A deep analysis of supply chains by researchers in the Lundquist College of Business finds that a firm's role in the chain can have a large influence on borrowing and lending strategies.

Businesses typically rely on banks and financial markets for financing, but credit provided by suppliers can also play an important role, especially in manufacturing. Yet why firms lend and borrow extensively from each other is still an open question.

In a paper online ahead of print in the *Journal of Financial Economics*, "Trade Credit and Profitability in Production Networks," Youchang Wu, an associate professor at the University of Oregon, and co-author Michael Gofman, an assistant professor at the University of Rochester, examined trade credit from a new angle.

They noted that for an average nonfinancial firm in North America, the outstanding amount of trade credit it receives from suppliers is about 21 percent of annual production costs. Moreover, most firms simultaneously borrow from their suppliers and lend to their customers, with the average outstanding amount of trade credit provided to customers at around 15 percent of annual sales.

Previous studies on trade credit, they noted, have focused on a firm's role either as a lender or a borrower of trade credit, ignoring the fact that trade credit flows along supplier-customer links in complex production networks.

Using a comprehensive database of supplier-customer relationships from 2003 to 2018, Wu and Gofman analyzed more than 200,000 supply chains formed by more than 5,600 nonfinancial firms. By locating a firm in the supply chain, their study accounts for a firm's dual role as a supplier and a customer. This novel approach allowed the researchers to uncover new details about trade credit within and across supply chains.

In particular, they found that within the supply chain, more upstream firms borrow more from suppliers, lend more to customers and hold more net trade credit, despite appearing to have weaker financing capacity than more downstream firms.

The length of the supply chains they examined varies significantly.

An example of a longer supply chain is one in which Intermolecular Inc. supplies advanced materials to Micron Technology Inc., which creates computer memory and computer data storage that it provides to Nvidia Corp., which uses them to manufacture graphics cards it supplies to Tesla. In contrast, a short supply chain example is one in which Sensata Technology provides sensors directly to Tesla.

In longer supply chains, firms tend to be more profitable, and the increase in trade credit provision from the lower to the upper level of the chain is more gradual.
Both within and across supply chains, the authors noted that there is an almost 1-to-1 correspondence between the variation in the trade credit a firm provides and the variation in the trade credit it receives. These findings are less consistent with the idea of financially strong firms lending to financially weak firms, an implication of the financing advantage theory.

"Our findings are more consistent with the recursive moral hazard theory of trade credit," said Wu, who teaches in the Department of Finance at the Lundquist College of Business and is the John B. Rogers Research Scholar and coordinator of the UO's finance doctoral program.

"This theory argues that more upstream firms have more severe incentive problems, especially when they are not that profitable, because the quality of their products is revealed only after a long delay," he said. "Thus, more net trade credit provided by upstream firms helps to align incentives."

The authors did, however, find evidence that a firm's provision of trade credit is related to its financial status during an economic downturn. For instance, during the 2008-09 financial crisis, upstream firms experienced a larger decline in profit margins than did downstream firms, and net provision of trade credit dropped significantly, suggesting that financial strength plays a more important role in determining the provision and use of trade credit during a crisis period.

Overall, Wu and Gofman's systematic study highlights variations in trade credit practices across firms, which can help both researchers and practitioners better understand the role of trade credit in production networks as well as examine other economic and financial questions related to supply chains.


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