and thus have greater incentives to avoid disease. Taken together, these insights strongly suggest that the market is unlikely to provide optimal disease risk management, and regulators should take not only local common-pool externalities into account, but also the global market structure.

We extend this analysis to consider not only supply disruptions like disease outbreaks that tend to offer price compensation, but also shared risky events that may devalue multinational brands and exacerbate losses.