Stock market reaction to supply chain disruptions from the 2011 Great East Japan Earthquake

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ABSTRACT

The business press characterized the March 11, 2011 Great East Japan Earthquake (GEJE) as the most significant disruption ever for global supply chains. In the aftermath of the GEJE, there was a great deal of debate about the risks and vulnerabilities of global supply chains and there were calls to redesign and restructure supply chain strategies. To examine this issue, we empirically estimate the effect of the GEJE on the stock prices (or shareholder value) of firms. Our analyses are based on a global sample of 460 publicly traded firms collected from articles and announcements in the business press that identify firms affected by the GEJE. We find that firms experiencing supply chain disruptions due to the GEJE lose on average 3.73% of their shareholder value during the one month period after the GEJE, and the loss remains roughly at this level when measured over the three month period after the GEJE. This level of loss in shareholder value is economically significant. However, if we consider the claims about the widespread and significant disruptions in supply chains caused by the GEJE, together with the rarity of such an event, the loss does not seem inordinately negative. It suggests that supply chains were probably not that vulnerable to the GEJE, and/or they were able to recover quickly and reduce the losses, indicating that they were fairly resilient. We also find that subsequent to the GEJE, upstream and downstream supply chain propagation effects are negative, the contagion effect on firms related to the nuclear industry is very negative and sustained, and although the competitive effect is positive over the first month after the GEJE, much of this effect dissipates over the next two months.