CLEVELAND FED

District Data Brief

Disruptions Are Expected to Persist, Prompting Some Firms to Rethink Supply Chain Management

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Despite business leaders' expectations that supply chain challenges would have subsided by now, supply chains remain disrupted, in some cases to an even greater degree than earlier in the pandemic. The sources of the disruption reportedly vary from firm to firm and product to product, and they also change from week to week, but business contacts and analysts have argued that limited labor supply, port congestion[1] and other transportation bottlenecks, and strong demand for goods each play a role.

In the Census Bureau's Small Business Pulse Survey during the week ending March 13, more than half of all firms that responded reported some kind of supply chain disruption related to supplier, delivery, or production (Figure 1). Disruptions were reportedly more widespread among firms in the construction, manufacturing, and retail trade sectors.

[1] According to the Marine Exchange of Southern California and Vessel Traffic Service Los Angeles/Long Beach, the backlog of container ships at the ports of Los Angeles and Long Beach was 44 as of March 21, 2022, down from a high of 109 on January 9, 2022, but well above the 2019 average of less than 1.

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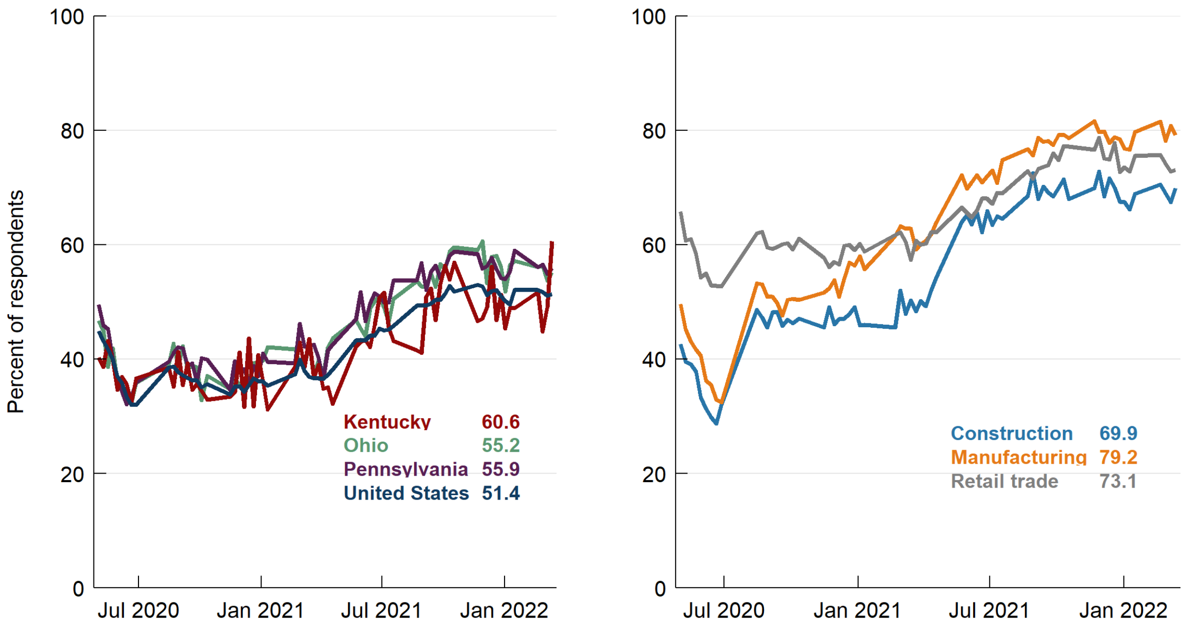
Figure 1. Share of Small Businesses Experiencing Some Type of Supply Chain Disruption[2]



Notes: Last data point was the week ending March 13, 2022. Values shown in legend. Right panel shows sector-level data for the United States as a whole.
Source: Census Bureau Small Business Pulse Survey.

Through surveys conducted by and conversations with researchers at the Federal Reserve Bank of Cleveland, business contacts confirm that supply chain disruptions are broad based. In a December 2021 survey, a homebuilder in Cincinnati, Ohio, said, "From start to finish—just about everything [is disrupted]. It has changed from week to week but there is always a problem getting supplies and materials." A shortage of microchips has been especially challenging, most notably for the automotive sector. Adding to the overall uncertainty, the war in Ukraine has created additional challenges, including in microchip production, food production and distribution, and global shipping.

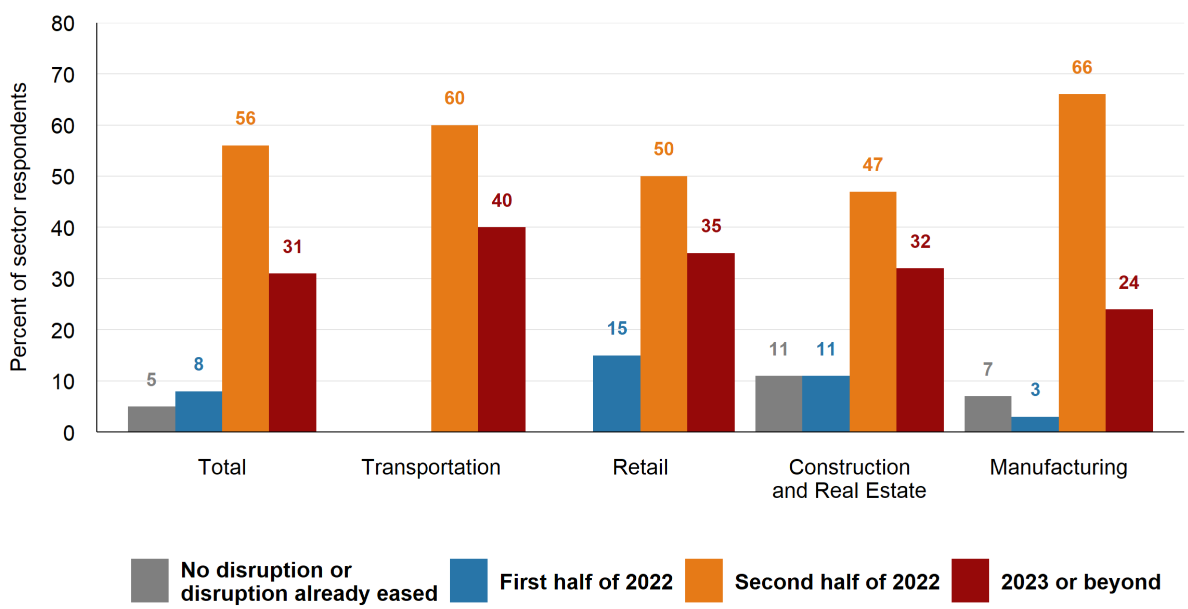
[2] The Census Bureau asks, "In the last week, did this business have any of the following?
- Domestic supplier delays
- Foreign supplier delays
- Difficulty locating alternative domestic suppliers
- Difficulty locating alternative foreign suppliers
- Production delays at this business
- Delays in delivery/shipping to customers
- None of the above"

Figure 1 shows the share of firms reporting something other than "None of the above."

Expectations for recovery

In the Cleveland Fed's December 2021 survey, more than half of business contacts from the most-impacted industries (manufacturing, transportation, construction and real estate, and retail)[3] said they expected relief during the second half of 2022, but nearly a third thought the disruption would last into 2023 or beyond (Figure 2). In more recent conversations, however, contacts continued to stretch their timelines: In March, one executive from an engineering and construction management firm in Cincinnati, Ohio, said that he did not expect relief for another 18 to 24 months. Contacts also convey that there is a lot of uncertainty around their projections.

Figure 2. Expected Timeline for Supply Chain Disruptions to Ease Meaningfully, by Sector



Notes: In a survey fielded from December 13, 2021, to December 27, 2021, firms were asked, "At what point do you expect supply chain disruptions to ease meaningfully?" Total is the sum of 78 contacts in sectors shown on the chart.
Source: Federal Reserve Bank of Cleveland.

In some cases, the return to prepandemic inventory levels is expected to be slow, which means that other supply chain challenges will linger, too. In particular, the semiconductor shortage has strained the supply of light vehicles and other transportation equipment. According to Ward's Automotive Group, light vehicle inventory has improved from a low in September 2021, but, as of February 2022, it remains less than a third of its level two years ago. Many analysts believe there won't be meaningful relief from the

[3] Respondents in these sectors were least likely to report that they had experienced no disruption or that disruptions had already eased. Thus, the remainder of my analysis focuses on only these sectors.

microchip shortage until at least the second half of 2022. Some say it could take longer because new production facilities will take time to build. Intel's recently announced microchip plants in Columbus, Ohio, for example, will not come online until 2025. In the Cleveland Fed's December 2021 survey, a contact from a trucking company based in Pittsburgh, Pennsylvania, didn't expect supply chain disruptions to ease meaningfully until at least 2023, in part because even when new trucking equipment becomes available, his firm will need to replace old trucks before it can add to its fleet. Contacts from other industries increasingly reported that the lack of freight capacity is a key constraint, so rebuilding the inventory of trucks could be an important step in resolving supply chain bottlenecks.

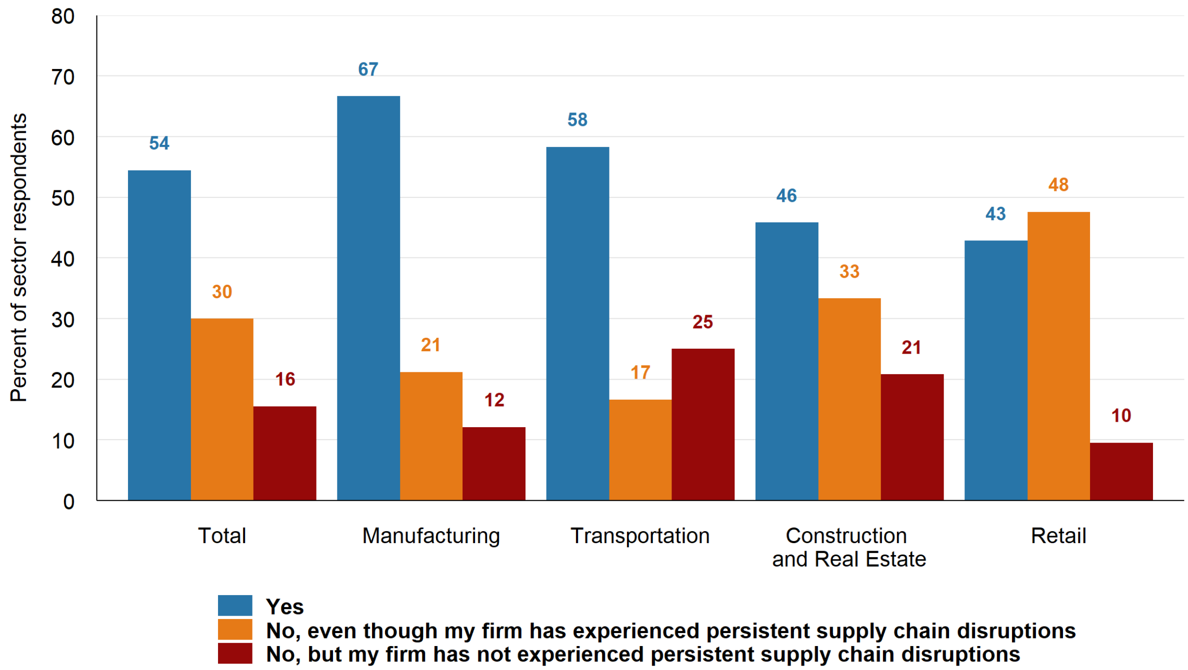
A few contacts pointed to small improvements as the basis for their optimism for recovery later this year. In early January, two manufacturers in Lexington, Kentucky, noted that while lead times remained very long, deliveries were more frequently arriving as scheduled. One of them said that suppliers have also been increasing the volume of goods they are willing to commit to delivering in the second half of the year. Still, after some improvement in December and January, the Institute for Supply Management's supplier deliveries and backlog of orders indexes increased again in February.

Business leaders acknowledge that there is tremendous uncertainty about what it will take for supply chains to normalize and when that might happen, and the recent developments in Eastern Europe add to this uncertainty. Also, several contacts believe that an increase in labor availability is necessary for disruptions to improve. Because of the ongoing challenges firms are facing in hiring workers, one manufacturer in central Ohio did not anticipate relief for at least a year. Further, many contacts have noted that their expectations about the timeline for resolution are mostly based on hope rather than on concrete evidence.

Adapting supply chain management

Because disruptions are expected to persist for some time, many firms have made changes to the way that they manage their supply chains. In a fall 2021 survey, the Cleveland Fed asked, "Has your firm made adaptations (for example, building safety stocks and abandoning 'just in time' inventory controls, substituting materials or components in products, changing product offerings or designs, etc.) in response to persistent supply chain disruptions?" More than half of the firms in manufacturing, transportation, construction and real estate, and retail reported that they had (Figure 3).

Figure 3. Firms' Responses to Persistent Supply Chain Disruptions, by Sector



Notes: In a survey fielded from September 27, 2021, to October 4, 2021, firms were asked, "Has your firm made adaptations…in response to persistent supply chain disruptions?" Total is the sum of 90 contacts in sectors shown on the chart.
Source: Federal Reserve Bank of Cleveland.

The adaptations that firms reported include holding more inventory, starting purchase processes for materials before orders are placed, taking deliveries whenever possible (even if they come out of sequence), and adding new suppliers. A manufacturer in Wheeling, West Virginia, found some success sourcing materials from domestic suppliers rather than foreign ones, but the firm still struggles to find trucks and drivers to deliver product to its customers. A manufacturer based in Lexington, Kentucky, reported, "You can't do just-in-time [inventory management] anymore, so we're rebuilding our supply chain." Holding inventory poses additional costs and risks, but one manufacturer in the Cleveland, Ohio, area said that extended lead times disrupted production so much that he was willing to add warehouse space to hold a year's supply of steel. Some contacts reported that they and their suppliers had shifted to selling only those products that are the most profitable or those for which they can reliably obtain the required inputs. A homebuilder based in Columbus, Ohio, for example, reported in February that there were fewer varieties of carpet and tile to choose from as manufacturers focused production on the more popular styles.

Above all, contacts report dedicating an unprecedented amount of employee time and resources to supply chain management. A restaurant group owner in Lexington, Kentucky, created a new full-time position dedicated to handling supply chain issues for all of the group's locations; previously, sourcing product was the responsibility of individual restaurant managers. Similarly, a manufacturer in Dayton, Ohio, has an entire team dedicated to supply chain management. He said the team was (figuratively) "still playing whack-a-mole every day" just to secure scarce materials and allow the firm to keep producing.

Conclusion

As supply chain challenges linger, firms have extended their expected timelines for recovery and many believe that it will be at least the second half of 2022 before they experience meaningful relief. The war in Eastern Europe has added even more challenges and uncertainty to global supply chains. Because of the long duration of supply chain challenges, some firms are making changes to the way that they manage their supply chains, and these changes are expected to be long-lasting.

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