

## LOGISTICS REPORT

# Commentary: Supply-Chain Risks From the Coronavirus Demand Immediate Action

MIT's Yossi Sheffi writes that the unknown potential impact of the virus shouldn't stop companies from acting quickly to minimize short- and long-term impact on their operations



Workers producing protective suits at a factory in Binzhou in China's eastern Shandong province earlier this month

PHOTO: STR/AGENCE FRANCE-PRESSE/GETTY IMAGES

*By Yossi Sheffi*

Feb. 18, 2020 2:38 pm ET

As scientists race to develop a cure for the coronavirus, businesses are trying to assess the impact of the outbreak on their own enterprises. Just as scientists are confronting an unknown enemy, corporate executives are largely working blind because the coronavirus could cause supply-chain disruptions that are unlike anything we have seen in the past 70 years.

For now, the best course of action for companies is to analyze possible outcomes in the context of known supply-chain risks based on historical precedents, and to take precautionary measures that minimize exposure to future disruptions.

Predictions regarding the impact of the virus range from dire to optimistic. Pessimists draw parallels with the 1918 Spanish flu pandemic, which killed tens of millions of people world-wide,

and the aftermath of the 2008 financial crisis. On the other side, optimists foresee an epidemic akin to a typical flu outbreak that will run its course.

---

## Newsletter Sign-up

### Logistics Report

Top news and in-depth analysis on the world of logistics, from supply chain to transport and technology.

SIGN UP

PREVIEW →

From a supply-chain perspective, the disruptions associated with past crises such as the 2003 outbreak of severe acute respiratory syndrome, or SARS, that swept across Asia; the 2011 Fukushima nuclear disaster; or the 2011 Thailand floods are not a good yardstick for the current epidemic. Those events shook specific companies for a relatively short time, but the impact of the coronavirus could be much more sustained.

Moreover, the virus formally known as Covid-19 is affecting both supply and demand, so the potential threats are graver than those earlier disruptions. This is especially true because of China's growth since the SARS crisis as a manufacturing powerhouse and as a major consumer market.

Today's supply chains are global and more complex than they were in 2003. Not only are Chinese factories affected by lockdowns and quarantines, production sites in other countries already are running low on parts for products assembled in China. For example, Apple Inc. works with suppliers in 43 countries, all of which receive components from Apple's contract manufacturers in China.

To understand which companies in supply chains are the most vulnerable, one has to understand the so-called supply-chain bullwhip effect.

**The most vulnerable companies are small and leveraged suppliers upstream in the supply chain that are in danger of going under.**

—Yossi Sheffi

Assume, for instance, that a retailer experiences an X% drop in demand for a product. It surmises that future sales will be lower too, and so concludes that its current inventories are too high. So the retailer cuts its orders to the wholesaler by twice the amount of the drop in

demand. The wholesaler sees that cut in its orders and, using the same logic, cuts the orders to the manufacturer by double that amount, or four times less than the retailer's drop in demand. The manufacturer reduces its orders to parts suppliers by even more, and so on.

At each level of the supply chain the decline in demand sparks a bigger decline in orders from suppliers. Each company reasons that they need to quickly cut production to adjust to declining sales and work off their now-bloated inventory. The most vulnerable companies are small and leveraged suppliers upstream in the supply chain that are in danger of going under.

Then-Ford Motor Co. Chief Executive Alan Mulally tried to mitigate the impending bullwhip during the 2008 financial crisis by imploring U.S. lawmakers to save his competitors. He argued that if automotive Tier 1 suppliers failed, then their suppliers would also fail, and so on, affecting the entire U.S. automobile industry.

When demand revives, the bullwhip pattern reverses as each echelon boosts ordering, both to cover expected higher sales and to quickly replenish depleted inventories. The reverse bullwhip of oscillating orders and inventories strains the ability of production and logistics operations to keep up. After a period during which many upstream suppliers fail and remaining companies fail to deliver during the recovery, a multinational enterprise may find it easier to leave China and set up manufacturing elsewhere.

Faced with so many unknowns, companies should take sensible "just in case" steps to prepare for the effects of the coronavirus.

1. Set up a central emergency management center. At this point it can be virtual but should include a clear roster of participants with clear decision-making rules in case of a pandemic.
2. Review the company's product portfolio and the customer base in order to set priorities. If capacity is reduced, there will need to be rules for which products should be built and which customers should be supplied first.
3. Review suppliers. Who makes critical parts? Are there alternate sources? What is the suppliers' inventory status?
4. Plan for operating to maximize cash flow rather than profits.
5. Maintain communications with federal and local authorities, as well as Chinese and other Southeast Asian friends and colleagues on the ground.

Hoping for the best while preparing for the worst may not seem like a rigorous business approach to the crisis. But given our lack of knowledge, it is the most prudent strategy for managing risk.

— *Yossi Sheffi is director of the Massachusetts Institute of Technology's Center for Transportation and Logistics. He is the author of two books on supply-chain risk management,*

*“The Resilient Enterprise” and “The Power of Resilience.”*

Copyright © 2020 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <https://www.djreprints.com>.