Global Supply Chain Disruptions and Product Market Competition*

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Abstract

We study how production networks and product market competition interact in propagating supply chain shocks in the recent 2018 U.S.-China trade war and during the COVID-19 pandemic. U.S. firms with Chinese suppliers experienced sizable sales declines in the period following both of these shocks, as trade tensions between the U.S. and China escalated and the pandemic impacted production in China. Notably, these sales losses occurred for firms in less competitive industries and with less diversified supply chains. The main policy implication is that competition can mitigate the effect of supply chain shocks.

Keywords: Supply chain disruptions, competition, entry threats, supply chain diversification, sales losses.

JEL Classification: G12; G14; G31; G32; G33; L1; L2; L5.

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1 Introduction

Motivated by the seminal work of Coase (1937), finance theory has long recognized the importance of finance for product market relationships, identifying financial stability as a vehicle to encourage relationship-specific investments (Titman, 1984; Maksimovic and Titman, 1991).[1] The importance of finance for product market relationships has also been documented empirically (MacKay and Phillips, 2005; Kale and Shahrur, 2007; Banerjee, Dasgupta and Kim, 2008; Moon and Phillips, 2021). Empirical studies have further shown that stronger product market relationships are associated with better corporate performance (e.g., Allen and Phillips, 2000; Brandt et al., 2017; Chu, Tian and Wang, 2019; Dai, Liang and Ng, 2020).

This study focuses on the costs that related firms incur when major supply-chain shocks disrupt product market relationships during two major supply chain shocks: the 2018 U.S.-China trade war and the coronavirus supply chain disruption. Theoretically, Long and Plosser (1983) are the first to study how production network shocks affect related firms. They show that a production shock affecting firms in a certain industry will propagate to the customers of these firms and potentially propagate further downstream.[2] This paper asks how these shocks propagate in competitive and non-competitive industries? While this question has not been answered previously, our examination is motivated by studies that have documented that greater industry competition leads to faster productivity growth (e.g., Blundell, Griffith and van Reenen, 1999; Aghion et al., 2004, 2009; Schmitz Jr, 2005). This productivity growth occurs, for example, because competition facilitates the displacement of less efficient firms by their rivals (Disney, Haskel and Heden, 2003; Harris and Li, 2006), incentivizes managers to work hard (Köke and Renneboog, 2005), and reduces agency costs as managers are less likely to enjoy the "quiet life" (e.g., Bertrand and Mullainathan, 2003; Giroud and Muller, 2011).

Firm-level evidence on the effect of supply-chain shocks has been scarce because of limited data availability,[3] focusing mainly on short-lived supply chain interruptions. To our best knowledge,

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[1]Other studies include, Chemla and Faure-Grimaud (2001), Hennessy and Livdan (2009), and Chu (2012).

[2]Carvalho et al. (2021) and Baqaee and Farhi (2019) extend the Long and Plosser model and show that supply-chain shocks can additionally propagate upstream to the suppliers. The transmission of supply-chain shocks is caused, for example, by the existence of search costs preventing firms from easily adjusting their sourcing networks, especially for product market relationships characterized by a higher degree of relationship-specific investments (Antràs, Fort and Tintelnot, 2017; Bernard, Moxnes and Saito, 2019).

[3]One exception is Barrot and Sauvagnat (2016), who find significant short-lived downstream negative propagation

no prior study has investigated the effect of supply-chain shocks on corporate performance in competitive and non-competitive industries. This paper aims to fill this void. Conceptually, one can expect that firms in competitive industries are able to cope more effectively with supply-chain shocks because only more efficient firms operate in such industries. On the other hand, it could also be that firms in non-competitive industries can respond better to supply-chain shocks because they are cash rich and can absorb these shocks and attract alternative suppliers by paying higher prices. Because of these potential conflicting effects, studying the effect of production supply-chain shocks on corporate performance in competitive and non-competitive industries is mainly an empirical question.

We examine public and private worldwide suppliers of U.S. and international firms during two major supply chain shocks: the 2018 U.S.-China trade war, and the coronavirus supply chain disruption. President Donald Trump, who had advocated tariffs to eliminate the U.S. trade deficit since the 1980s, announced that he was running for president in the summer of 2015 and dominated Republican polling from that moment onward, leading to his election in November 2016. During his presidential campaign, Trump made it clear that tariffs would be a pillar of his economic policy to reduce the U.S. trade deficit with China. Following his election, President Trump directed the Office of the United States Trade Representative to investigate China trade policy with the U.S. On January 22, 2018, the U.S. announced tariffs of 20% to 50% on solar panels and washing machines. The response from China occurred on April 2, 2018 with the imposition of tariffs of 15% to 25% on a variety of U.S. products. The imposition of additional tariffs by both countries was accompanied by bilateral negotiations. Trade tensions began to ease during the weeks that preceded the announcement on December 13, 2019 that new tariffs to be mutually imposed on December 15 would not be implemented, and a follow-up agreement was signed on January 15, 2020.

The second shock we examine, the COVID-19 pandemic, was a shock that impacted production, especially in China, the largest import trading partner of the U.S., the European Union (EU), and many Asian countries. China's industrial production dropped by 13.5% year-on-year in January/February 2020, and an additional 1.1% in March 2020, before starting to grow again in April

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effects for publicly traded U.S. firms whose significant U.S. suppliers are affected by natural disasters. However, their data is limited to large suppliers that represent 10% or greater of firm sales of U.S. publicly traded firms.

2020 (Source: Organization for Economic Cooperation and Development (OECD)).[4] China's industrial production remained relatively strong up until July 2021 before starting to decline again for the remaining part of 2021, as the country suffered additional setbacks due to the closure of some of its main ports, factory labor shortages, electricity shortages, and new pandemic outbreaks.[5]

Despite these setbacks, U.S. imports from China increased in 2021 relative to 2019-2020, although 2021 imports were still significantly lower than the 2018 peak. The U.S. imports from China were $504 billion at the end of 2021 compared to $539 billion in 2018, or approximately 94% of the 2018 level. This while U.S. consumer demand grew by a staggering $2.1 trillion from 2018 to 2021 (or $1.6 trillion relative to the pre-pandemic demand level in 2019) (U.S. Bureau of Economic Analysis), shipping costs from Asia to the U.S. surged from $4,222/container at the end of 2020 to $16,327/container at the end of 2021 (Freightos Baltic Index),[6] and U.S. ports struggled to handle containers from China due to labor shortages. EU and Asia imports from China in 2021 generally grew more strongly than U.S. imports. By comparison, U.S. imports from Mexico and Canada, the top 2 and 3 U.S. import partners, in 2021 were 111% and 112% relative to 2018, respectively. U.S. imports from Japan and Germany, the top 4 and 5 U.S. import partners, in 2021 were 95% and 107% relative to 2018, respectively. U.S. imports from Japan and Germany in 2021 were each $135 billions, which is relatively small (and therefore potentially less disruptive) compared with $504 billions for China, $383 billions for Mexico, and $357 billions for Canada.

Using difference-in-difference (DiD) settings, we examine the effects of these two shocks. We start by assessing the extent to which the trade war disruption affected U.S. firms with Chinese suppliers in 2014q1-2017q4. We design our empirical tests to measure how the trade war disruption propagated downstream to U.S. customers controlling for potential contaminating effects by including firm fixed effects and industry-year-quarter fixed effects. Our empirical strategy ensures that we compare effects for treated firms (U.S. firms with Chinese suppliers at the onset of the trade shock) and control firms (U.S. firms without Chinese suppliers at the onset of trade shock) within the same industry. Our tests thus mitigate possible concerns that our results capture changes in

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[4]Container traffic from China's top eight ports dropped by 19.8% year-on-year in February 2020, and another 5.6% in March 2020 (Source: China Ports and Harbors Association – China Ministry of Transport). The China Ports and Harbors Association suspended the release of container traffic statistics for the month of January 2020.

[5]Because of factory closings during the Chinese New Year, industrial production data is not available for January 2018-2020, and for January-February 2021.

[6]By comparison, global shipping cost increased from $3,452/container at the end of 2020 to $9,842/container at the end of 2021 (Freightos Baltic Index).

demand for different products sold by treated and control firms during the trade war.

We find that sales decreased by 4.3% for U.S. firms with Chinese suppliers relative to their domestic counterparts without Chinese suppliers in 2016q1 compared with 2014q1-2015q4. Notably, sales for U.S. firms with Chinese suppliers decreased further in the four quarters of 2017 (6.7% in 2017q1, 5.6% in 2017q2, 4.7% in 2017q3, and 6.1% in 2017q4) as U.S.-China trade tensions were unfolding.

We find very similar effects for U.S. firms with Chinese suppliers during the pandemic supply chain disruption, which is a purely unexpected shock, therefore providing a strong identification setting. For Asian firms with Chinese suppliers, sales decreased in 2020q1 and 2020q2, respectively, but no additional sales decreases occurred after these quarters. We do not find any decline for EU firms and other global firms. Overall, our results indicate that these two trade shocks had sizable short- and long-term consequences on sales of U.S. firms reliant on Chinese suppliers, while firms from other countries with Chinese suppliers were more resilient.

To analyze the effect of product market competition, prior to the onset of each shock we partition firms based on whether they are facing low or high entry threats and low or high competition using the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) and the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016), respectively. This analysis reveals that sales decreased during the trade war and during the pandemic, but only for firms with Chinese suppliers facing lower entry threats and competition - thus, firms that had more stable market positions. For example, focusing on the pandemic shock, for the case of firms with Chinese suppliers facing low entry threats, sales decreased by 4.7% in 2020q1 and 8.0% in 2020q2. For these firms, sales decreased further in each of the quarters in 2021, ranging from a minimum of 4.9% in 2021q1 to a maximum of 10.0% in 2021q3. By comparison, we find that sales for firms with Chinese suppliers operating in competitive industries remained the same relative to their counterparts without Chinese suppliers. We find very similar sales declines during the U.S.-China trade war and pandemic for U.S. firms with Chinese subsidiaries, but again only in less competitive industries. Overall, these findings point to a lack of competition as an important channel for the transmission of supply-chain shocks.

We further consider how geographic supply chain diversification affects sales for firms with

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Chinese suppliers during the pandemic and the U.S.-China trade war. For each firm, we identify whether there are at least two global regions exporting a significant amount of its main production factor in the year leading to the trade war or the pandemic. We find that firms with Chinese suppliers suffered significant sales losses during the trade war or the pandemic but only if there was only one region exporting their top production factor (undiversified supply chain). Firms with Chinese suppliers that were able to import their main production factor pre-trade war or pre-pandemic from at least two regions (diversified supply chain) did not suffer significant sales losses during the pandemic compared to firms without Chinese suppliers. Overall, these findings suggest that the competitive profile of the supply chain structure is also important to estimate the effects of supply-chain shocks.

We conduct several tests to validate our empirical design and assess the robustness of our findings. First, we do not find that potential pre-trends can explain the reduction in sales for firms with Chinese suppliers operating in less competitive industries. Similarly, we find no effects when we consider firms not directly affected by the supply-chain shock. Importantly, in robustness tests, we find that our sales results hold when the control groups include only firms without Chinese suppliers who are the "closest" competitors of the treated firms. Together with the use of industry-quarter fixed in all our regressions, this additional test further helps mitigate the concern that our finding could be driven by a demand channel affecting treated firms more because, in these tests, treated and control firms are more likely to sell similar products. Our results are also robust to controlling for alternative channels, considering alternative samples, and using alternative proxies of exposure to the production shock. Overall, the insulation of firms in less competitive industries is probably responsible for the differential impact of the shock.

In addition to the literature discussed above, our paper also adds to the literature on supply chain and the role of multi-sourcing (e.g., Babich et al., 2012; Bimpikis, Candogan and Ehsani, 2019; Aral, Giambona and Wang, 2022), supplier proximity (e.g., Ersahin, Giannetti and Huang, 2024), and supply contracts (Almeida et al., 2017) as strategies to manage supply chain disruption risk. Ersahin, Giannetti and Huang (2023) identify increased trade credit as a channel through which suppliers help buyers during a shock. Franzoni, Giannetti and Tubaldi (2024) further show that larger firms are less impacted by supply-chain shocks. Several other studies have analyzed the

interconnectedness of firms along the supply chain (e.g., Hertzel et al., 2008; Campello and Gao, 2017; Gofman, Segal and Wu, 2020; Gofman and Wu, 2022; Crosignani, Macchiavelli and Silva, 2023; Schiller, 2023; Cen, Hertzel and Schiller, 2025). We complement this literature with evidence on the potential costs firms incur when product market relationships are interrupted by a "real shock" in the context of competitive and non-competitive industries. Overall, our novel data and empirical design provide a unique opportunity to estimate the overall short-term and long-term costs of the trade shocks for product market related firms. Our findings suggest that U.S. firms in less competitive industries were unable to find alternative sourcing channels following the Chinese production halt, pointing to a systemic dependence of U.S. firms on Chinese suppliers.

Our combined analysis of the two shocks suggests that structural trade imbalances can be costly in the event of unexpected supply chain shocks. However, escalating trade tensions may not be an effective means to curb these imbalances and may actually add additional costs. The main takeaway for policymakers is that promoting policies to encourage product market competition might help mitigate the effect of external shocks on business outcomes. Our findings can also offer valuable insights to decision-makers worldwide involved in trade discussions. There is mounting pressure from political analysts, policymakers, and the public to decouple the U.S. supply chain from China.[7] Our findings suggest that U.S. firms with Chinese suppliers incurred significant losses because of the supply chain network disruptions, especially if they operated in less competitive industries. However, due to relationship-specific investments that firms make over time (e.g., Grossman and Hart, 1986; Aghion and Tirole, 1994), redesigning production networks is costly and takes time. The takeaway for policymakers is that legislation might be more effective in connection with competition polices.

The rest of the paper is organized as follows. Section 2 discusses data sources and descriptive statistics. Section 3 presents our main results, as well as validity and robustness tests. Section 4 concludes. An Appendix provides additional details about our data and additional results.

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[7]For example, the CHIPS Act of 2022 and the ONSHORE Manufacturing Act of 2024.

2 Data Sources and Descriptive Statistics

We obtain granular supply chain relationship data from the FactSet Revere Supply Chain Relationships database. The dataset contains up-to-date information on material intercompany relationships from supply contracts, purchase obligations, SEC 10-K filings, investor presentations, press releases, and other public sources. The focus on material supply chain relationships indicates that our sample firms might also have relationships with suppliers that are too small to be included in the FactSet database. Using FactSet, we extract information on Chinese suppliers, as well as U.S., European Union (EU), and Asian (other than Chinese) suppliers, customers, and competitors of U.S., EU, and Asia publicly listed firms on December 31, 2015, the onset of the U.S.-China trade war. We obtain similar information for U.S. firms on December 31, 2019, the onset of the coronavirus supply-chain shock.[8]

For the U.S. sample, import-level transaction weight (kg/ton) and volume (twenty-foot equivalent unit containers, TEU) data are obtained from ocean freight bills of lading, extracted using the Panjiva Supply Chain Intelligence platform. The data comes in the form of large text files that need to be carefully cleaned and matched with our treated and control firms.

We combine the supply chain relationship data with U.S. firms' fundamentals from COMPUSTAT North America Fundamentals quarterly using 8-digit CUSIPs. The import-level data is combined with COMPUSTAT North America Fundamentals quarterly by first linking the PanjivaID to S&P Capital IQ company identifiers, and then linking the latter with COMPUSTAT GVKEYs. Data for international firms are from the COMPUSTAT Global Fundamentals quarterly database. Our EU and Asian samples include firms from all 27 EU countries and 9 out of the 17 East Asian countries with data in both FactSet and COMPUSTAT.[9] Media coverage of

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[8]Figure IA.1 presents a timeline of major events concerning the pandemic. To the best of our knowledge, Fox News was the first media outlet in the U.S. to discuss a mysterious respiratory illness in China on Friday, January 3, 2020 ("Mysterious Respiratory Illness Linked to China Food Market Sickens At Least 44, Officials Say"). On January 6, 2020, the news was covered by Bloomberg, CNN, New York Times, and Wall Street Journal. From January 7, 2020, to January 11, 2020, the pandemic was covered by most of the major media outlets, including Bloomberg (January 8), CNN (January 9), Fox Business News (January 8), NBC News (January 9 and 11), New York Times (January 8 and 10), Wall Street Journal (January 8, 10, and 11), and Washington Post (January 9).

[9]The 27 EU countries include Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden. The 9 East Asia countries include Hong Kong, Indonesia, South Korea, Macau, Malaysia, Philippines, Singapore, Thailand, Taiwan, and Vietnam. The list of excluded East Asia countries includes Brunei, Cambodia, Laos, Macao, Mongolia, Myanmar, North Korea, and Japan. With the exception of Japan, which does not require firms to file quarterly reports, the excluded list includes small countries.

the pandemic is obtained from LexisNexis and Factiva. Trade data for the U.S. are from the U.S. Census Bureau. Suppliers R&D and sales data is from WORLDSCOPE, while patent data is from the PatentsView database of the United States Patent and Trademark Office (USPTO). Earnings Calls are from Seeking Alpha.

Table 1 reports basic descriptive statistics for the U.S. firms in the FactSet Revere Supply Chain Relationships database, except financial firms (SICs 6000-6999), for 2014q1-2017q4 (Panel A: Trade War) and 2018q1-2021q4 (Panel B: Pandemic Supply Chain Shock). While we allow firms to enter and exit the sample during our sample period, we note that nearly 68% (69%) of the firms are in our sample for at least two quarters in 2014-2015 (2018-2019) and two quarters in 2016-2017 (2020-2021), and 58% (61%) of the firms are in our sample for at least four quarters in 2014-2015 (2018-2019) and four quarters in 2016-2017 (2020-2021). Below we show that our results are robust if we focus only on firms with data available for the entire sample period.

Table A.1 in the Appendix provides detailed definitions for the main variables used in the paper.

Table 1 shows that 11.5% and 12.5% (15.5% and 16.1%) of the U.S. firms in the trade war sample (Panel A) (pandemic sample, Panel B) have at least one Chinese supplier or customer on December 31, 2015 (December 31, 2019). On average, U.S. firms have 0.3 (0.6) Chinese suppliers and 0.3 (0.5) Chinese customers. In the trade war sample, U.S. firms have 7.8 (4.8) and 6.8 (5.4) U.S. (foreign, other than Chinese) suppliers and customers, respectively. The number of U.S. and foreign (other than Chinese) suppliers and customers is somewhat higher in the pandemic sample. On average, U.S. firms with Chinese suppliers import 14.3 kg/tons and 14.1 kg/tons during trade war and pandemic shock, respectively. For the average firm in our trade war sample (pandemic sample), imports from all other countries are 15.8 kg/tons (16.9 kg/tons). For the median U.S. firm in the trade war sample (Panel A), quarterly sales and book assets are $0.3 billion and $1.4 billion, respectively. Sales and assets are similar for U.S. firms in the pandemic sample (Panel B). The table also reports descriptive statistics on the Product Market Fluidity measure of Hoberg, Phillips and Prabhala (2014) and the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016). Figure 1 reports U.S. important activities from its top 5 important partners from 2010 to 2021. Figure IA.2 in the Internet Appendix displays the top and bottom 15 firms with Chinese suppliers by 2015q4 and 2019q4 sales.

Table 1: Descriptive Statistics

This table reports descriptive statistics for the firms in our sample for the periodd 2014q1 – 2017q4 (Panel A) and 2018q1 – 2021q4 (Panel B), respectively. The sample includes all U.S. firms in both FactSet and COMPUSTAT. We exclude financial firms (SICs 6000-6999). Chinese Suppliers≥1 (Customers≥1) is an indicator for firms with at least one Chinese supplier (customer) as of December 31, 2015 (Panel A), or as of December 31, 2019 (Panel B), respectively. U.S. Suppliers≥1 (Customers≥1) is an indicator for firms with at least one U.S. supplier (customer) on December 31, 2015 (Panel A), or on December 31, 2019 (Panel B), respectively. Product Market Fluidity is the measure of Hoberg, Phillips and Prabhala (2014). Text-based Network Industry Classifications (TNIC) HHI is the measure of Hoberg and Phillips (2010, 2016). Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Firm-level data is from COMPUSTAT North America. Weight (kg/ton) import data is from the S&P Global Panjiva Supply Chain Intelligence database. Subsidiaries data is from WRDS. Refer to Table A.1 for detailed variable definitions.

	Mean	Std. Dev.	25th Prc.	Median	75th Prc.	Obs.
Panel A: Trade War						
Sales (Billions $)	1.478	5.318	0.065	0.271	0.932	29,871
Chinese Suppliers≥1	0.115	0.319	0.000	0.000	0.000	29,871
Chinese Imports (kg/ton)	14.274	21.092	3.073	8.358	16.404	290,558
Other Imports (kg/ton)	15.828	28.547	1.579	7.267	17.982	571,878
Number of Chinese Suppliers	0.297	1.720	0.000	0.000	0.000	29,871
U.S. Suppliers≥1	0.807	0.395	1.000	1.000	1.000	29,871
Number of U.S. Suppliers	7.835	15.571	1.000	3.000	8.000	29,871
Number of Foreign Suppliers	4.820	14.056	0.000	1.000	4.000	29,871
Chinese Customers≥1	0.125	0.330	0.000	0.000	0.000	29,871
Number of Chinese Customers	0.317	1.215	0.000	0.000	0.000	29,871
Number of Chinese Subsidiaries	1.667	5.003	0.000	0.000	1.000	24,499
U.S. Customers≥1	0.711	0.453	0.000	1.000	1.000	29,871
Number of U.S. Customers	6.791	11.045	1.000	3.000	9.000	29,871
Number of Foreign Customers	5.433	12.287	0.000	1.000	6.000	29,871
Assets (Billions $)	8.163	29.920	0.320	1.359	4.931	29,864
Product Market Fluidity	6.091	3.341	3.722	5.313	7.566	28,218
TNIC HHI	0.278	0.263	0.086	0.180	0.378	28,355
Panel B: Pandemic Supply Chain Shock						
Sales (Billions $)	1.653	6.332	0.064	0.284	1.012	32,673
Chinese Suppliers≥1	0.155	0.362	0.000	0.000	0.000	32,673
Chinese Imports (kg/ton)	14.078	20.591	3.890	8.470	16.141	307,077
Other Imports (kg/ton)	16.875	32.480	1.591	7.155	17.648	497,141
Number of Chinese Suppliers	0.643	3.834	0.000	0.000	0.000	32,673
U.S. Suppliers≥1	0.837	0.369	1.000	1.000	1.000	32,673
Number of U.S. Suppliers	9.052	18.559	1.000	3.000	9.000	32,673
Number of Foreign Suppliers	6.780	19.660	1.000	2.000	5.000	32,673
Chinese Customers≥1	0.163	0.369	0.000	0.000	0.000	32,673
Number of Chinese Customers	0.496	2.191	0.000	0.000	0.000	32,673
Number of Chinese Subsidiaries	1.720	4.793	0.000	0.000	1.000	20,227
U.S. Customers≥1	0.745	0.436	0.000	1.000	1.000	32,673
Number of U.S. Customers	8.585	17.569	1.000	3.000	10.000	32,673
Number of Foreign Customers	7.882	23.665	0.000	2.000	7.000	32,673
Assets (Billions $)	9.689	34.821	0.382	1.615	5.751	32,658
Product Market Fluidity	5.611	3.590	3.006	4.630	7.222	30,627
TNIC HHI	0.294	0.268	0.097	0.189	0.403	30,742

Figure 1: U.S. Imports from Top 5 Import Partners

This figure plots U.S. yearly imports in $ billion from China, Mexico, Canada, Japan, and Germany, respectively, for the period from 2010 to 2021. The figure also plots the yearly total personal consumption expenditures in $ billion. Data on imports is from the U.S. Census Bureau. Data on personal consumption expenditures is from FRED.

U.S. Imports ($ B) from Top 5 Import Partners
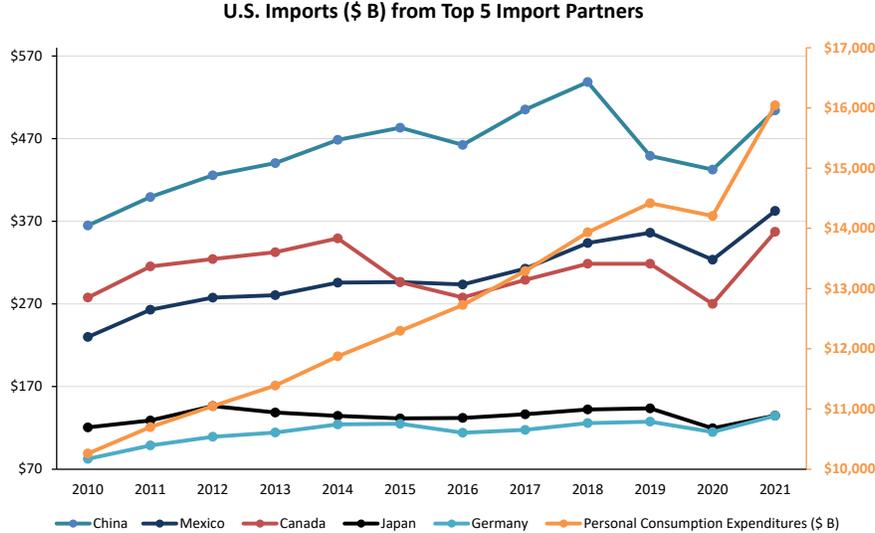
Table IA.1 in the Internet Appendix reports descriptive statistics separately for firms with and without Chinese suppliers, respectively, both in the trade war sample (Panels A and B) and the pandemic sample (Panels C and D). A visual inspection of Table IA.1 shows that U.S. firms with Chinese suppliers are larger than U.S. firms without Chinese suppliers. For the two groups, book assets are $32.7 ($34.6) billion and $3.9 ($5.1) billion, respectively, in the trade war (pandemic) sample. On average, U.S. firms with Chinese suppliers have 2.3 and 3.8 Chinese suppliers in the trade war and pandemic samples, respectively. In our main regressions, we control for assets to mitigate the concern that differences in size between firms with and without Chinese suppliers could be driving our results. In robustness tests, we further match on pre-event assets and industry, finding that our main results hold in the matched sample.

3 Results

3.1 Sales for Affected U.S. Firms by Sourcing Strategy

In this section, we analyze how the trade war and the pandemic supply-chain shock affected sales of U.S. firms with Chinese suppliers relative to U.S. firms without Chinese suppliers. To this end, we estimate the following difference-in-difference model:

$$Log\ of\ Sales_{i,q} = \sum_{k=2016q1}^{2017q4} \beta_k(Chinese\ Suppliers \geq 1_{i,Pre\text{-}event} \times k)+$$

$$\sum_{k=2016q1}^{2017q4} \gamma_k(Chinese\ Customers \geq 1_{i,Pre\text{-}event} \times k)+$$

$$1/Assets_{i,q-1} + i_i \times z_q + y_i + \varepsilon_{i,q}, \tag{1}$$

where *Log of Sales* is the natural logarithm of sales of firm i in quarter q. Chinese Suppliers$\geq$1 and Chinese Customers$\geq$1 are indicators for firms with at least one Chinese supplier or customer, respectively, on December 31, 2015, while 2016q1-2017q4 are year-quarter indicators. This design allows us to estimate the effect of having Chinese suppliers on the outcome variable of interest, accounting for the potential effects associated with having Chinese customers. Further, to control for differences between firms with and without Chinese suppliers, and customers, all our regressions include lagged 1/assets, 2-digit SIC industry indicators, i_i, interacted with year-quarter fixed effects, z_q, and firm fixed effects, y_i. Standard errors are clustered at the firm level. Our analysis focuses on the sample period 2014q1–2017q4 (2018q1–2021q4): a sixteen-quarter time window centered on 2015q4 (2019q4). As discussed, President Trump, who advocated for tariffs to reduce the U.S. trade deficit with China, announced that he was running for president in the summer of 2015 and dominated his party's polls until his election in November 2016. We identify whether firms have Chinese suppliers on December 31, 2015 to mitigate the concern that a firm's supply base might endogenize President Trump's focus on imposing tariffs on China, which is likely to be the case if one, for example, considers a firm's supply base at the end of 2016 or later. This is less of a concern for the pandemic supply chain shock, which is effectively unanticipated.

The focus of our analysis is the interaction terms in Eq. (1), our difference-in-difference estimators, which measure the change in sales for U.S. firms exposed to Chinese suppliers (treated firms) relative to U.S. firms without exposure to Chinese suppliers (control firms) in 2016q1–2017q4 (2020q1–2021q4), relative to 2014q1–2015q4 (2018q1–2019q4).

Table 2 reports results from this estimation. In column 2, the significantly negative coefficient on the Chinese supplier indicator interacted with the 2016q1 indicator suggests that sales decreased

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by 4.3% for U.S. firms with Chinese suppliers compared with U.S. firms without Chinese suppliers in the first quarter following the beginning of the trade war relative to the pre-trade war period. Importantly, sales decreased for the affected U.S. firms in all quarters of 2017. Column 3 shows that on average sales for treated firms decreased by 4.7% compared with control firms during the trade war.

Turning to the pandemic, in column 5, the significantly negative coefficient on the Chinese supplier indicator interacted with the 2020q1 and 2020q2 indicators suggests that sales decreased by 3.2% and 6.4% for U.S. firms with Chinese suppliers compared with U.S. firms without Chinese suppliers in 2020q1 and 2020q2, respectively, relative to the pre-pandemic period. Importantly, sales decreased for the affected U.S. firms also in 2021q2-2021q4, ranging from 5.7% in 2021q3 to 8.5% in 2021q1. Column 6 shows that on average sales for treated firms decreased by 4.7% compared with control firms in 2020q1-2021q4 relative to 2018q1-2019q4.

One could be concerned that in Table 2 we are picking up sales trends that started affecting U.S. firms with Chinese suppliers prior to the production network disruptions. To consider this possibility, we re-estimate the model in Table 2, columns 1 and 4, adding interactions of the indicator for firms with Chinese suppliers with seven pre-shock quarter indicators, 2014q2-2017q4 (2018q2-2019q4), with 2014Q1 (2018q1) as the omitted case.

Table 2: Sales During the US-China Trade War and the Pandemic: By Sourcing Strategy
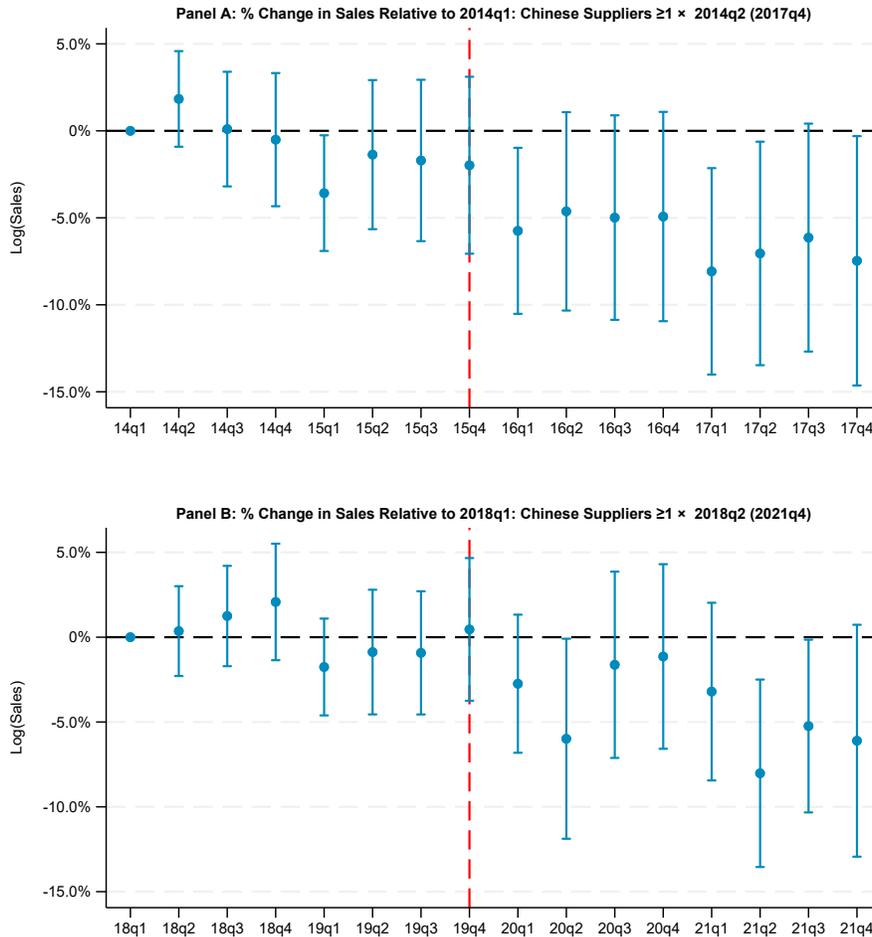
This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1–2017q4 (Columns (1)-(3)) and 2018q1 – 2021q4 (Columns (4)-(6)). Chinese Suppliers≥1 (Customers≥1) is an indicator for firms with at least one Chinese supplier (customer) on December 31, 2015 (Columns (1)-(3)) and on December 31, 2019 (Columns (4)-(6)). 2016q1 to 2017q4 (2020q1 to 2021q4) are year-quarter dummies. Post is an indicator for quarters 2016q1-2017q4 (Column (3)) and quarters 2020q1-2021q4 (Column (6)), respectively. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

| | Dep. Variable: Log of Sales | | | | | |
| | Trade War | | | Pandemic | | |
Sample Period:	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Suppliers ≥1 × Post			-0.047**			-0.047**
			(0.020)			(0.020)
Chinese Suppliers ≥1 × 2016q1	-0.048***	-0.043**				
	(0.016)	(0.017)				
Chinese Suppliers ≥1 × 2016q2	-0.037*	-0.032				
	(0.021)	(0.022)				
Chinese Suppliers ≥1 × 2016q3	-0.040*	-0.036				
	(0.022)	(0.023)				
Chinese Suppliers ≥1 × 2016q4	-0.040*	-0.035				
	(0.022)	(0.023)				
Chinese Suppliers ≥1 × 2017q1	-0.071***	-0.067**				
	(0.025)	(0.026)				
Chinese Suppliers ≥1 × 2017q2	-0.061**	-0.056**				
	(0.026)	(0.027)				
Chinese Suppliers ≥1 × 2017q3	-0.052**	-0.047*				
	(0.026)	(0.027)				
Chinese Suppliers ≥1 × 2017q4	-0.065**	-0.061**				
	(0.029)	(0.030)				
Chinese Suppliers ≥1 × 2020q1				-0.028*	-0.032*	
				(0.016)	(0.018)	
Chinese Suppliers ≥1 × 2020q2				-0.060**	-0.065**	
				(0.026)	(0.027)	
Chinese Suppliers ≥1 × 2020q3				-0.017	-0.021	
				(0.023)	(0.025)	
Chinese Suppliers ≥1 × 2020q4				-0.012	-0.016	
				(0.023)	(0.024)	
Chinese Suppliers ≥1 × 2021q1				-0.033	-0.037	
				(0.022)	(0.023)	
Chinese Suppliers ≥1 × 2021q2				-0.081***	-0.085***	
				(0.024)	(0.026)	
Chinese Suppliers ≥1 × 2021q3				-0.053**	-0.057**	
				(0.021)	(0.023)	
Chinese Suppliers ≥1 × 2021q4				-0.062**	-0.066**	
				(0.030)	(0.032)	
Chinese Customers ≥1 × Post		-0.020	-0.020		0.015	0.015
		(0.018)	(0.018)		(0.024)	(0.024)
Lagged 1/Assets	-0.001	-0.001	-0.001	-0.003***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	29,871	29,871	29,871	32,673	32,673	32,673
R2 (within)	0.003	0.003	0.003	0.004	0.004	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Figure 2, Panels A and B, show that only one interaction and none of the pre-shock interactions for the trade war and the pandemic sample, respectively, are statistically significant. Instead, the interaction of the Chinese supplier indicator with the post-shock quarter dummies are statistically significant six times and four times in the post event period for the trade war and the covid shock, respectively, in line with the pattern of Table 2. Overall, this evidence mitigates the concern that our findings could be driven by a trend specific to the U.S. with Chinese suppliers that began before the trade war or pandemic.

Figure 2: Sales Around the US-China Trade War and the Pandemic: By Sourcing Strategy

This figure plots the coefficients on the interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies from difference-in-difference sales regressions with pre-shock interactions to test for the parallel trend assumption. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1-2017q4 (Panel A) and 2018q1 – 2021q4 (Panel B), respectively. 2014q1 (Panel A) or 2018q1 (Panel B) are the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × 2014q2 (2017q4)

Panel B: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × 2018q2 (2021q4)

The effect of the pandemic supply chain shock on the sales of firms from other regions was less severe. Table 3 shows that sales of Asian firms (other than Chinese) with Chinese suppliers decreased by about 3.3% and 4.4% in 2020q1 and 2020q2, respectively, but not in other quarters. Notably, we find no reduction in sales for EU firms and other global firms. Overall, our sales results indicate that the supply-chain shocks originating in China and the systemic dependence of U.S. firms on Chinese suppliers had sizable short-term and long-term consequences on the sales of affected U.S. firms. The relatively modest decrease in sales for the firms with Chinese suppliers from other regions indicates that their economies were more resilient to the Chinese supply chain disruption than their U.S. counterpart.

Table 3: Sales During the Pandemic: EU, Asian, and Other Global Firms

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The samples in columns (1) and (2) include all EU and Asian firms, respectively, in both FactSet and COMPUSTAT Global, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. The sample in column (3) includes all firms in both FactSet and COMPUSTAT Global, except Asian, Chinese, EU, and U.S. firms for the period 2018q1 – 2021q4. It also excludes financial firms (SICs 6000-6999). Chinese Suppliers$\geq$1 is an indicator for firms with at least one Chinese supplier on December 31, 2019. 2020q1 to 2021q4 are year-quarter dummies. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT Global. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales		
	EU Firms	**Asian Firms**	**Other Global Firms**
	(1)	(2)	(3)
Chinese Suppliers $\geq$1 $\times$ 2020q1	-0.012	-0.033*	0.013
	(0.024)	(0.018)	(0.022)
Chinese Suppliers $\geq$1 $\times$ 2020q2	-0.030	-0.044*	0.017
	(0.028)	(0.026)	(0.027)
Chinese Suppliers $\geq$1 $\times$ 2020q3	-0.028	0.001	0.003
	(0.027)	(0.024)	(0.029)
Chinese Suppliers $\geq$1 $\times$ 2020q4	0.001	-0.044	0.012
	(0.028)	(0.043)	(0.028)
Chinese Suppliers $\geq$1 $\times$ 2021q1	0.023	-0.053	0.021
	(0.030)	(0.041)	(0.028)
Chinese Suppliers $\geq$1 $\times$ 2021q2	-0.007	-0.064	0.011
	(0.031)	(0.042)	(0.030)
Chinese Suppliers $\geq$1 $\times$ 2021q3	-0.023	-0.056	0.003
	(0.027)	(0.044)	(0.032)
Chinese Suppliers $\geq$1 $\times$ 2021q4	-0.013	-0.039	0.003
	(0.028)	(0.044)	(0.032)
Lagged 1/Assets	-0.001	-0.025**	-0.005***
	(0.001)	(0.012)	(0.002)
Observations	20,776	36,910	46,902
R2 (within)	0.001	0.006	0.004
Firm Fixed Effects	Yes	Yes	Yes
Industry $\times$ Year-Quarter Fixed Effects	Yes	Yes	Yes
Country $\times$ Year-Quarter Fixed Effects	Yes	Yes	Yes

3.2 Sales for Affected U.S. Firms by Sourcing Strategy and Product Market Competition

Next, we analyze the effect of trade war and the pandemic supply-chain shocks based on industry competition. Table 4 presents results for the trade war sample. At the end of 2015 (the onset of the trade war shock), we partition firms based on whether they face low or high entry threats according to whether the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) is below or above the sample median. We similarly partition firms according to whether they are facing low or high competition based on whether the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) is above or below the sample median in 2015. We then interact these low and high indicators with our main interaction terms in Eq. (1).

Table 4 shows that sales decreased for 2016 and 2017, but only for firms with Chinese suppliers facing lower competition. Column 1, for the case of firms with Chinese suppliers facing low entry threats, shows that sales decreased in each quarter from 2016q1 to 2017q4, ranging from by 4.3% in 2016q2 and 10.8% in 2017q1. By comparison, we find no change in the sales of firms with Chinese suppliers facing high entry threats relative to their counterparts without Chinese suppliers. On average, sales decreased by 6.7% for treated firms facing low entry threats in the period 2016q1-2017q4, while they did not decrease for treated firms in high entry threat industries (column 2). Columns 3 and 4 show a similar decline in sales for firms with Chinese suppliers facing low competition, and again no effect on the sales of treated firms facing high competition.[10]

Figure 3 Panels A and C show no indication of any pre-trade war declines of sales of treated firms in low entry threat and low competition industries, respectively. Instead, the sales declines start in 2016q1, the first post-trade was quarter. By comparison, Panels B and D show no changes in sales for treated firms in high-entry threat and high-competition industries, respectively, before or after the beginning of the trade war.

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[10]Notably, in the 10 years prior to the beginning of the trade war (2005-2015), firms with Chinese suppliers outperformed firms without Chinese suppliers in terms of sales (Table IA.2, column 1). However, it is only the firms with Chinese suppliers operating in high entry threat (column 2) and high competition (column 3) industries that experienced higher sales. Combined with the evidence in Table 4, these findings suggest that having Chinese suppliers was overall beneficial to U.S. firms but only if they operated in competitive industries.
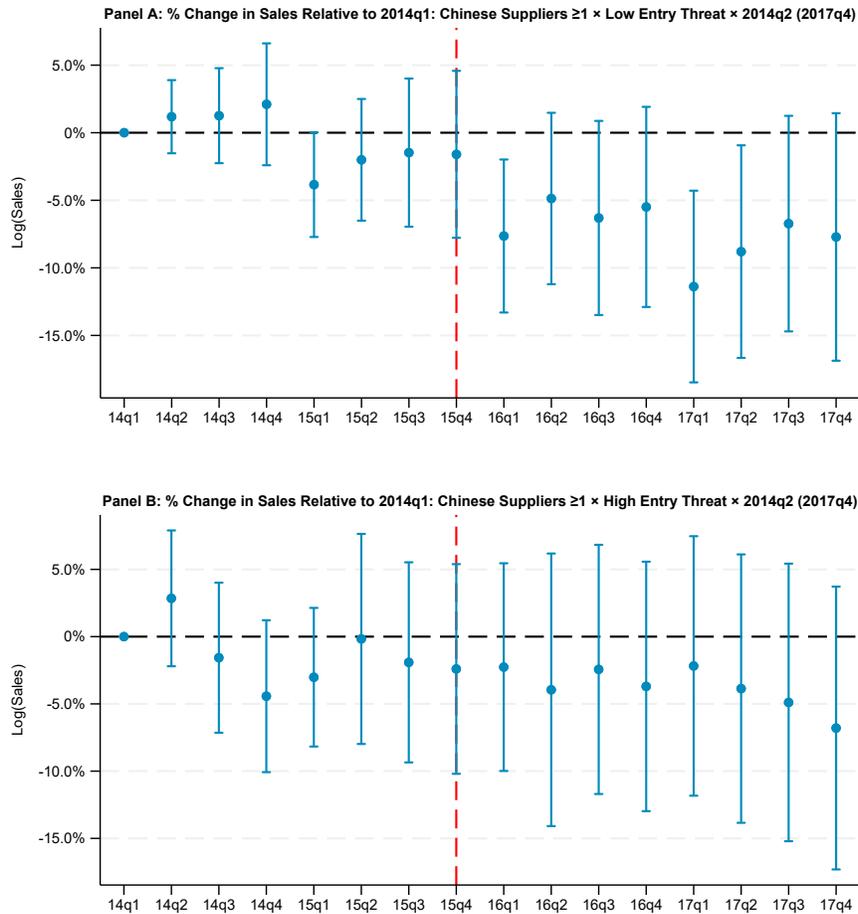
Table 4: Sales By Sourcing Strategy and Competition: Pre vs. Post US-China Trade War

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4, where 2014q1 – 2015q4 is the pre-trade war period and 2016q1 – 2017q4 the post trade war period. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015. In column (1), Low (High) is an indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015. In column (2), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015. 2016q1 to 2017q4 are year-quarter dummies. Post is an indicator for quarters 2016q1-2017q4. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Imports data is from the S&P Global Panjiva Supply Chain Intelligence Database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.
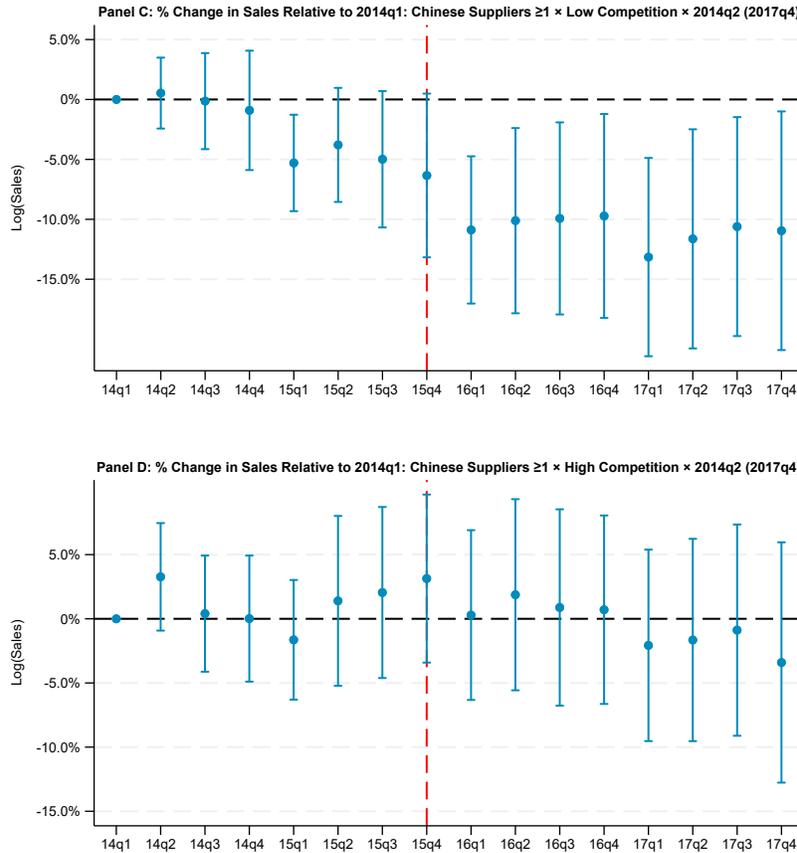
	Dep. Variable: Log of Sales			
	Entry Threat: Low vs. High		Competition: Low vs. High	
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Post		-0.067***		-0.081***
		(0.024)		(0.028)
Chinese Suppliers≥1 × High × Post		-0.023		-0.016
		(0.030)		(0.024)
Chinese Suppliers≥1 × Low × 2016q1	-0.071***		-0.082***	
	(0.020)		(0.023)	
Chinese Suppliers≥1 × Low × 2016q2	-0.043*		-0.074**	
	(0.022)		(0.030)	
Chinese Suppliers≥1 × Low × 2016q3	-0.057**		-0.072**	
	(0.028)		(0.031)	
Chinese Suppliers≥1 × Low × 2016q4	-0.049*		-0.070**	
	(0.028)		(0.033)	
Chinese Suppliers≥1 × Low × 2017q1	-0.108***		-0.104***	
	(0.032)		(0.038)	
Chinese Suppliers≥1 × Low × 2017q2	-0.082**		-0.089**	
	(0.033)		(0.039)	
Chinese Suppliers≥1 × Low × 2017q3	-0.061*		-0.079**	
	(0.033)		(0.038)	
Chinese Suppliers≥1 × Low × 2017q4	-0.071*		-0.082**	
	(0.039)		(0.041)	
Chinese Suppliers≥1 × High × 2016q1	-0.009		-0.008	
	(0.025)		(0.021)	
Chinese Suppliers≥1 × High × 2016q2	-0.025		0.008	
	(0.041)		(0.026)	
Chinese Suppliers≥1 × High × 2016q3	-0.010		-0.002	
	(0.033)		(0.027)	
Chinese Suppliers≥1 × High × 2016q4	-0.023		-0.004	
	(0.033)		(0.026)	
Chinese Suppliers≥1 × High × 2017q1	-0.008		-0.032	
	(0.036)		(0.027)	
Chinese Suppliers≥1 × High × 2017q2	-0.025		-0.027	
	(0.036)		(0.028)	
Chinese Suppliers≥1 × High × 2017q3	-0.035		-0.020	
	(0.038)		(0.030)	
Chinese Suppliers≥1 × High × 2017q4	-0.054		-0.045	
	(0.040)		(0.039)	
Observations	29,864	29,864	29,869	29,869
R2 (within)	0.004	0.003	0.004	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Figure 3: Sales Around the US-China Trade War

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions with pre-shock interactions to test for the parallel trend assumption. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. In Panel A (B), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms' low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2019. In Panel C (D), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4. 2014q1 is the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × Low Entry Threat × 2014q2 (2017q4)

Panel B: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × High Entry Threat × 2014q2 (2017q4)

Figure 3: Sales Around the US-China Trade War (cont.)

Panel C: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × Low Competition × 2014q2 (2017q4)

Panel D: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × High Competition × 2014q2 (2017q4)

Because the U.S.-China trade war continued up until the end of 2019, we also estimate the regressions in Table 4 for the period 2012q1-2019q4. Figure IA.3 reports these results, showing that sales continued to decline for U.S. firms with Chinese suppliers in low-entry threat (Panel A) and low-competition (Panel C) up until the end of 2019. By comparison, Panels B and D show nearly no effect on the sales of treated firms in high-entry threat and high-competition industries. Figure IA.4 in the Internet Appendix suggests that these findings are not driven by a violation of the parallel-trend assumption.

Table 5 examines the impact of the pandemic on firms with Chinese suppliers. In line with the trade war results, Table 5 shows, for the pandemic sample, that sales decreased for 2020 and 2021, but only for firms with Chinese suppliers facing lower competition. Column 1, for the case of firms with Chinese suppliers facing low entry threats, shows that sales decreased by 4.7% in 2020q1 and 8.0% in 2020q2. For these firms, sales decreased further in each of the quarters in 2021, 4.9% in 2021q1, 10.0% in 2021q2, 8.4% in 2021q3, and 7.9% in 2021q4. By comparison, we find no change in the sales of treated firms facing high entry threats relative to their counterparts without Chinese

suppliers. On average, sales decreased by 6.0% for treated firms facing low entry threats in the period 2020q1-2021q4, while they did not decrease for treated firms in high entry threat industries (column 2). Columns 3 and 4 show a similar decline in sales for firms with Chinese suppliers facing low competition, and again no effect on the sales of treated firms facing high competition.

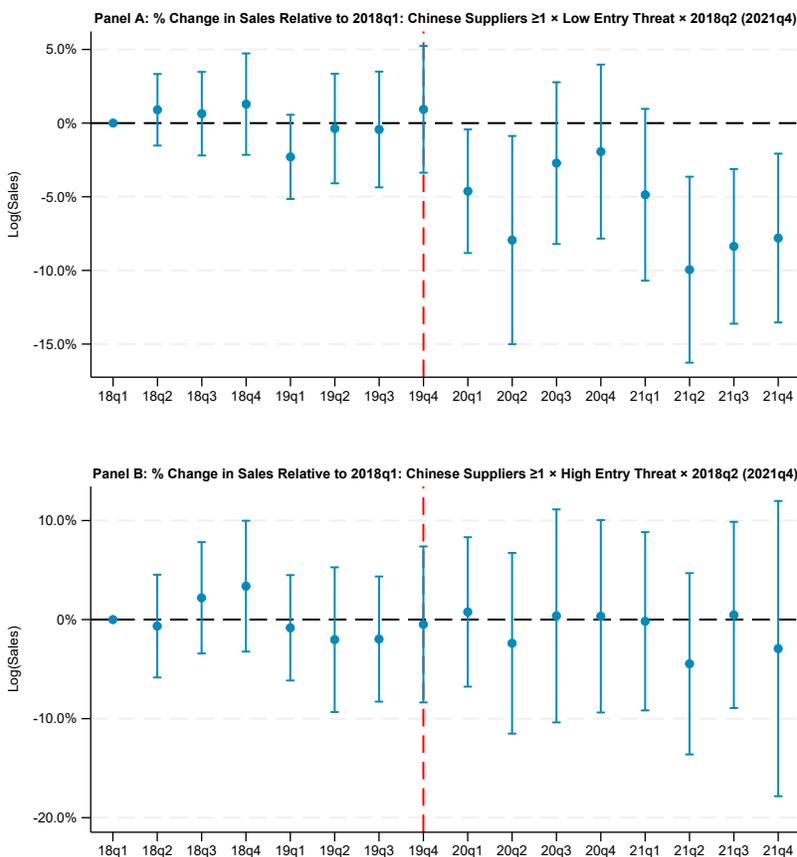**Table 5: Sales By Sourcing Strategy and Competition: Pre vs. Post Pandemic**

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2019. In columns (1)-(2), Low (High) is an indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2019. In columns (3)-(4), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2019. 2020q1 to 2021q4 are year-quarter dummies. Post is an indicator for quarters 2020q1-2021q4. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

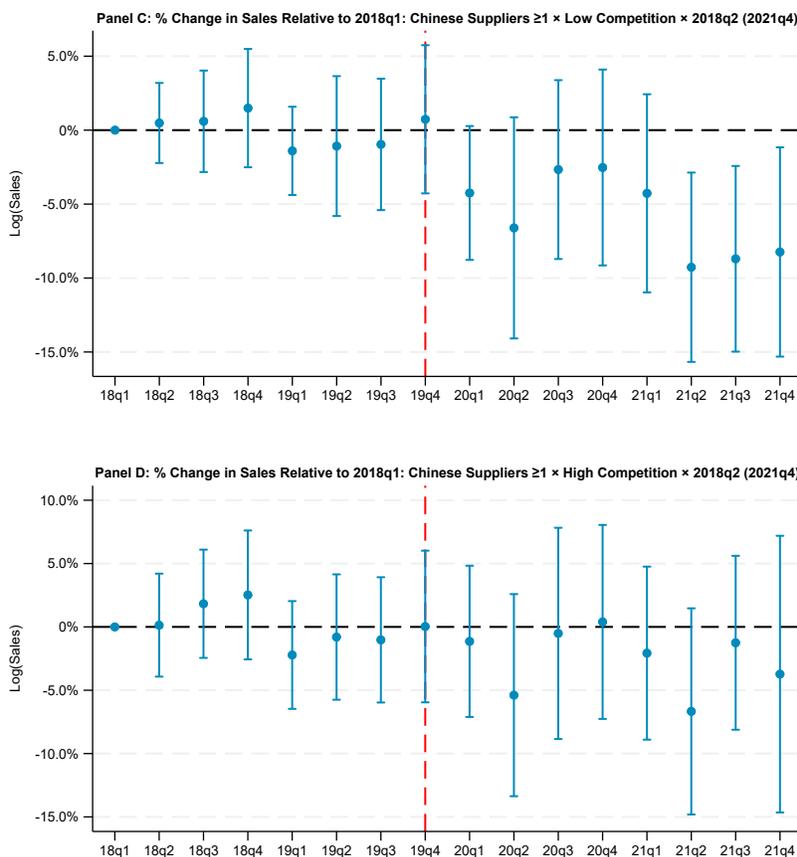|	Dep. Variable: Log of Sales			
	Entry Threat: Low vs. High		Competition: Low vs. High	
	(1)	(2)	(3)	(4)
Chinese Suppliers ≥1 × Low × Post		-0.060***		-0.057***
		(0.020)		(0.022)
Chinese Suppliers ≥1 × High × Post		-0.009		-0.026
		(0.034)		(0.026)
Chinese Suppliers ≥1 × Low × 2020q1	-0.047***		-0.042**	
	(0.017)		(0.018)	
Chinese Suppliers ≥1 × Low × 2020q2	-0.080**		-0.066**	
	(0.032)		(0.033)	
Chinese Suppliers ≥1 × Low × 2020q3	-0.028		-0.026	
	(0.022)		(0.024)	
Chinese Suppliers ≥1 × Low × 2020q4	-0.020		-0.025	
	(0.024)		(0.027)	
Chinese Suppliers ≥1 × Low × 2021q1	-0.049**		-0.042	
	(0.025)		(0.029)	
Chinese Suppliers ≥1 × Low × 2021q2	-0.100***		-0.092***	
	(0.028)		(0.026)	
Chinese Suppliers ≥1 × Low × 2021q3	-0.084***		-0.087***	
	(0.021)		(0.025)	
Chinese Suppliers ≥1 × Low × 2021q4	-0.079***		-0.082***	
	(0.023)		(0.029)	
Chinese Suppliers ≥1 × High × 2020q1	0.009		-0.012	
	(0.029)		(0.024)	
Chinese Suppliers ≥1 × High × 2020q2	-0.023		-0.054	
	(0.039)		(0.035)	
Chinese Suppliers ≥1 × High × 2020q3	0.005		-0.006	
	(0.048)		(0.037)	
Chinese Suppliers ≥1 × High × 2020q4	0.004		0.003	
	(0.044)		(0.034)	
Chinese Suppliers ≥1 × High × 2021q1	-0.001		-0.021	
	(0.039)		(0.029)	
Chinese Suppliers ≥1 × High × 2021q2	-0.044		-0.067*	
	(0.040)		(0.038)	
Chinese Suppliers ≥1 × High × 2021q3	0.006		-0.013	
	(0.041)		(0.030)	
Chinese Suppliers ≥1 × High × 2021q4	-0.028		-0.038	
	(0.070)		(0.051)	
Lagged 1/Assets	-0.003***	-0.003***	-0.003***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	32,659	32,659	32,660	32,660
R2 (within)	0.005	0.004	0.004	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Figure 4, Panels A and C, show no evidence of any pre-pandemic trends in the sales declines of treated firms in low entry threat and low competition industries, respectively. Instead, the sales declines start in 2020q1. By comparison, Panels B and D show no changes in sales for treated firms in high-entry threat and high-competition industries, respectively, before or after the pandemic-production shock.

Figure 4: Sales Around the Pandemic: By Sourcing Strategy and Product Market Competition

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions with pre-shock interactions to test for the parallel trend assumption. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. In Panel A (B), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms' low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2019. In Panel C (D), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2019. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. 2018q1 is the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × Low Entry Threat × 2018q2 (2021q4)

Panel B: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × High Entry Threat × 2018q2 (2021q4)

Figure 4: Sales Around the Pandemic: By Sourcing Strategy and Product Market Competition (cont.)

Panel C: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × Low Competition × 2018q2 (2021q4)

Panel D: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × High Competition × 2018q2 (2021q4)

Could our pandemic results be driven by the U.S.-China trade war, the intention first, and the imposition later of tariffs on imports from China? As discussed, President Trump, who backed the trade war, announced that he was running for president in the summer of 2015 and dominated Republican polling from that moment onward leading to his election in November 2016. Our assumption is that firms had enough time to adjust their exposure to Chinese suppliers before the pandemic started in early 2020. Therefore, given that in our main test we consider whether firms had Chinese suppliers on December 31, 2019, it is unlikely that our results are capturing the effect of the trade war. The absence of any pre-pandemic trends documented in Figures 2 and 4 is also reassuring that the production shock caused by the pandemic and not the trade war are the reason for the decline in sales for firms with Chinese suppliers in low competitive industries in Table 5.

Further, following Huang et al. (2023), we remove firms in the steel, aluminium, and other industries directly affected by the trade war. Table IA.3 shows that our results are qualitatively

and quantitatively very similar to those in the main Table 5 after removing these industries.

3.2.1 The Effects of the Trade War and Supply Chain Shocks By Sourcing Strategy and Supply Chain Diversification

Arguably, the effect of trade tensions and supply chain shocks should be less severe if affected firms have access to alternative sourcing channels. To test this conjecture, for each firm, we identify the number of regions exporting at least 20% of the firm's top 1 production factor based on weight (tons) and volume (TEU) in 2015 for the trade war shock and 2019 for the pandemic supply chain shock. If there is only one (at least two) region(s) exporting the top 1 production factor of the firm, then the firm's supply chain diversification is categorized as low (high). Import data is from the S&P Global Panjiva Supply Chain Intelligence database. The number of exporting regions is identified independently from whether the firm is sourcing from that region in 2015 (2019 for the pandemic). We consider the following regions, Africa and Middle East, Asia (excluding China), Europe, Latin America, North America, and Oceania.

To exemplify, let's consider Apple and Stellantis (former Chrysler). In 2015 (2019), the main product imported by Apple based on volume was 4-digit Harmonized System (HS) product code 8471, which includes automatic data processing machines, magnetic or optical readers, machines for transcribing data onto data media in coded form, and machines for processing data. In 2015 (2019), 97.5% (98.9%) of this product based on volume was exported from Asia, plus China. For Stellantis, the main imported product was 4-digit HS product code 8708, which includes parts and accessories for motor vehicles, tractors, public-transport passenger vehicles, motor cars, goods transport motor vehicles, and special purpose motor vehicles. In 2015 (2019), 30.1% (43.1%) and 36.3% (36.7%) of this product based on volume was exported from Asia (excluding China) and Europe, respectively. We categorize supply chain diversification as low for Apple and high for Stellantis.

Table 6 shows that firms with Chinese suppliers suffered significant sales losses during the US-China trade war shock if supply chain diversification was low. In contrast, firms with Chinese suppliers that could source their main production factors from at least two global regions did not experience significant sales losses compared to control firms. In line with the parallel-trend assumption, Figure IA.5 shows no evidence of a declines in the sales of the treated firms relative to the control firms prior to the trade war shock.

Table 6: Sales During the US-China Trade War: By Sourcing Strategy and Supply Chain Diversification

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in FactSet, COMPUSTAT, and Panjiva except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015. In columns (1)-(2), and (3)-(4), Low (High) is an indicator for firms with low (high) supply chain diversification, that is, firms for which there is only one region (two or more regions) exporting at least 20% of their top 1 production factor in 2015 based on weight (tons), and volume (TEU), respectively. The number of exporting regions is identified independently from whether the firm is sourcing from that region in 2015. We consider the following regions: African and Middle East, Asia (excluding China), Europe, Latin America, North America, and Oceania. Post is an indicator for quarters 2016q1-2017q4. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Imports data is from the S&P Global Panjiva Supply Chain Intelligence Database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	# Regions Exporting Main Production Factor: Low vs. High			
	Exports: Weight		Exports: Volume	
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Post		-0.062**		-0.062**
		(0.027)		(0.025)
Chinese Suppliers≥1 × High × Post		-0.017		-0.006
		(0.050)		(0.057)
Chinese Suppliers≥1 × Low × 2016q1	-0.059**		-0.060***	
	(0.024)		(0.023)	
Chinese Suppliers≥1 × Low × 2016q2	-0.067***		-0.064***	
	(0.025)		(0.024)	
Chinese Suppliers≥1 × Low × 2016q3	-0.059**		-0.064**	
	(0.029)		(0.028)	
Chinese Suppliers≥1 × Low × 2016q4	-0.033		-0.041	
	(0.031)		(0.029)	
Chinese Suppliers≥1 × Low × 2017q1	-0.068**		-0.075**	
	(0.032)		(0.030)	
Chinese Suppliers≥1 × Low × 2017q2	-0.062*		-0.059*	
	(0.034)		(0.032)	
Chinese Suppliers≥1 × Low × 2017q3	-0.075**		-0.064*	
	(0.036)		(0.035)	
Chinese Suppliers≥1 × Low × 2017q4	-0.077*		-0.067	
	(0.045)		(0.042)	
Chinese Suppliers≥1 × High × 2016q1	-0.019		0.009	
	(0.039)		(0.049)	
Chinese Suppliers≥1 × High × 2016q2	-0.005		-0.002	
	(0.039)		(0.043)	
Chinese Suppliers≥1 × High × 2016q3	0.011		0.036	
	(0.057)		(0.061)	
Chinese Suppliers≥1 × High × 2016q4	0.008		0.040	
	(0.059)		(0.064)	
Chinese Suppliers≥1 × High × 2017q1	-0.018		0.014	
	(0.061)		(0.070)	
Chinese Suppliers≥1 × High × 2017q2	-0.015		-0.011	
	(0.055)		(0.066)	
Chinese Suppliers≥1 × High × 2017q3	-0.022		-0.044	
	(0.066)		(0.077)	
Chinese Suppliers≥1 × High × 2017q4	-0.077		-0.092	
	(0.073)		(0.085)	
Observations	11,416	11,416	11,195	11,195
R2 (within)	0.031	0.031	0.031	0.031
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Table 7 reports estimations from similar tests for the pandemic supply chain shock. In line with the evidence for the trade war, we find a significant decrease in the sales of U.S. firms with Chinese suppliers relative to control firms following the beginning of the pandemic only if supply chain diversification was low. We find no decline in the sales of U.S. firms with Chinese suppliers relative to control firms during the trade war if supply chain diversification was high. Figure IA.6 suggests that a violation of the parallel-trend assumption is unlikely to explain our results. There are, however, a few significant coefficients during the pre-event period, although they are economically much smaller compared to the post-event coefficients (Figure IA.6, Panels A and C).

To assess the robustness of these results to potential pre-trends, we perform the "Honest DiD" sensitivity analysis of of Rambachan and Roth (2023) (see also Roth et al., 2023). We find that the breakdown value for a significant effect at the 5% level for the sales results is $\bar{M} = 1.0$ (Figure IA.7). This suggests that our sales results are robust to allowing for a violation of parallel trends of up to 100% of the maximum violation in the pre-treatment period. This robustness is stronger than that reported by recent studies (e.g., Lin et al., 2023; Barrot et al., 2024), which find a break-down value of 50%. Overall, these findings indicate that our results are unlikely to be due to a violation of the parallel trend assumption. Altogether, our results suggest that the competitive profile of the supply chain structure is also important to assess the effects of supply-chain shocks.[11]

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[11]As we have discussed in the introduction, 2021 imports from Japan, the 4th import partner of the US, were also lower than their 2018 level, $135 billion vs. $142 billion. Although Japan is is a much smaller trading partner than China, Mexico, and Canada, from which the U.S. imported $539 billions, $344 billions, and $319 billions, respectively, in 2018, having Japanese suppliers pre-pandemic could also disruptive for U.S. firms. In line with this conjecture, Table IA.4 shows that firms with Japanese suppliers but without Chinese suppliers suffered sales losses during the pandemic but only if they operated in low-competition industries. In line with Table 5, firms with Chinese suppliers but without Japanese suppliers suffered significant sales losses during the pandemic but only if they operated in low entry threat and low competition industries. Notably, firms with both Chinese and Japanese suppliers did not suffer any sales losses possibly because having suppliers in both countries improved supply chain diversification.

Table 7: Sales During the Pandemic: By Sourcing Strategy and Supply Chain Diversification

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in FactSet, COMPUSTAT, and Panjiva except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2019. In columns (1)-(2), and (3)-(4), Low (High) is an indicator for firms with low (high) supply chain diversification, that is, firms for which there is only one region (two or more regions) exporting at least 20% of their top 1 production factor in 2019 based on weight (tons), and volume (TEU), respectively. The number of exporting regions is identified independently from whether the firm is sourcing from that region in 2019. We consider the following regions: African and Middle East, Asia (excluding China), Europe, Latin America, North America, and Oceania. Post is an indicator for quarters 2020q1-2021q4. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Imports data is from the S&P Global Panjiva Supply Chain Intelligence Database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	# Regions Exporting Main Production Factor: Low vs. High			
	Exports: Weight		Exports: Volume	
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Post		-0.071***		-0.076***
		(0.023)		(0.022)
Chinese Suppliers≥1 × High × Post		-0.010		-0.022
		(0.039)		(0.040)
Chinese Suppliers≥1 × Low × 2020q1	-0.061***		-0.062***	
	(0.021)		(0.022)	
Chinese Suppliers≥1 × Low × 2020q2	-0.070**		-0.099***	
	(0.031)		(0.033)	
Chinese Suppliers≥1 × Low × 2020q3	-0.065**		-0.069***	
	(0.026)		(0.025)	
Chinese Suppliers≥1 × Low × 2020q4	-0.033		-0.034	
	(0.030)		(0.028)	
Chinese Suppliers≥1 × Low × 2021q1	-0.062*		-0.070**	
	(0.032)		(0.028)	
Chinese Suppliers≥1 × Low × 2021q2	-0.103***		-0.104***	
	(0.027)		(0.026)	
Chinese Suppliers≥1 × Low × 2021q3	-0.097***		-0.098***	
	(0.026)		(0.025)	
Chinese Suppliers≥1 × Low × 2021q4	-0.084**		-0.073**	
	(0.036)		(0.036)	
Chinese Suppliers≥1 × High × 2020q1	-0.029		-0.042	
	(0.039)		(0.036)	
Chinese Suppliers≥1 × High × 2020q2	-0.072		-0.019	
	(0.060)		(0.041)	
Chinese Suppliers≥1 × High × 2020q3	0.006		-0.015	
	(0.045)		(0.042)	
Chinese Suppliers≥1 × High × 2020q4	-0.002		-0.023	
	(0.049)		(0.050)	
Chinese Suppliers≥1 × High × 2021q1	0.007		0.010	
	(0.047)		(0.060)	
Chinese Suppliers≥1 × High × 2021q2	0.001		-0.029	
	(0.042)		(0.044)	
Chinese Suppliers≥1 × High × 2021q3	0.006		-0.014	
	(0.045)		(0.046)	
Chinese Suppliers≥1 × High × 2021q4	0.004		-0.038	
	(0.052)		(0.054)	
Observations	11,692	11,692	11,503	11,503
R2 (within)	0.009	0.008	0.009	0.009
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

3.3 Validation and Robustness Tests

If treated and control firms operate in different industries, then one could be worried that demand forces, as opposed to the pandemic supply-chain shock that first affected Chinese suppliers, could be the reason for the decline in sales of firms with Chinese suppliers post-pandemic. Reassuringly, Figure IA.8 shows that treated and control firms have a very similar industry distribution for both the trade war (Panels A and B) and the pandemic (Panels C and D) samples, respectively. As discussed, all our sales regressions include industry-year-quarter fixed effects. To further address the potential effect of industry differences between treated and control firms, we perform the following tests. In our first test, in 2015q4 (2019q4 for the pandemic sample), we match each treated firm to its closest control based on industry and one-hundred log of asset categories. There is no significant difference in the industry and asset category between treated and control firms after matching. We use these one hundred asset categories instead of the continuous book asset to ensure that each treated firm is matched with a control firm, but our results are very similar if we match on the continuous book assets, although in this case, we lose some of the treated firms. In line with Table 4, the matched sample results for the trade war sample in Table 8, Panel A, columns 1 and 4, show a pattern of decline in sales in the period following the beginning of the trade war only for firms with Chinese suppliers in low entry threat or low competition industries. Panel B, columns 1 and 4, show similar effects for the pandemic sample.

In our next test, we take advantage of newly available data in the FactSet database to identify the U.S. competitors without Chinese suppliers of our treated firms. We then estimate our difference-in-difference sale regressions for a sample that includes U.S. firms with Chinese suppliers (treated firms) and U.S. competitors of the treated firms without Chinese suppliers (control firms). In a related test, we identify the top-10 rivals of our treated firms without Chinese suppliers using the Text-based Network Industry Classifications of Hoberg and Phillips (2010, 2016). Using these alternative control groups, we find once again that sales decline during the trade war (Panel A) and the pandemic (Panel B) only for treated firms operating in low entry threat or low competition industries, Table 8, column 2-3 and 5-6, respectively. Because in these tests treated and control firms are very likely to serve similar customers, these findings help further mitigate the concern that our results could be driven by a demand channel.

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Table 8: Sales During the US-China Trade War and the Pandemic: Alternative Control Groups

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4 (Panel A), and period 2018q1–2021q4 (Panel B). Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015 (Panel A), and on December 31, 2019 (Panel B). In columns (1)–(3), Low (High) is an indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (Panel A), and 2019 (Panel B). In columns (4)–(6), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (Panel A), and 2019 (Panel B). In columns (1) and (4), the control group includes firms without Chinese suppliers identified as the closest match based on industry and log of asset categories. In columns (2) and (5), the control group includes FactSet competitors without Chinese suppliers. In columns (3) and (6), the control group includes the top 10 rivals of our treated firms without Chinese suppliers, identified using the Text-based Network Industry Classifications of Hoberg and Phillips (2010, 2016). 2016q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

Panel A: Trade War	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High			Competition: Low vs. High		
Sample:	Matching on 2-digit SIC and Log of Assets Categories	FactSet Competitors	TNIC Rivals	Matching on 2-digit SIC and Log of Assets Categories	FactSet Competitors	TNIC Rivals
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Suppliers ≥1 × Low × 2016q1	-0.082***	-0.076***	-0.072***	-0.087***	-0.086***	-0.085***
	(0.026)	(0.023)	(0.021)	(0.028)	(0.026)	(0.024)
Chinese Suppliers ≥1 × Low × 2016q2	-0.056*	-0.036	-0.053**	-0.084**	-0.068**	-0.087***
	(0.030)	(0.024)	(0.024)	(0.038)	(0.031)	(0.032)
Chinese Suppliers ≥1 × Low × 2016q3	-0.092**	-0.062**	-0.066**	-0.107**	-0.069**	-0.080**
	(0.039)	(0.030)	(0.029)	(0.043)	(0.033)	(0.033)
Chinese Suppliers ≥1 × Low × 2016q4	-0.075**	-0.042	-0.044	-0.084**	-0.055	-0.065*
	(0.037)	(0.034)	(0.030)	(0.042)	(0.037)	(0.034)
Chinese Suppliers ≥1 × Low × 2017q1	-0.133***	-0.129***	-0.115***	-0.127**	-0.125***	-0.114***
	(0.045)	(0.035)	(0.033)	(0.051)	(0.040)	(0.039)
Chinese Suppliers ≥1 × Low × 2017q2	-0.123***	-0.099***	-0.090***	-0.129**	-0.109***	-0.097**
	(0.045)	(0.037)	(0.034)	(0.051)	(0.042)	(0.040)
Chinese Suppliers ≥1 × Low × 2017q3	-0.113***	-0.081**	-0.074**	-0.139***	-0.097**	-0.092**
	(0.043)	(0.038)	(0.034)	(0.050)	(0.042)	(0.039)
Chinese Suppliers ≥1 × Low × 2017q4	-0.089*	-0.087*	-0.070*	-0.088*	-0.094*	-0.078*
	(0.050)	(0.047)	(0.041)	(0.053)	(0.048)	(0.043)
Chinese Suppliers ≥1 × High × 2016q1	-0.017	-0.014	-0.009	-0.025	-0.013	-0.006
	(0.035)	(0.028)	(0.027)	(0.029)	(0.024)	(0.022)
Chinese Suppliers ≥1 × High × 2016q2	-0.037	-0.014	-0.034	-0.007	0.019	0.001
	(0.055)	(0.042)	(0.043)	(0.039)	(0.028)	(0.028)
Chinese Suppliers ≥1 × High × 2016q3	-0.049	0.000	-0.011	-0.039	-0.003	-0.006
	(0.056)	(0.035)	(0.035)	(0.045)	(0.029)	(0.029)
Chinese Suppliers ≥1 × High × 2016q4	-0.043	-0.002	-0.018	-0.039	0.006	0.001
	(0.054)	(0.039)	(0.036)	(0.042)	(0.032)	(0.028)
Chinese Suppliers ≥1 × High × 2017q1	-0.035	-0.021	-0.019	-0.062	-0.044	-0.039
	(0.063)	(0.039)	(0.039)	(0.051)	(0.030)	(0.030)
Chinese Suppliers ≥1 × High × 2017q2	-0.066	-0.035	-0.031	-0.070	-0.034	-0.034
	(0.062)	(0.039)	(0.038)	(0.051)	(0.033)	(0.031)
Chinese Suppliers ≥1 × High × 2017q3	-0.112*	-0.044	-0.043	-0.081	-0.032	-0.029
	(0.066)	(0.042)	(0.040)	(0.053)	(0.035)	(0.033)
Chinese Suppliers ≥1 × High × 2017q4	-0.069	-0.049	-0.048	-0.075	-0.049	-0.044
	(0.066)	(0.046)	(0.043)	(0.059)	(0.045)	(0.041)
Observations	7,227	7,911	13,776	7,227	7,911	13,781
R2 (within)	0.016	0.018	0.023	0.016	0.019	0.024
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Pandemic	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High			Competition: Low vs. High		
Sample:	Matching on 2-digit SIC and Log of Assets Categories	FactSet Competitors	TNIC Rivals	Matching on 2-digit SIC and Log of Assets Categories	FactSet Competitors	TNIC Rivals
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2020q1	-0.058***	-0.059***	-0.041**	-0.057***	-0.058***	-0.035*
	(0.020)	(0.018)	(0.017)	(0.022)	(0.019)	(0.018)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2020q2	-0.105***	-0.090***	-0.069**	-0.092**	-0.072**	-0.058*
	(0.035)	(0.033)	(0.031)	(0.036)	(0.035)	(0.033)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2020q3	-0.036	-0.043*	-0.031	-0.037	-0.039	-0.028
	(0.024)	(0.023)	(0.022)	(0.025)	(0.025)	(0.024)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2020q4	-0.014	-0.015	-0.015	-0.021	-0.016	-0.022
	(0.028)	(0.027)	(0.024)	(0.031)	(0.030)	(0.027)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2021q1	-0.055*	-0.043	-0.038	-0.052	-0.031	-0.031
	(0.031)	(0.029)	(0.026)	(0.034)	(0.032)	(0.030)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2021q2	-0.102***	-0.082***	-0.076***	-0.100***	-0.070**	-0.068**
	(0.032)	(0.029)	(0.028)	(0.031)	(0.030)	(0.027)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2021q3	-0.088***	-0.065***	-0.072***	-0.097***	-0.064**	-0.074***
	(0.027)	(0.025)	(0.022)	(0.030)	(0.028)	(0.026)
Chinese Suppliers ≥ 1 $\times$ Low $\times$ 2021q4	-0.073**	-0.052*	-0.053**	-0.077**	-0.053	-0.055*
	(0.029)	(0.029)	(0.024)	(0.034)	(0.034)	(0.030)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2020q1	0.002	-0.006	0.020	-0.015	-0.022	-0.003
	(0.036)	(0.032)	(0.031)	(0.029)	(0.026)	(0.025)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2020q2	-0.027	-0.017	-0.015	-0.062	-0.055	-0.041
	(0.044)	(0.042)	(0.041)	(0.040)	(0.038)	(0.036)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2020q3	0.002	0.005	-0.002	-0.007	-0.012	-0.013
	(0.054)	(0.050)	(0.049)	(0.043)	(0.040)	(0.038)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2020q4	0.019	0.025	0.005	0.019	0.016	0.008
	(0.050)	(0.046)	(0.045)	(0.040)	(0.038)	(0.035)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2021q1	-0.008	0.016	0.017	-0.022	-0.011	-0.005
	(0.045)	(0.042)	(0.040)	(0.034)	(0.033)	(0.030)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2021q2	-0.054	-0.020	-0.017	-0.068	-0.048	-0.040
	(0.048)	(0.044)	(0.041)	(0.043)	(0.039)	(0.039)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2021q3	-0.013	0.026	0.011	-0.020	0.006	-0.006
	(0.050)	(0.046)	(0.043)	(0.037)	(0.035)	(0.032)
Chinese Suppliers ≥ 1 $\times$ High $\times$ 2021q4	-0.006	-0.005	0.005	-0.017	-0.016	-0.007
	(0.081)	(0.077)	(0.071)	(0.061)	(0.059)	(0.053)
Observations	10,762	12,015	19,276	10,762	12,015	19,277
R2 (within)	0.007	0.010	0.008	0.007	0.009	0.007
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Barrot and Sauvagnat (2016) argue that firms producing highly specialized products might rely on specialized suppliers that are difficult to replace, input specificity. If input specificity is correlated with the competitive structure of the industry, then input specificity rather than industry competition could be driving our results. To address this concerns, in line with Barrot and Sauvagnat (2016), we measure input specificity based on suppliers' R&D expenses, number of patents, and number of patent citations. We then re-estimate our main regressions in Tables 4 and 5 controlling for these three measures of industry specificity. Table 9 show that our main findings that sales declines during the trade war (Panel A) and the pandemic (Panel B) for firms with Chinese suppliers in low entry threat/low competition industries hold after we control for industry specificity.[12]

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[12]In unreported robustness tests, we find that controlling for pre-pandemic discussions of supply chain risk in earnings calls transcripts from Seeking Alpha has no effect on our main results in Table 5. We follow Ersahin, Giannetti and Huang (2024) and Wu (2024) to build our supply chain risk measure.

Table 9: Sales During the US-China Trade War and the Pandemic: Input Specificity

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4 (Panel A), and period 2018q1–2021q4 (Panel B). Chinese Suppliers$\geq$1 is an indicator for firms with at least one Chinese supplier on December 31, 2015 (Panel A), and on December 31, 2019 (Panel B). In columns (1) and (3) and (5), Low (High) is an indicator for firms low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (Panel A), and 2019 (Panel B). In columns (2) and (4) and (6), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (Panel A), and 2019 (Panel B). 2016q1 to 2021q4 are year-quarter dummies. In columns (1)-(2), Input Specificity, following Barrot and Sauvagnat (2016), is a time-varying indicator for firms' suppliers R&D over suppliers sales above the sample median of the prior 2 years of suppliers R&D over suppliers sales. In columns (3)-(4) ((5)-(6)), Input Specificity, following Barrot and Sauvagnat (2016), is a time-varying indicator for firms' suppliers number of patents (citations) above the sample median of the prior 3 years of suppliers number of patents (citations). As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Suppliers R&D and sales data is from WORLDSCOPE. Citations and Patents data is from the PatentsView database of the United States Patent and Trademark Office (USPTO). Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

Panel A: Trade War	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	Input Specificity ind. for firms with Suppliers R&D/Sales above median		Input Specificity ind. for firms with Suppliers Number of Patents above median		Input Specificity ind. for firms with Suppliers Number of Citations above median	
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Suppliers $\geq$1 × Low × 2016q1	-0.071***	-0.082***	-0.072***	-0.083***	-0.071***	-0.082***
	(0.020)	(0.023)	(0.020)	(0.023)	(0.020)	(0.023)
Chinese Suppliers $\geq$1 × Low × 2016q2	-0.042*	-0.073**	-0.044**	-0.074**	-0.043*	-0.074**
	(0.022)	(0.030)	(0.022)	(0.030)	(0.022)	(0.030)
Chinese Suppliers $\geq$1 × Low × 2016q3	-0.058**	-0.073**	-0.058**	-0.073**	-0.058**	-0.073**
	(0.028)	(0.031)	(0.028)	(0.031)	(0.028)	(0.031)
Chinese Suppliers $\geq$1 × Low × 2016q4	-0.049*	-0.070**	-0.049*	-0.070**	-0.049*	-0.070**
	(0.028)	(0.033)	(0.028)	(0.033)	(0.028)	(0.033)
Chinese Suppliers $\geq$1 × Low × 2017q1	-0.109***	-0.105***	-0.108***	-0.105***	-0.108***	-0.104***
	(0.032)	(0.038)	(0.032)	(0.038)	(0.032)	(0.038)
Chinese Suppliers $\geq$1 × Low × 2017q2	-0.083**	-0.090**	-0.082**	-0.089**	-0.081**	-0.088**
	(0.033)	(0.039)	(0.033)	(0.039)	(0.033)	(0.039)
Chinese Suppliers $\geq$1 × Low × 2017q3	-0.061*	-0.078**	-0.061*	-0.078**	-0.061*	-0.078**
	(0.033)	(0.038)	(0.033)	(0.038)	(0.033)	(0.038)
Chinese Suppliers $\geq$1 × Low × 2017q4	-0.071*	-0.082**	-0.071*	-0.082**	-0.070*	-0.082**
	(0.039)	(0.041)	(0.039)	(0.041)	(0.039)	(0.041)
Chinese Suppliers $\geq$1 × High × 2016q1	-0.009	-0.008	-0.009	-0.009	-0.010	-0.010
	(0.025)	(0.021)	(0.025)	(0.021)	(0.025)	(0.021)
Chinese Suppliers $\geq$1 × High × 2016q2	-0.025	0.009	-0.026	0.007	-0.026	0.006
	(0.041)	(0.026)	(0.041)	(0.026)	(0.041)	(0.026)
Chinese Suppliers $\geq$1 × High × 2016q3	-0.012	-0.003	-0.011	-0.003	-0.011	-0.003
	(0.033)	(0.027)	(0.033)	(0.026)	(0.033)	(0.027)
Chinese Suppliers $\geq$1 × High × 2016q4	-0.023	-0.004	-0.023	-0.004	-0.023	-0.004
	(0.033)	(0.026)	(0.033)	(0.026)	(0.033)	(0.026)
Chinese Suppliers $\geq$1 × High × 2017q1	-0.009	-0.033	-0.007	-0.031	-0.006	-0.030
	(0.036)	(0.027)	(0.036)	(0.027)	(0.036)	(0.027)
Chinese Suppliers $\geq$1 × High × 2017q2	-0.026	-0.029	-0.024	-0.027	-0.023	-0.026
	(0.036)	(0.028)	(0.036)	(0.028)	(0.036)	(0.028)
Chinese Suppliers $\geq$1 × High × 2017q3	-0.035	-0.020	-0.034	-0.019	-0.034	-0.019
	(0.038)	(0.030)	(0.037)	(0.030)	(0.037)	(0.030)
Chinese Suppliers $\geq$1 × High × 2017q4	-0.053	-0.045	-0.054	-0.044	-0.054	-0.044
	(0.040)	(0.039)	(0.039)	(0.038)	(0.040)	(0.038)
Input Specificity	0.010	0.010	0.028***	0.028***	0.033***	0.032***
	(0.007)	(0.007)	(0.011)	(0.011)	(0.012)	(0.012)
Observations	29,864	29,869	29,864	29,869	29,864	29,869
R2 (within)	0.004	0.004	0.004	0.004	0.004	0.005
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Pandemic	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	Input Specificity ind. for firms with Suppliers R&D/Sales above median		Input Specificity ind. for firms with Suppliers Number of Patents above median		Input Specificity ind. for firms with Suppliers Number of Citations above median	
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Suppliers ≥ 1 × Low × 2020q1	-0.047***	-0.042**	-0.047***	-0.042**	-0.047***	-0.042**
	(0.017)	(0.018)	(0.017)	(0.018)	(0.017)	(0.018)
Chinese Suppliers ≥ 1 × Low × 2020q2	-0.080**	-0.066**	-0.080**	-0.066**	-0.081**	-0.066**
	(0.032)	(0.033)	(0.032)	(0.033)	(0.032)	(0.033)
Chinese Suppliers ≥ 1 × Low × 2020q3	-0.028	-0.027	-0.028	-0.026	-0.029	-0.027
	(0.022)	(0.024)	(0.022)	(0.024)	(0.022)	(0.024)
Chinese Suppliers ≥ 1 × Low × 2020q4	-0.020	-0.025	-0.020	-0.025	-0.021	-0.026
	(0.024)	(0.027)	(0.024)	(0.027)	(0.024)	(0.027)
Chinese Suppliers ≥ 1 × Low × 2021q1	-0.050**	-0.043	-0.050**	-0.043	-0.050**	-0.043
	(0.025)	(0.029)	(0.025)	(0.029)	(0.025)	(0.029)
Chinese Suppliers ≥ 1 × Low × 2021q2	-0.101***	-0.093***	-0.100***	-0.092***	-0.101***	-0.093***
	(0.028)	(0.026)	(0.028)	(0.026)	(0.028)	(0.026)
Chinese Suppliers ≥ 1 × Low × 2021q3	-0.084***	-0.087***	-0.084***	-0.087***	-0.086***	-0.088***
	(0.021)	(0.025)	(0.021)	(0.025)	(0.021)	(0.025)
Chinese Suppliers ≥ 1 × Low × 2021q4	-0.079***	-0.083***	-0.079***	-0.082***	-0.081***	-0.084***
	(0.023)	(0.029)	(0.023)	(0.029)	(0.023)	(0.029)
Chinese Suppliers ≥ 1 × High × 2020q1	0.008	-0.012	0.009	-0.012	0.008	-0.012
	(0.029)	(0.024)	(0.029)	(0.024)	(0.029)	(0.024)
Chinese Suppliers ≥ 1 × High × 2020q2	-0.023	-0.055	-0.023	-0.054	-0.024	-0.055
	(0.039)	(0.035)	(0.039)	(0.035)	(0.039)	(0.035)
Chinese Suppliers ≥ 1 × High × 2020q3	0.004	-0.006	0.005	-0.005	0.004	-0.006
	(0.048)	(0.037)	(0.048)	(0.037)	(0.048)	(0.037)
Chinese Suppliers ≥ 1 × High × 2020q4	0.004	0.003	0.004	0.004	0.004	0.003
	(0.044)	(0.034)	(0.044)	(0.034)	(0.044)	(0.034)
Chinese Suppliers ≥ 1 × High × 2021q1	-0.001	-0.021	-0.001	-0.021	-0.002	-0.022
	(0.039)	(0.029)	(0.039)	(0.029)	(0.039)	(0.029)
Chinese Suppliers ≥ 1 × High × 2021q2	-0.044	-0.068*	-0.043	-0.067*	-0.045	-0.068*
	(0.040)	(0.038)	(0.040)	(0.038)	(0.040)	(0.038)
Chinese Suppliers ≥ 1 × High × 2021q3	0.006	-0.013	0.006	-0.013	0.004	-0.015
	(0.041)	(0.030)	(0.042)	(0.030)	(0.042)	(0.030)
Chinese Suppliers ≥ 1 × High × 2021q4	-0.029	-0.038	-0.028	-0.037	-0.031	-0.040
	(0.070)	(0.051)	(0.070)	(0.051)	(0.070)	(0.051)
Input Specificity	-0.009	-0.009	0.005	0.005	-0.008	-0.008
	(0.008)	(0.008)	(0.013)	(0.013)	(0.012)	(0.012)
Observations	32,659	32,660	32,659	32,660	32,659	32,660
R2 (within)	0.005	0.005	0.005	0.004	0.005	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Our argument is that firms with Chinese suppliers suffered sales losses during the trade war or the pandemic because production slowed down in China during that period. If that is the case, we should find similar results if we consider firms with Chinese subsidiaries. To analyze this channel, we re-estimate Tables 4 and 5 measuring exposure to China based on whether the firm had at least a Chinese subsidiary in 2015 (trade war sample) or in 2019 (pandemic sample). Table IA.5 reports these estimations.

In columns 1-2 of Table IA.5, we consider whether firms have a Chinese subsidiary irrespective of whether they have also Chinese suppliers. In columns 3-4, we measure exposure to China based on whether the firm has a Chinese subsidiary, a Chinese supplier, or both. In columns 5-6, we measure exposure based on whether the firm has a Chinese subsidiary, but we drop from the sample firms with Chinese suppliers. Notably, we find significantly large decreases in sales for firms with Chinese subsidiaries in low entry threat and low competition industries both in the quarters following the

beginning of the trade war (Table IA.5, Panel A) and the pandemic supply chain shock (Table IA.5, Panel B). Overall, Table IA.5 suggests that having Chinese subsidiaries was also costly for U.S. firms relative to firms without Chinese subsidiaries both during the trade war and the pandemic, but only if they operated in less competitive industries.

If the customers of the treated firms have Chinese suppliers, then in our sales regressions we could be capturing the effect of the supply chain on the customers rather than on the treated firms directly. To address this concern, in Table IA.6, we re-estimate our main sales regressions adding the interaction of an indicator for whether customers have at least one Chinese supplier on December 31, 2015 (2019), with a dummy variable equal to one for the period 2016q1-2017q4 (2020q1-2021q4). Notably, this interaction term is economically small and statistically insignificant. Most importantly, our main sales results are robust to controlling for whether customers have Chinese suppliers. Overall, these findings indicate that the decline in sales for the treated firms in low entry threat/low competition industries is not driven by a potential indirect effect of having customers with Chinese suppliers.

Table IA.7 show that our results hold if we restrict the sample to firms with data available for the entire 2015q1-2021q4 (trade war shock) and 2018q1-2017q4 (pandemic supply chain shock) periods, respectively. This test mitigates the concern that any potential bias in our estimations due to firms exiting the sample is unlikely to have any significant effect on our results. In our main analysis, we use an indicator to identify firms exposed to Chinese suppliers at the onset of the pandemic. In a robustness test, we proxy for whether firms have Chinese suppliers based on whether they have a Chinese supplier in FactSet or they report imports from China in 2015 or 2019 in Panjiva (kg/ton and volume/TEU.) In line with the main results in Tables 4 and 5, Table IA.8 shows a significant decrease in sales for U.S. firms with Chinese suppliers in low entry threat and low competition industries during both shocks. By comparison, we find no decline in sales for treated firms in high-entry threats and high-competition industries.

In our empirical strategy, the trade war and the pandemic shock affected U.S. firms with Chinese suppliers by affecting their imports from China. Because the shock did not originate in the U.S., we should not find any effect on the sales of the Chinese firms with US suppliers. To test this prediction, we estimate a regression like Eq. (1) for a sample of Chinese firms from COMPUSTAT

Global with the log of quarterly sales as the dependent variable. Figure IA.9, Panels A and B, report results from this estimation for the trade war and the pandemic samples, respectively. Notably, the U.S. supplier indicators interacted with the post-shock year-quarter indicators are all statistically insignificant, indicating that the trade war and the pandemic were mainly shocks to import activities of U.S. firms.

4 Conclusions

This paper studies how production networks and product market competition interact in the propagation of shocks. We consider two major shocks: the U.S.-China trade war and the pandemic supply chain shock. U.S. firms with Chinese suppliers experienced sizable sales declines in the period following the beginning of the trade war and the outbreak of the coronavirus pandemic, as trade tensions between the U.S. and China escalated and the pandemic impacted production in China. Notably, only firms operating in less competitive industries experienced these sales losses. We further find that it is only the affected firms with a less diversified supply chain structure that suffered significant sales losses both during the U.S.-China trade war and the pandemic. Overall, our findings show that limited competition is an important channel through which supply chain disruptions can lead to sustained sales losses.

Our findings suggest that U.S. firms with Chinese suppliers in less competitive industries incurred sustained sales losses because of the trade war and the coronavirus supply chain disruption. The main policy implication of our study is that fostering competition can mitigate the effect of negative shocks on economic activities. Our findings can also offer useful insights to decision-makers worldwide involved in trade discussions and help to understand supply chain shocks.

There is mounting pressure from political analysts, policymakers, and the public to decouple the U.S. supply chain from China. For example, the CHIPS Act of 2022 and the ONSHORE Manufacturing Act of 2024 are intended to revitalize the U.S. semiconductor sector. Our evidence suggests that structural trade imbalances can be costly in the event of unexpected supply chain shocks (pandemic supply chain shock), but increasing trade tensions may not be suitable to address these imbalances and may introduce additional costs (trade war shock).

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Table A.1: Variable Definitions

This table provides the definitions of the main variables used in this paper.

Main Firm-Level Variables:	Definition:
Sales	Quarterly sales (COMPUSTAT item saleq). We exclude financial firms (SICs 6000-6999). Firm-level data for the U.S. firms is from COMPUSTAT North America. Firm-level data for the EU and Asian firms are from COMPUSTAT Global.
Chinese Suppliers (Customers)≥1	Indicator for U.S. (EU, Asian, Other Global) firms with at least one Chinese supplier (customer) on December 31, 2015 (2019). Data on suppliers (customers) is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Chinese Imports	U.S. firms import-level transaction weights (kg/ton) and volumes (twenty-foot equivalent unit containers, TEU) from China. Import data is from the S&P Global Panjiva Supply Chain Intelligence database. We exclude financial firms (SICs 6000-6999).
Other Imports	U.S. firms import-level transaction weights (kg/ton) and volumes (twenty-foot equivalent unit containers, TEU) from countries other than China. Import data is from the S&P Global Panjiva Supply Chain Intelligence database. We exclude fi- nancial firms (SICs 6000-6999).
Number Chinese Suppliers	Number of Chinese suppliers of U.S. (EU, Asian) firms on December 31, 2015 (2019). Data on suppliers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
U.S. Suppliers (Customers)≥1	Indicator for U.S. (Chinese) firms with at least one U.S. supplier (customer) on December 31, 2015 (2019). Data on suppliers (customers) is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Number U.S. Suppliers	Number of U.S. suppliers of U.S. firms on December 31, 2015 (2019). Data on suppliers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Number Foreign Suppliers	Number of foreign suppliers (excl. Chinese) of U.S. (EU, Asian) firms on December 31, 2015 (2019). Data on suppliers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Number Chinese Customers	Number of Chinese customers of U.S. (EU, Asian) firms on December 31, 2015 (2019). Data on customers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Number Chinese Subsidiaries	Number of Chinese subsidiaries of U.S. firms reported on their 2019 SEC filings. Data on subsidiaries is from the WRDS Subsidiaries database. We exclude financial firms (SICs 6000-6999).
Number U.S. Customers	Number of U.S. customers of U.S. firms on December 31, 2015 (2019). Data on customers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).

(Table continues on next page.)

Main Firm-Level Variables:	Definition:
Number Foreign Customers	Number of foreign customers (excl. Chinese) of U.S. (EU., Asian) firms on December 31, 2015 (2019). Data on customers is from the FactSet Revere Supply Chain Relationships database. We exclude financial firms (SICs 6000-6999).
Assets	Book assets (COMPUSTAT item atq). We exclude financial firms (SICs 6000-6999). Firm-level data for the U.S. firms are from COMPUSTAT North America. Firm-level data for the EU and Asian firms are from COMPUSTAT Global.
Low (High) Fluidity (Low and High Entry Threat)	Indicator for firms with the product market fluidity measure (variable name: prodmktfluid) of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (2019). Data obtained from `http://hobergphillips.tuck.dartmouth.edu/industryconcen.htm`.
Low (High) Competition (High and Low Concentration)	Indicator for firms with the Text-based Network Industry Classifications (TNIC) HHI measure (variable name: tnic3hhi) of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (2019). Data obtained from `http://hobergphillips.tuck.dartmouth.edu/industryconcen.htm`.
Lagged 1/Assets	The inverse of lagged book assets (COMPUSTAT item atq). We exclude financial firms (SICs 6000-6999). Firm-level data for the U.S. firms are from COMPUSTAT North America. Firm-level data for the EU and Asian firms are from COMPUSTAT Global.

Internet Appendix to

Global Supply Chain Disruptions and Product Market Competition

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Table IA.1: Descriptive Statistics Subsamples

This table reports descriptive statistics for the firms in our sample for the period 2014q1–2017q4 (Panels A and B: Trade War) and 2018q1 – 2021q4 (Panels C and D: Pandemic). The samples in Panels A and B (C and D) include all U.S. firms in both FactSet and COMPUSTAT, with and without Chinese suppliers on December 31, 2015 (2019), respectively. Product Market Fluidity is the measure of Hoberg, Phillips and Prabhala (2014). Text-based Network Industry Classifications (TNIC) HHI is the measure of Hoberg and Phillips (2010, 2016). Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Firm-level data is from COMPUSTAT North America. Weight (kg/ton) import data is from the S&P Global Panjiva Supply Chain Intelligence database. Refer to Table A.1 for detailed variable definitions.

Trade War

		Panel A: U.S. Firms with Chinese Suppliers				
	Mean	Std. Dev.	25th Prc.	Median	75th Prc.	Obs.
Sales (Billions $)	6.300	13.076	0.548	1.709	5.421	3,434
Other Imports (kg/ton)	17.025	30.136	1.395	8.010	18.312	283,574
Number of Chinese Suppliers	2.254	4.576	1.000	1.000	2.000	3,434
U.S. Suppliers≥1	0.919	0.273	1.000	1.000	1.000	3,434
Number of U.S. Suppliers	25.050	34.463	3.000	11.000	31.000	3,434
Number of Foreign Suppliers	21.171	34.990	3.000	9.000	22.000	3,434
Chinese Customers≥1	0.366	0.482	0.000	0.000	1.000	3,434
Number of Chinese Customers	1.228	2.756	0.000	0.000	1.000	3,434
Number of Chinese Subsidiaries	4.755	10.171	0.000	2.000	5.000	3,165
U.S. Customers≥1	0.823	0.382	1.000	1.000	1.000	3,434
Number of U.S. Customers	12.497	18.554	2.000	6.000	15.000	3,434
Number of Foreign Customers	14.352	27.427	1.000	5.000	17.000	3,434
Assets (Billions $)	34.999	77.689	2.294	6.956	32.729	3,434
Product Market Fluidity	5.057	2.704	3.177	4.575	6.331	3,303
TNIC HHI	0.313	0.263	0.117	0.204	0.431	3,336

Trade War

		Panel B: U.S. Firms without Chinese Suppliers				
	Mean	Std. Dev.	25th Prc.	Median	75th Prc.	Obs.
Sales (Billions $)	0.852	2.518	0.056	0.219	0.721	26,437
Other Imports (kg/ton)	14.650	26.841	1.732	6.670	17.476	288,304
Number of Chinese Suppliers	0.042	0.246	0.000	0.000	0.000	26,437
U.S. Suppliers≥1	0.793	0.406	1.000	1.000	1.000	26,437
Number of U.S. Suppliers	5.598	8.731	1.000	3.000	6.000	26,437
Number of Foreign Suppliers	2.696	5.000	0.000	1.000	3.000	26,437
Chinese Customers≥1	0.093	0.291	0.000	0.000	0.000	26,437
Number of Chinese Customers	0.199	0.749	0.000	0.000	0.000	26,437
Number of Chinese Subsidiaries	1.209	3.431	0.000	0.000	1.000	21,334
U.S. Customers≥1	0.696	0.460	0.000	1.000	1.000	26,437
Number of U.S. Customers	6.050	9.399	0.000	3.000	8.000	26,437
Number of Foreign Customers	4.275	7.824	0.000	1.000	5.000	26,437
Assets (Billions $)	4.676	11.036	0.283	1.099	3.904	26,430
Product Market Fluidity	6.229	3.393	3.822	5.420	7.760	24,915
TNIC HHI	0.274	0.263	0.082	0.177	0.371	25,019

(Table continues on next page.)

Pandemic

			Panel C: U.S. Firms with Chinese Suppliers			
	Mean	Std. Dev.	25th Prc.	Median	75th Prc.	Obs.
Sales (Billions $)	6.145	13.938	0.473	1.653	5.162	5,070
Other Imports (kg/ton)	18.735	37.695	1.191	6.480	16.504	251,894
Number of Chinese Suppliers	3.770	9.081	1.000	1.000	3.000	5,070
U.S. Suppliers≥1	0.947	0.223	1.000	1.000	1.000	5,070
Number of U.S. Suppliers	25.963	37.353	4.000	12.000	30.000	5,070
Number of Foreign Suppliers	26.764	42.358	4.000	12.000	30.000	5,070
Chinese Customers≥1	0.410	0.492	0.000	0.000	1.000	5,070
Number of Chinese Customers	1.854	4.902	0.000	0.000	2.000	5,070
Number of Chinese Subsidiaries	4.195	8.499	0.000	1.000	5.000	3,634
U.S. Customers≥1	0.853	0.355	1.000	1.000	1.000	5,070
Number of U.S. Customers	15.203	29.965	2.000	7.000	17.000	5,070
Number of Foreign Customers	22.919	52.207	2.000	8.000	22.000	5,070
Assets (Billions $)	34.637	78.338	2.113	7.376	30.113	5,069
Product Market Fluidity	4.509	2.888	2.540	3.735	5.553	4,807
TNIC HHI	0.315	0.268	0.118	0.210	0.417	4,852

Pandemic

			Panel D: U.S. Firms without Chinese Suppliers			
	Mean	Std. Dev.	25th Prc.	Median	75th Prc.	Obs.
Sales (Billions $)	0.828	2.719	0.053	0.218	0.714	27,603
Other Imports (kg/ton)	14.964	25.921	2.109	7.800	18.400	245,247
Number of Chinese Suppliers	0.069	0.356	0.000	0.000	0.000	27,603
U.S. Suppliers≥1	0.817	0.386	1.000	1.000	1.000	27,603
Number of U.S. Suppliers	5.946	9.450	1.000	3.000	7.000	27,603
Number of Foreign Suppliers	3.109	6.418	0.000	1.000	3.000	27,603
Chinese Customers≥1	0.117	0.322	0.000	0.000	0.000	27,603
Number of Chinese Customers	0.246	0.930	0.000	0.000	0.000	27,603
Number of Chinese Subsidiaries	1.178	3.249	0.000	0.000	1.000	16,593
U.S. Customers≥1	0.725	0.446	0.000	1.000	1.000	27,603
Number of U.S. Customers	7.370	13.818	1.000	3.000	8.000	27,603
Number of Foreign Customers	5.120	10.638	0.000	1.000	5.000	27,603
Assets (Billions $)	5.105	13.135	0.317	1.284	4.043	27,589
Product Market Fluidity	5.816	3.670	3.139	4.820	7.531	25,820
TNIC HHI	0.290	0.268	0.091	0.186	0.399	25,890

Table IA.2: Sales During 2005-2015: By Sourcing Strategy and Product Market Competition

This table reports estimations from difference-in-difference annual sales regressions. The dependent variable is the natural logarithm of sales. The annual sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the annual period 2005 – 2015. For 2005, Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2005. We follow a similar approach for the other years. In column (2), Low (High) is a time-varying indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median at the end of the fiscal year. In column (3), Low (High) is a time-varying indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median at the end of the fiscal year. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales		
		Entry Threat:	Competition:
		Low vs. High	Low vs. High
	(1)	(2)	(3)
Chinese Suppliers ≥1	0.041**		
	(0.019)		
Chinese Suppliers ≥1 × Low		-0.013	-0.015
		(0.020)	(0.026)
Chinese Suppliers ≥1 × High		0.081***	0.081***
		(0.025)	(0.023)
Observations	24,120	24,120	24,120
R2 (within)	0.001	0.002	0.002
Firm Fixed Effects	Yes	Yes	Yes
Industry × Year Fixed Effects	Yes	Yes	Yes

Table IA.3: Sales During the Pandemic: Excluding Industries Affected by the US-China Trade War

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. Following Huang et al. (2023), we exclude firms in the steel and aluminum industries (2-digit SIC 33 and 4-digit SICs 1000, 1090, 3411, 3412, 3440, 3442, 3444, 3448, 3460, 3490, 3540, 3541). Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2019. In columns (1) and (2), Low (High) is an indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2019. In columns (3) and (4), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2019. 2020q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	Excl. Steel and Aluminum Industries			
	Entry Threat: Low vs. High		Competition: Low vs. High	
	(1)	(2)	(3)	(4)
Chinese Suppliers ≥1 × Low × Post		-0.059***		-0.054**
		(0.020)		(0.023)
Chinese Suppliers ≥1 × High × Post		-0.005		-0.025
		(0.034)		(0.026)
Chinese Suppliers ≥1 × Low × 2020q1	-0.047***		-0.041**	
	(0.017)		(0.018)	
Chinese Suppliers ≥1 × Low × 2020q2	-0.080**		-0.063*	
	(0.032)		(0.034)	
Chinese Suppliers ≥1 × Low × 2020q3	-0.027		-0.023	
	(0.022)		(0.024)	
Chinese Suppliers ≥1 × Low × 2020q4	-0.018		-0.020	
	(0.024)		(0.027)	
Chinese Suppliers ≥1 × Low × 2021q1	-0.048*		-0.040	
	(0.026)		(0.030)	
Chinese Suppliers ≥1 × Low × 2021q2	-0.099***		-0.090***	
	(0.028)		(0.027)	
Chinese Suppliers ≥1 × Low × 2021q3	-0.082***		-0.082***	
	(0.021)		(0.025)	
Chinese Suppliers ≥1 × Low × 2021q4	-0.078***		-0.078***	
	(0.023)		(0.029)	
Chinese Suppliers ≥1 × High × 2020q1	0.013		-0.010	
	(0.030)		(0.024)	
Chinese Suppliers ≥1 × High × 2020q2	-0.018		-0.053	
	(0.039)		(0.035)	
Chinese Suppliers ≥1 × High × 2020q3	0.011		-0.004	
	(0.048)		(0.037)	
Chinese Suppliers ≥1 × High × 2020q4	0.008		0.004	
	(0.044)		(0.034)	
Chinese Suppliers ≥1 × High × 2021q1	0.001		-0.021	
	(0.039)		(0.029)	
Chinese Suppliers ≥1 × High × 2021q2	-0.041		-0.067*	
	(0.041)		(0.038)	
Chinese Suppliers ≥1 × High × 2021q3	0.009		-0.013	
	(0.042)		(0.030)	
Chinese Suppliers ≥1 × High × 2021q4	-0.025		-0.038	
	(0.071)		(0.051)	
Observations	32,073	32,073	32,074	32,074
R2 (within)	0.005	0.004	0.004	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Table IA.4: Sales During the Pandemic: Japanese Suppliers

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. Chinese (Japanese) without Japanese (Chinese) Suppliers≥1 is an indicator for firms that have at least one Chinese (Japanese) supplier but no Japanese (Chinese) supplier on December 31, 2019. Chinese and Japanese Suppliers≥1 is an indicator for firms that have at least one Chinese supplier and one Japanese supplier on December 31, 2019. Post is an indicator for 2020q1 to 2021q4. In column (1), Low (High) is an indicator for firms low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2019. In column (2), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2019. 2020q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales	
	Entry Threat: Low vs. High	Competition: Low vs. High
	(1)	(2)
Chinese without Japanese Suppliers ≥1 × Low × Post	-0.101***	-0.106***
	(0.027)	(0.029)
Chinese without Japanese Suppliers ≥1 × High × Post	0.001	-0.016
	(0.052)	(0.042)
Japanese without Chinese Suppliers ≥1 × Low × Post	-0.042	-0.081***
	(0.026)	(0.030)
Japanese without Chinese Suppliers ≥1 × High × Post	-0.015	0.008
	(0.040)	(0.031)
Chinese and Japanese Suppliers ≥1 × Low × Post	-0.035	-0.023
	(0.025)	(0.030)
Chinese and Japanese Suppliers ≥1 × High × Post	-0.029	-0.045
	(0.040)	(0.029)
Observations	32,659	32,660
R2 (within)	0.005	0.005
Firm Fixed Effects	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes

Table IA.5: Sales During the US-China Trade War and the Pandemic: Chinese Subsidiaries

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4 (Panel A), and period 2018q1–2021q4 (Panel B). In columns (1)-(2) and (5)-(6), Chinese Sourcing≥1 is an indicator for firms with at least one Chinese subsidiary in their 2015 SEC filings (Panel A), and 2019 SEC filings (Panel B). In columns (5) and (6), we drop firms Chinese suppliers on December 31, 2015 (Panel A), and on December 31, 2019 (Panel B). In Panel A (Panel B) columns (3)-(4), Chinese Sourcing≥1 is an indicator for firms with at least one Chinese subsidiary in their 2015 (2019) SEC filings or one Chinese suppliers on December 31, 2015 (2019), or both. In columns (1) and (3) and (5), Low (High) is an indicator for firms with low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (Panel A), and 2019 (Panel B). In columns (2) and (4) and (6), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (Panel A), and 2019 (Panel B). 2016q1 to 2021q4 are year-quarter dummies. In columns (1)-(4), we include the full sample, while in columns (5)-(6), we exclude firms with Chinese suppliers on December 31, 2015 (Panel A), and on December 31, 2019 (Panel B). As control variable we include the inverse of lagged assets. Subsidiaries data is from WRDS. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

Panel A: Trade War	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	Chinese Sourcing ≥1 for firms with Chinese subsidiaries		Chinese Sourcing ≥1 for firms with Chinese subsidiaries or suppliers, or both		Chinese Sourcing ≥1 for firms with Chinese subsidiaries	
Sample:	Full		Full		Excl. firms with Chinese suppliers	
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Sourcing ≥1 × Low × x 2016q1	-0.018	-0.034**	-0.025*	-0.042***	-0.001	-0.021
	(0.015)	(0.016)	(0.014)	(0.015)	(0.016)	(0.017)
Chinese Sourcing ≥1 × Low × x 2016q2	-0.014	-0.030*	-0.012	-0.036**	0.006	-0.015
	(0.017)	(0.017)	(0.016)	(0.018)	(0.018)	(0.018)
Chinese Sourcing ≥1 × Low × x 2016q3	-0.045**	-0.059***	-0.034*	-0.051***	-0.017	-0.037*
	(0.018)	(0.019)	(0.018)	(0.019)	(0.018)	(0.019)
Chinese Sourcing ≥1 × Low × x 2016q4	-0.057***	-0.080***	-0.046**	-0.072***	-0.036*	-0.066***
	(0.019)	(0.020)	(0.018)	(0.019)	(0.020)	(0.020)
Chinese Sourcing ≥1 × Low × x 2017q1	-0.023	-0.053**	-0.029	-0.056***	0.012	-0.031
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)
Chinese Sourcing ≥1 × Low × x 2017q2	-0.025	-0.060***	-0.032	-0.063***	-0.001	-0.045**
	(0.021)	(0.022)	(0.021)	(0.022)	(0.023)	(0.023)
Chinese Sourcing ≥1 × Low × x 2017q3	-0.058**	-0.097***	-0.054**	-0.090***	-0.037	-0.083***
	(0.023)	(0.023)	(0.022)	(0.023)	(0.025)	(0.025)
Chinese Sourcing ≥1 × Low × x 2017q4	-0.078***	-0.120***	-0.075***	-0.112***	-0.060**	-0.112***
	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)	(0.025)
Chinese Sourcing ≥1 × High × 2016q1	-0.026	-0.001	-0.015	0.006	-0.017	0.018
	(0.021)	(0.018)	(0.019)	(0.016)	(0.025)	(0.021)
Chinese Sourcing ≥1 × High × 2016q2	-0.026	0.001	-0.016	0.017	-0.011	0.025
	(0.024)	(0.021)	(0.024)	(0.020)	(0.027)	(0.024)
Chinese Sourcing ≥1 × High × 2016q3	-0.029	-0.009	-0.011	0.009	-0.010	0.023
	(0.026)	(0.022)	(0.024)	(0.021)	(0.030)	(0.026)
Chinese Sourcing ≥1 × High × 2016q4	-0.027	0.004	-0.019	0.013	-0.014	0.032
	(0.029)	(0.025)	(0.026)	(0.022)	(0.033)	(0.029)
Chinese Sourcing ≥1 × High × 2017q1	-0.005	0.037	0.001	0.034	0.009	0.079**
	(0.031)	(0.028)	(0.028)	(0.025)	(0.036)	(0.032)
Chinese Sourcing ≥1 × High × 2017q2	-0.020	0.033	-0.013	0.028	-0.003	0.069**
	(0.031)	(0.028)	(0.028)	(0.025)	(0.036)	(0.033)
Chinese Sourcing ≥1 × High × 2017q3	-0.024	0.031	-0.014	0.031	0.003	0.073*
	(0.040)	(0.036)	(0.035)	(0.031)	(0.048)	(0.044)
Chinese Sourcing ≥1 × High × 2017q4	-0.055	0.005	-0.047	0.002	-0.035	0.046
	(0.037)	(0.034)	(0.033)	(0.030)	(0.043)	(0.038)
Observations	29,864	29,869	29,864	29,869	26,422	26,427
R2 (within)	0.003	0.006	0.003	0.006	0.003	0.005
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Pandemic	Dep. Variable: Log of Sales					
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	Chinese Sourcing ≥ 1 for firms with Chinese subsidiaries		Chinese Sourcing ≥ 1 for firms with Chinese subsidiaries or suppliers, or both		Chinese Sourcing ≥ 1 for firms with Chinese subsidiaries	
Sample:	Full		Full		Excl. firms with Chinese suppliers	
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2020q1	-0.027*	-0.043**	-0.039***	-0.045***	-0.032	-0.047**
	(0.016)	(0.018)	(0.015)	(0.016)	(0.020)	(0.022)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2020q2	-0.060**	-0.082***	-0.067***	-0.074***	-0.054*	-0.079***
	(0.024)	(0.026)	(0.025)	(0.025)	(0.029)	(0.030)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2020q3	-0.070***	-0.095***	-0.059***	-0.073***	-0.076***	-0.102***
	(0.021)	(0.023)	(0.020)	(0.021)	(0.026)	(0.027)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2020q4	-0.066***	-0.086***	-0.061***	-0.072***	-0.081***	-0.098***
	(0.022)	(0.025)	(0.021)	(0.023)	(0.027)	(0.029)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2021q1	-0.069***	-0.079***	-0.074***	-0.076***	-0.083***	-0.094***
	(0.023)	(0.025)	(0.022)	(0.024)	(0.028)	(0.030)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2021q2	-0.083***	-0.101***	-0.104***	-0.111***	-0.092***	-0.114***
	(0.023)	(0.026)	(0.023)	(0.023)	(0.028)	(0.030)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2021q3	-0.092***	-0.107***	-0.097***	-0.106***	-0.096***	-0.113***
	(0.022)	(0.025)	(0.021)	(0.023)	(0.027)	(0.030)
Chinese Sourcing $\geq 1 \times$ Low $\times$ 2021q4	-0.116***	-0.140***	-0.121***	-0.133***	-0.131***	-0.153***
	(0.024)	(0.027)	(0.022)	(0.025)	(0.029)	(0.031)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2020q1	-0.020	-0.001	-0.018	-0.014	-0.041	-0.015
	(0.024)	(0.020)	(0.021)	(0.019)	(0.029)	(0.025)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2020q2	0.007	0.021	-0.013	-0.015	0.005	0.031
	(0.035)	(0.031)	(0.030)	(0.028)	(0.041)	(0.038)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2020q3	-0.054	-0.023	-0.031	-0.019	-0.056	-0.020
	(0.034)	(0.026)	(0.032)	(0.027)	(0.039)	(0.033)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2020q4	-0.045	-0.023	-0.026	-0.019	-0.042	-0.025
	(0.033)	(0.027)	(0.031)	(0.026)	(0.039)	(0.033)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2021q1	0.002	-0.001	-0.010	-0.021	-0.007	-0.007
	(0.039)	(0.031)	(0.032)	(0.026)	(0.047)	(0.039)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2021q2	-0.024	-0.014	-0.042	-0.046	-0.025	-0.005
	(0.039)	(0.032)	(0.032)	(0.030)	(0.048)	(0.041)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2021q3	-0.016	-0.013	-0.017	-0.021	-0.024	-0.014
	(0.040)	(0.031)	(0.033)	(0.027)	(0.049)	(0.039)
Chinese Sourcing $\geq 1 \times$ High $\times$ 2021q4	-0.070	-0.048	-0.058	-0.055	-0.065	-0.046
	(0.046)	(0.036)	(0.044)	(0.036)	(0.052)	(0.043)
Observations	32,659	32,660	32,659	32,660	27,582	27,583
R2 (within)	0.006	0.006	0.006	0.007	0.006	0.006
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry $\times$ Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Table IA.6: Sales During the US-China Trade War and the Pandemic: Customers with Chinese Suppliers

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1-2017q4 (Columns (1)-(2)), or the period 2018q1 – 2021q4 (Columns (3)-(4)). Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015 (Columns (1)-(2)), and on December 31, 2019 (Columns (3)-(4)). Post Trade War (Pandemic) is an indicator for 2016q1 to 2017q4 (2020q1 to 2021q4). In column (1) ((3)), Low (High) is an indicator for firms low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (2019). In column (2) ((4)), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (2019). 2016q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	Trade War		Pandemic	
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Trade War: 2016q1 (Pandemic: 2020q1)	-0.069***	-0.080***	-0.048***	-0.043**
	(0.020)	(0.023)	(0.017)	(0.018)
Chinese Suppliers≥1 × Low × Trade War: 2016q2 (Pandemic: 2020q2)	-0.042*	-0.072**	-0.081**	-0.067**
	(0.022)	(0.031)	(0.032)	(0.033)
Chinese Suppliers≥1 × Low × Trade War: 2016q3 (Pandemic: 2020q3)	-0.056**	-0.070**	-0.029	-0.027
	(0.028)	(0.032)	(0.022)	(0.024)
Chinese Suppliers≥1 × Low × Trade War: 2016q4 (Pandemic: 2020q4)	-0.048*	-0.068**	-0.021	-0.026
	(0.028)	(0.033)	(0.024)	(0.027)
Chinese Suppliers≥1 × Low × Trade War: 2017q1 (Pandemic: 2021q1)	-0.107***	-0.103***	-0.050**	-0.043
	(0.032)	(0.038)	(0.025)	(0.029)
Chinese Suppliers≥1 × Low × Trade War: 2017q2 (Pandemic: 2021q2)	-0.081**	-0.088**	-0.101***	-0.093***
	(0.033)	(0.039)	(0.028)	(0.026)
Chinese Suppliers≥1 × Low × Trade War: 2017q3 (Pandemic: 2021q3)	-0.060*	-0.077**	-0.085***	-0.088***
	(0.033)	(0.038)	(0.021)	(0.025)
Chinese Suppliers≥1 × Low × Trade War: 2017q4 (Pandemic: 2021q4)	-0.070*	-0.081*	-0.080***	-0.083***
	(0.039)	(0.042)	(0.023)	(0.029)
Chinese Suppliers≥1 × High × Trade War: 2016q1 (Pandemic: 2020q1)	-0.006	-0.007	0.007	-0.013
	(0.026)	(0.021)	(0.030)	(0.024)
Chinese Suppliers≥1 × High × Trade War: 2016q2 (Pandemic: 2020q2)	-0.023	0.009	-0.024	-0.056
	(0.041)	(0.026)	(0.039)	(0.035)
Chinese Suppliers≥1 × High × Trade War: 2016q3 (Pandemic: 2020q3)	-0.008	-0.001	0.003	-0.007
	(0.033)	(0.027)	(0.048)	(0.037)
Chinese Suppliers≥1 × High × Trade War: 2016q4 (Pandemic: 2020q4)	-0.020	-0.003	0.003	0.002
	(0.034)	(0.026)	(0.044)	(0.034)
Chinese Suppliers≥1 × High × Trade War: 2017q1 (Pandemic: 2021q1)	-0.005	-0.030	-0.002	-0.022
	(0.037)	(0.027)	(0.039)	(0.029)
Chinese Suppliers≥1 × High × Trade War: 2017q2 (Pandemic: 2021q2)	-0.022	-0.026	-0.045	-0.068*
	(0.036)	(0.029)	(0.041)	(0.038)
Chinese Suppliers≥1 × High × Trade War: 2017q3 (Pandemic: 2021q3)	-0.032	-0.019	0.004	-0.014
	(0.038)	(0.031)	(0.042)	(0.031)
Chinese Suppliers≥1 × High × Trade War: 2017q4 (Pandemic: 2021q4)	-0.051	-0.044	-0.030	-0.039
	(0.040)	(0.039)	(0.070)	(0.051)
Customers with Chinese Suppliers≥1 × Post Trade War (Pandemic)	-0.010	-0.008	0.006	0.006
	(0.016)	(0.016)	(0.018)	(0.018)
Observations	29,864	29,869	32,659	32,660
R2 (within)	0.004	0.004	0.005	0.004
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Table IA.7: Sales During the Trade War and the Pandemic: Alternative Samples

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), that have sales data available for the entire period 2014q1-2017q4 (Columns (1)-(2)), or the period 2018q1 – 2021q4 (Columns (3)-(4)). Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015 (Columns (1)-(2)), and on December 31, 2019 (Columns (3)-(4)). In column (1) ((3)), Low (High) is an indicator for firms low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (2019). In column (2) ((4)), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (2019). 2016q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	Trade War		Pandemic	
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Trade War: 2016q1 (Pandemic: 2020q1)	-0.077***	-0.084***	-0.048***	-0.042**
	(0.021)	(0.024)	(0.019)	(0.020)
Chinese Suppliers≥1 × Low × Trade War: 2016q2 (Pandemic: 2020q2)	-0.032	-0.049*	-0.063*	-0.064
	(0.023)	(0.026)	(0.035)	(0.040)
Chinese Suppliers≥1 × Low × Trade War: 2016q3 (Pandemic: 2020q3)	-0.037	-0.050*	-0.015	-0.013
	(0.026)	(0.029)	(0.024)	(0.027)
Chinese Suppliers≥1 × Low × Trade War: 2016q4 (Pandemic: 2020q4)	-0.036	-0.052	-0.012	-0.015
	(0.029)	(0.034)	(0.026)	(0.030)
Chinese Suppliers≥1 × Low × Trade War: 2017q1 (Pandemic: 2021q1)	-0.106***	-0.103***	-0.040	-0.033
	(0.029)	(0.035)	(0.028)	(0.032)
Chinese Suppliers≥1 × Low × Trade War: 2017q2 (Pandemic: 2021q2)	-0.081**	-0.092**	-0.066***	-0.071**
	(0.034)	(0.040)	(0.024)	(0.028)
Chinese Suppliers≥1 × Low × Trade War: 2017q3 (Pandemic: 2021q3)	-0.054	-0.079**	-0.061***	-0.076***
	(0.034)	(0.038)	(0.022)	(0.026)
Chinese Suppliers≥1 × Low × Trade War: 2017q4 (Pandemic: 2021q4)	-0.066	-0.079*	-0.047*	-0.065**
	(0.041)	(0.043)	(0.024)	(0.028)
Chinese Suppliers≥1 × High × Trade War: 2016q1 (Pandemic: 2020q1)	-0.024	-0.029	-0.005	-0.024
	(0.027)	(0.022)	(0.024)	(0.021)
Chinese Suppliers≥1 × High × Trade War: 2016q2 (Pandemic: 2020q2)	-0.015	0.001	-0.022	-0.032
	(0.029)	(0.025)	(0.042)	(0.034)
Chinese Suppliers≥1 × High × Trade War: 2016q3 (Pandemic: 2020q3)	-0.020	-0.008	0.045	0.026
	(0.032)	(0.026)	(0.050)	(0.038)
Chinese Suppliers≥1 × High × Trade War: 2016q4 (Pandemic: 2020q4)	-0.020	-0.004	0.014	0.011
	(0.035)	(0.027)	(0.041)	(0.031)
Chinese Suppliers≥1 × High × Trade War: 2017q1 (Pandemic: 2021q1)	-0.034	-0.052*	0.035	0.006
	(0.037)	(0.029)	(0.037)	(0.028)
Chinese Suppliers≥1 × High × Trade War: 2017q2 (Pandemic: 2021q2)	-0.035	-0.032	-0.022	-0.028
	(0.037)	(0.031)	(0.039)	(0.029)
Chinese Suppliers≥1 × High × Trade War: 2017q3 (Pandemic: 2021q3)	-0.048	-0.020	0.011	0.008
	(0.039)	(0.032)	(0.041)	(0.030)
Chinese Suppliers≥1 × High × Trade War: 2017q4 (Pandemic: 2021q4)	-0.045	-0.034	0.006	0.013
	(0.043)	(0.041)	(0.074)	(0.054)
Observations	18,310	18,310	21,050	21,050
R2 (within)	0.025	0.025	0.010	0.010
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

Table IA.8: Sales During the Pandemic: Extended Treated Sample

This table reports estimations from difference-in-difference sales regressions. The dependent variable is the natural logarithm of sales. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1-2017q4 (Columns (1)-(2)), or the period 2018q1 – 2021q4 (Columns (3)-(4)). Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015, or with Chinese imports>0 (kg/ton >0 or volume/TEU >0) in 2015 (Columns (1)-(2)), and at least one Chinese supplier on December 31, 2019, or with Chinese imports>0 (kg/ton >0 or volume/TEU >0) in 2019 (Columns (3)-(4)). In column (1) ((3)), Low (High) is an indicator for firms low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015 (2019). In column (2) ((4)), Low (High) is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015 (2019). 2016q1 to 2021q4 are year-quarter dummies. As control variable we include the inverse of lagged assets. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. Standard errors reported in parentheses are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% (two-tailed) test levels, respectively.

	Dep. Variable: Log of Sales			
	Trade War		Pandemic	
	Entry Threat: Low vs. High	Competition: Low vs. High	Entry Threat: Low vs. High	Competition: Low vs. High
	(1)	(2)	(3)	(4)
Chinese Suppliers≥1 × Low × Trade War: 2016q1 (Pandemic: 2020q1)	-0.047***	-0.060***	-0.033**	-0.032*
	(0.015)	(0.016)	(0.016)	(0.017)
Chinese Suppliers≥1 × Low × Trade War: 2016q2 (Pandemic: 2020q2)	-0.038**	-0.055***	-0.039	-0.035
	(0.017)	(0.019)	(0.025)	(0.028)
Chinese Suppliers≥1 × Low × Trade War: 2016q3 (Pandemic: 2020q3)	-0.032*	-0.052***	-0.013	-0.025
	(0.019)	(0.020)	(0.020)	(0.022)
Chinese Suppliers≥1 × Low × Trade War: 2016q4 (Pandemic: 2020q4)	-0.041**	-0.067***	-0.025	-0.045*
	(0.019)	(0.020)	(0.022)	(0.023)
Chinese Suppliers≥1 × Low × Trade War: 2017q1 (Pandemic: 2021q1)	-0.073***	-0.082***	-0.037	-0.048*
	(0.021)	(0.023)	(0.024)	(0.026)
Chinese Suppliers≥1 × Low × Trade War: 2017q2 (Pandemic: 2021q2)	-0.049**	-0.061**	-0.063***	-0.069***
	(0.022)	(0.024)	(0.023)	(0.024)
Chinese Suppliers≥1 × Low × Trade War: 2017q3 (Pandemic: 2021q3)	-0.056**	-0.073***	-0.050**	-0.070***
	(0.024)	(0.026)	(0.021)	(0.023)
Chinese Suppliers≥1 × Low × Trade War: 2017q4 (Pandemic: 2021q4)	-0.069***	-0.093***	-0.084***	-0.106***
	(0.024)	(0.026)	(0.023)	(0.025)
Chinese Suppliers≥1 × High × Trade War: 2016q1 (Pandemic: 2020q1)	-0.033*	-0.017	0.020	0.007
	(0.018)	(0.015)	(0.021)	(0.018)
Chinese Suppliers≥1 × High × Trade War: 2016q2 (Pandemic: 2020q2)	-0.044*	-0.019	0.016	-0.001
	(0.025)	(0.019)	(0.032)	(0.027)
Chinese Suppliers≥1 × High × Trade War: 2016q3 (Pandemic: 2020q3)	-0.027	0.002	0.011	0.021
	(0.024)	(0.020)	(0.034)	(0.027)
Chinese Suppliers≥1 × High × Trade War: 2016q4 (Pandemic: 2020q4)	-0.033	0.004	0.006	0.026
	(0.025)	(0.021)	(0.031)	(0.026)
Chinese Suppliers≥1 × High × Trade War: 2017q1 (Pandemic: 2021q1)	-0.036	-0.029	0.003	0.009
	(0.026)	(0.022)	(0.030)	(0.024)
Chinese Suppliers≥1 × High × Trade War: 2017q2 (Pandemic: 2021q2)	-0.039	-0.024	-0.020	-0.021
	(0.027)	(0.023)	(0.031)	(0.027)
Chinese Suppliers≥1 × High × Trade War: 2017q3 (Pandemic: 2021q3)	-0.024	-0.004	-0.002	0.014
	(0.028)	(0.024)	(0.031)	(0.025)
Chinese Suppliers≥1 × High × Trade War: 2017q4 (Pandemic: 2021q4)	-0.061**	-0.028	-0.046	-0.025
	(0.030)	(0.027)	(0.045)	(0.035)
Observations	29,864	29,869	32,659	32,660
R2 (within)	0.004	0.005	0.004	0.005
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry × Year-Quarter Fixed Effects	Yes	Yes	Yes	Yes

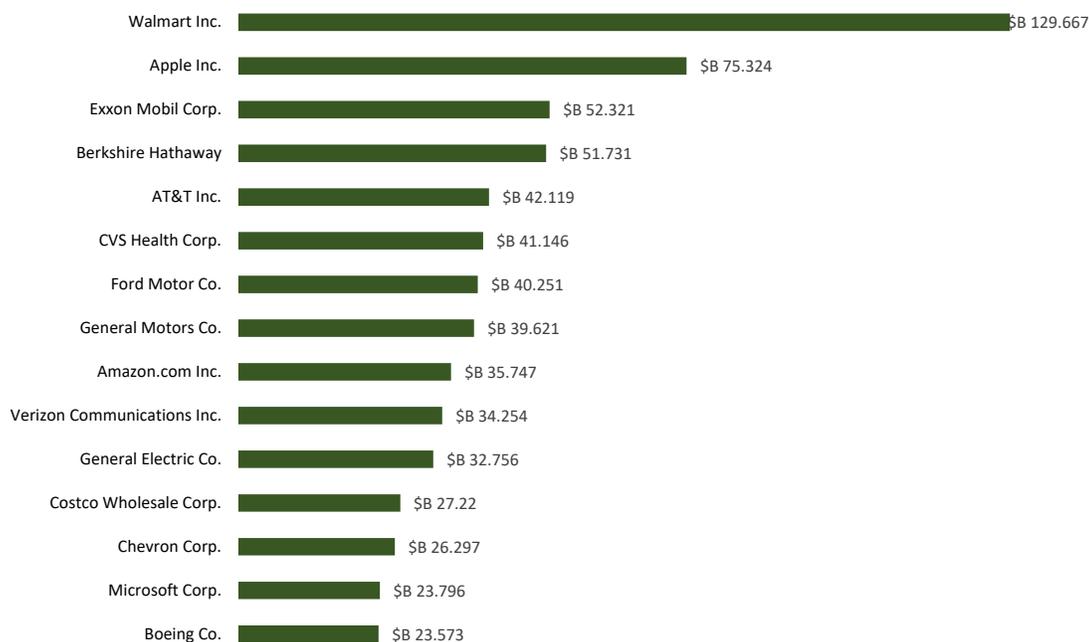## Figure IA.1: Timeline of the Coronavirus Pandemic

This figure presents a timeline of major events of the pandemic from December 31, 2019, when the first pneumonia cases in Wuhan were reported to the World Health Organization (WHO) until the end of 2021.
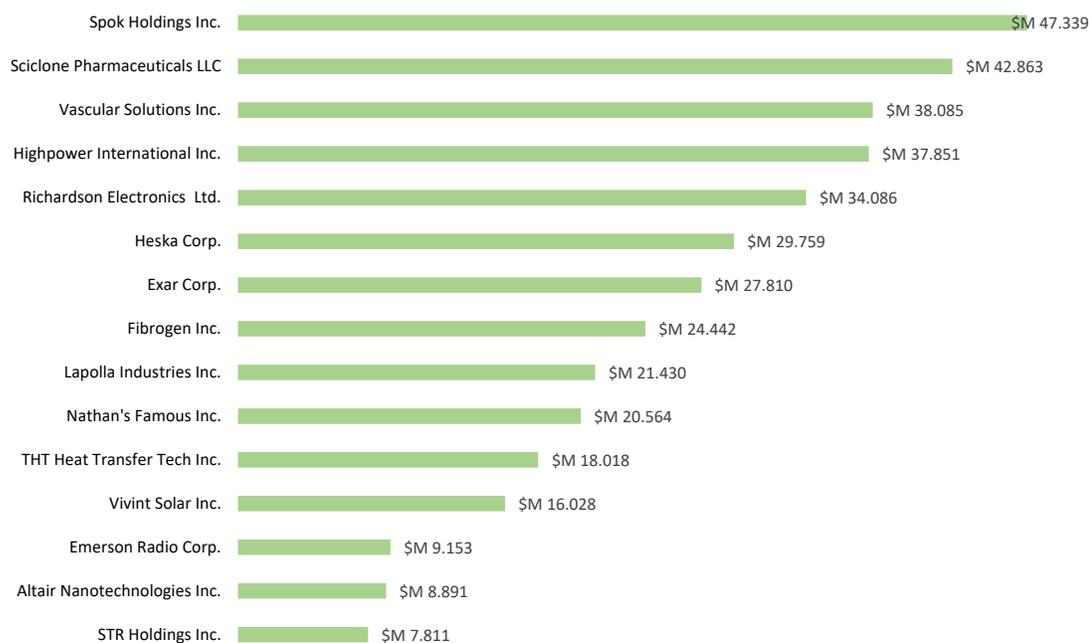
Figure IA.2: Largest U.S. Firms with Chinese Suppliers

In Panel A (C), this graph presents the top 15 U.S. firms by 2015q4 (2019q4) sales, respectively, with at least one Chinese supplier on December 31, 2015 (2019). In Panel B (D), this graph presents the bottom 15 U.S. firms by 2015q4 (2019q4) sales, respectively, with at least one Chinese supplier on December 31, 2015 (2019). Supply chain relationship data is from FactSet Revere Supply Chain Relationships. Sales data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions.

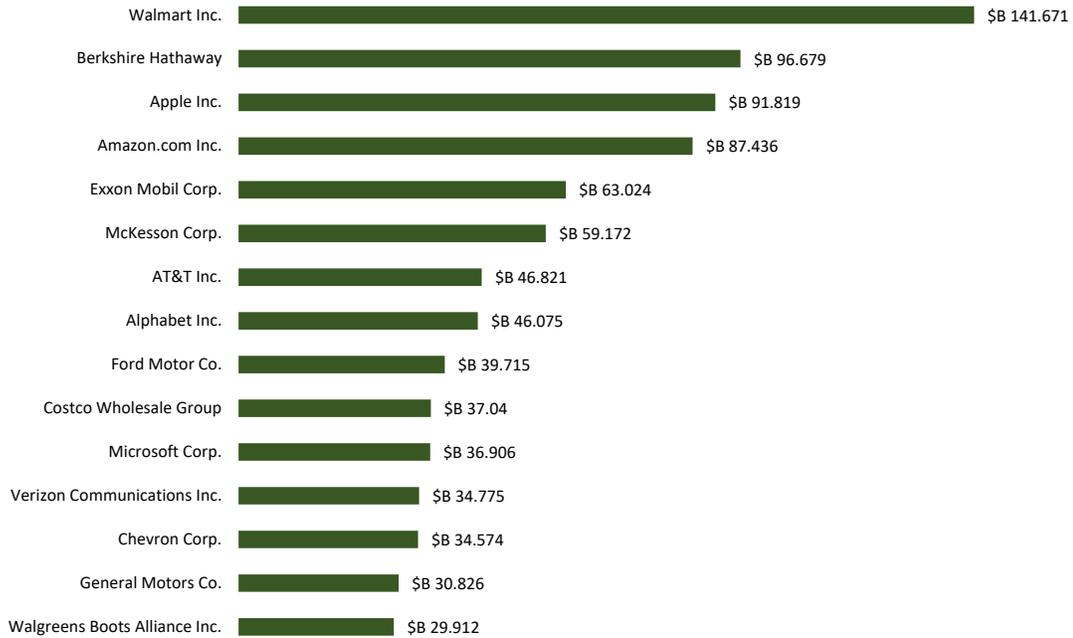**Panel A: Top 15 U.S. Firms with Chinese Suppliers by Sales in 2015q4**

Firm	Sales
Walmart Inc.	$B 129.667
Apple Inc.	$B 75.324
Exxon Mobil Corp.	$B 52.321
Berkshire Hathaway	$B 51.731
AT&T Inc.	$B 42.119
CVS Health Corp.	$B 41.146
Ford Motor Co.	$B 40.251
General Motors Co.	$B 39.621
Amazon.com Inc.	$B 35.747
Verizon Communications Inc.	$B 34.254
General Electric Co.	$B 32.756
Costco Wholesale Corp.	$B 27.22
Chevron Corp.	$B 26.297
Microsoft Corp.	$B 23.796
Boeing Co.	$B 23.573

Panel B: Bottom 15 U.S. Firms with Chinese Suppliers by Sales in 2015q4

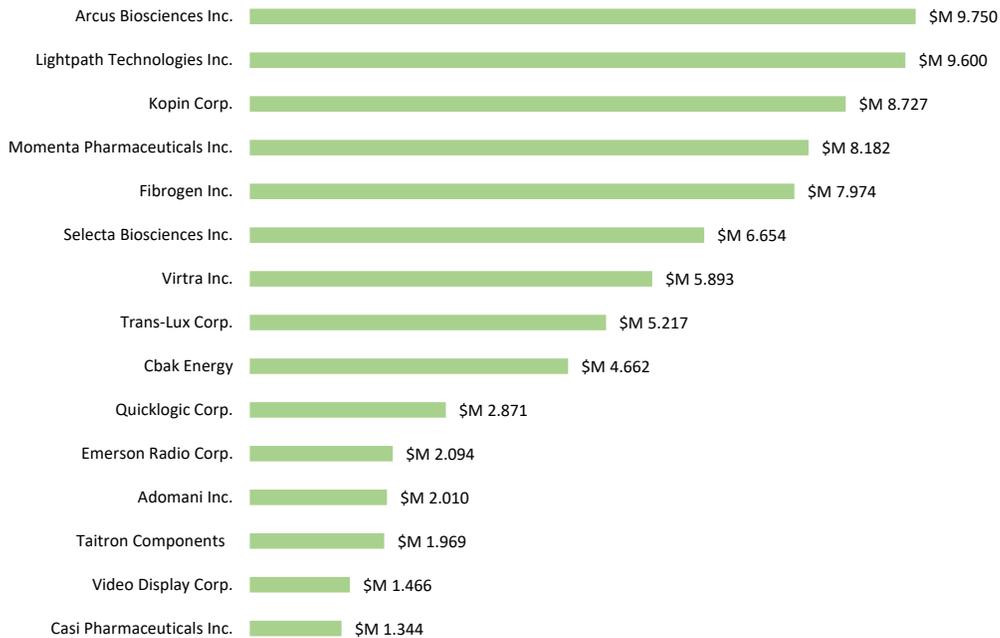| Firm	Sales
Spok Holdings Inc.	$M 47.339
Sciclone Pharmaceuticals LLC	$M 42.863
Vascular Solutions Inc.	$M 38.085
Highpower International Inc.	$M 37.851
Richardson Electronics Ltd.	$M 34.086
Heska Corp.	$M 29.759
Exar Corp.	$M 27.810
Fibrogen Inc.	$M 24.442
Lapolla Industries Inc.	$M 21.430
Nathan's Famous Inc.	$M 20.564
THT Heat Transfer Tech Inc.	$M 18.018
Vivint Solar Inc.	$M 16.028
Emerson Radio Corp.	$M 9.153
Altair Nanotechnologies Inc.	$M 8.891
STR Holdings Inc.	$M 7.811

Figure IA.2: Largest U.S. Firms with Chinese Suppliers (cont.)

Panel C: Top 15 U.S. Firms with Chinese Suppliers by Sales in 2019q4

Firm	Sales
Walmart Inc.	$B 141.671
Berkshire Hathaway	$B 96.679
Apple Inc.	$B 91.819
Amazon.com Inc.	$B 87.436
Exxon Mobil Corp.	$B 63.024
McKesson Corp.	$B 59.172
AT&T Inc.	$B 46.821
Alphabet Inc.	$B 46.075
Ford Motor Co.	$B 39.715
Costco Wholesale Group	$B 37.04
Microsoft Corp.	$B 36.906
Verizon Communications Inc.	$B 34.775
Chevron Corp.	$B 34.574
General Motors Co.	$B 30.826
Walgreens Boots Alliance Inc.	$B 29.912

Panel D: Bottom 15 U.S. Firms with Chinese Suppliers by Sales in 2019q4

Firm	Sales
Arcus Biosciences Inc.	$M 9.750
Lightpath Technologies Inc.	$M 9.600
Kopin Corp.	$M 8.727
Momenta Pharmaceuticals Inc.	$M 8.182
Fibrogen Inc.	$M 7.974
Selecta Biosciences Inc.	$M 6.654
Virtra Inc.	$M 5.893
Trans-Lux Corp.	$M 5.217
Cbak Energy	$M 4.662
Quicklogic Corp.	$M 2.871
Emerson Radio Corp.	$M 2.094
Adomani Inc.	$M 2.010
Taitron Components	$M 1.969
Video Display Corp.	$M 1.466
Casi Pharmaceuticals Inc.	$M 1.344

Figure IA.3: Sales During the US-China Trade War: Extended Sample Period

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. In Panel A (B), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms' low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015. In Panel C (D), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2012q1 – 2019q4. 2012q1-2015q4 are the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.
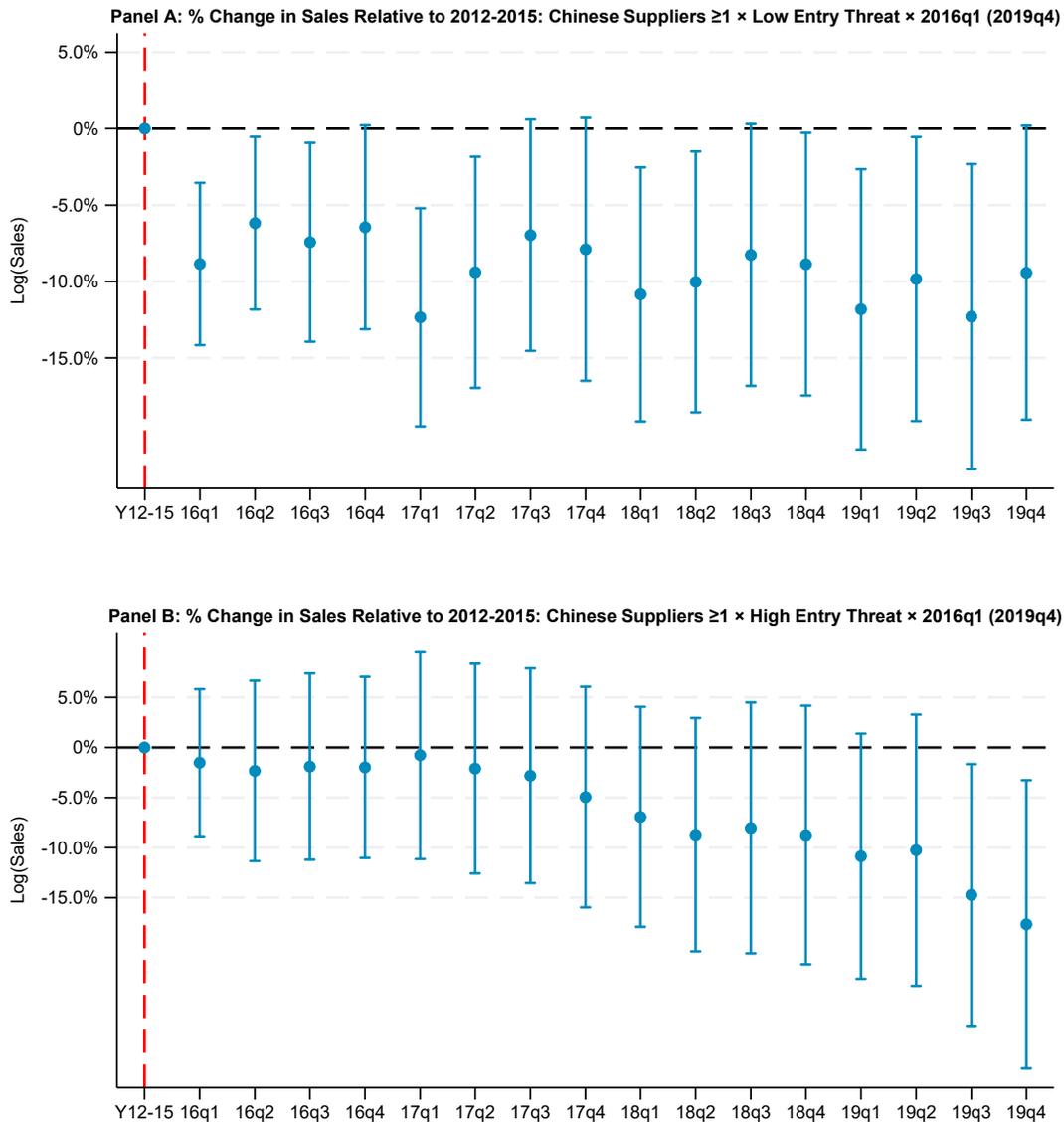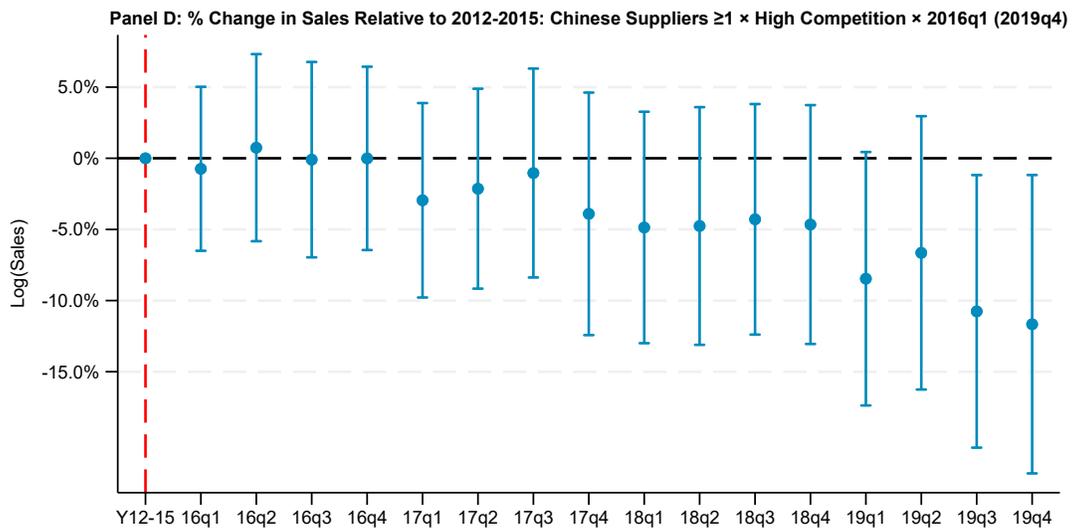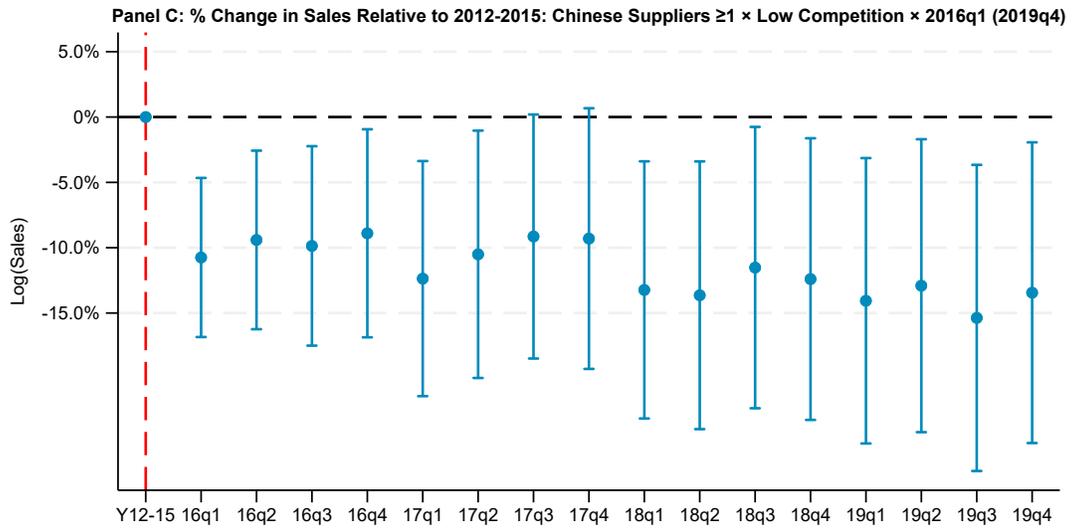

Panel A: % Change in Sales Relative to 2012-2015: Chinese Suppliers ≥1 × Low Entry Threat × 2016q1 (2019q4)

Panel B: % Change in Sales Relative to 2012-2015: Chinese Suppliers ≥1 × High Entry Threat × 2016q1 (2019q4)

Figure IA.3: Sales During the US-China Trade War: Extended Sample Period (cont.)

Panel C: % Change in Sales Relative to 2012-2015: Chinese Suppliers ≥1 × Low Competition × 2016q1 (2019q4)

Panel D: % Change in Sales Relative to 2012-2015: Chinese Suppliers ≥1 × High Competition × 2016q1 (2019q4)

Figure IA.4: Sales During the US-China Trade War

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. In Panel A (B), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms' low (high) fluidity (low and high entry threats, respectively), that is firms with the product market fluidity measure of Hoberg, Phillips and Prabhala (2014) below (above) the sample median in 2015. In Panel C (D), we plot the coefficients of the triple interaction with Low (High) which is an indicator for firms with low (high) competition (high and low concentration, respectively), that is firms with the Text-based Network Industry Classifications (TNIC) HHI measure of Hoberg and Phillips (2010, 2016) above (below) the sample median in 2015. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2012q1 – 2019q4. 2012q1 is the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

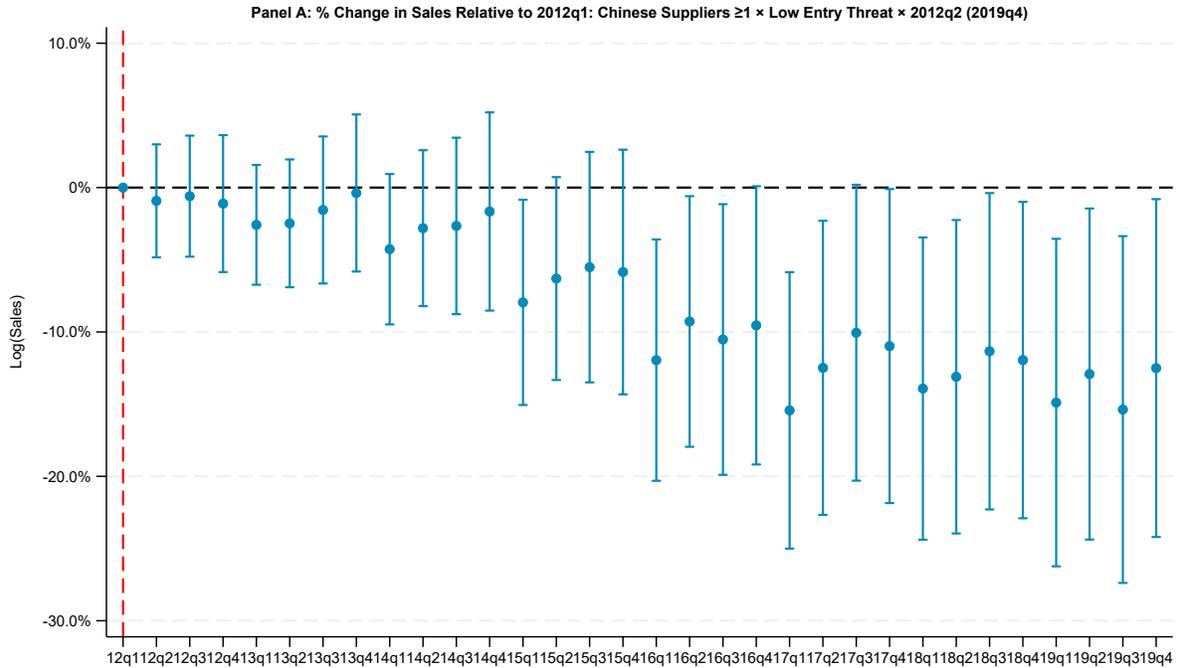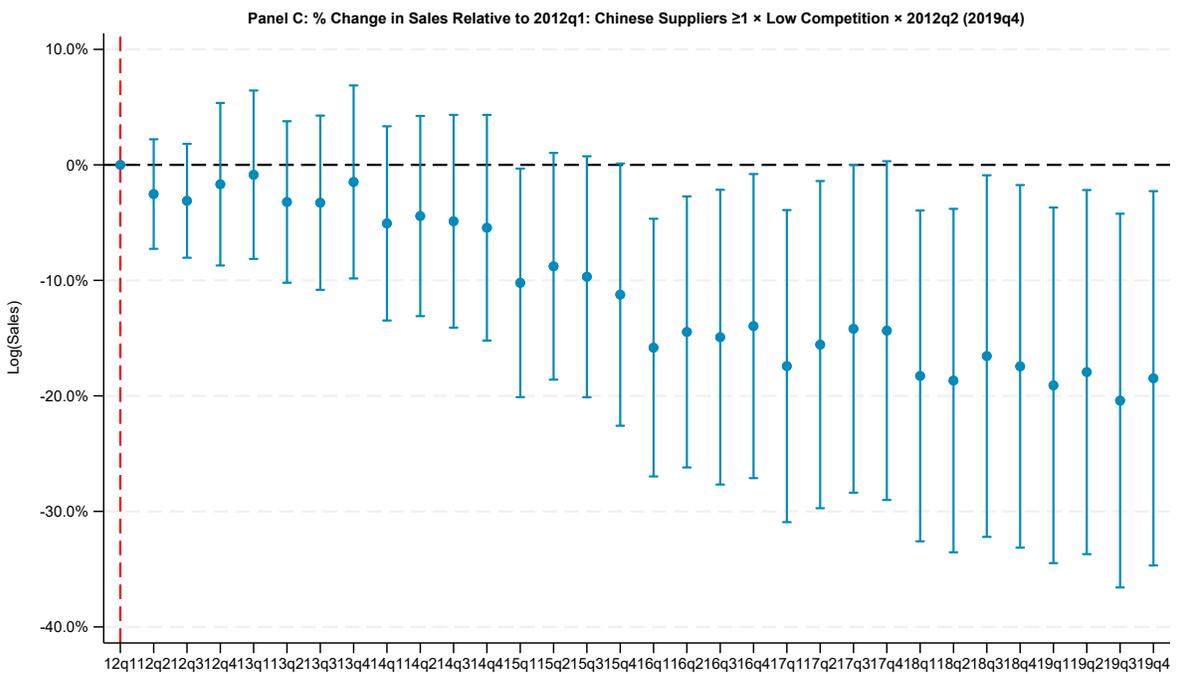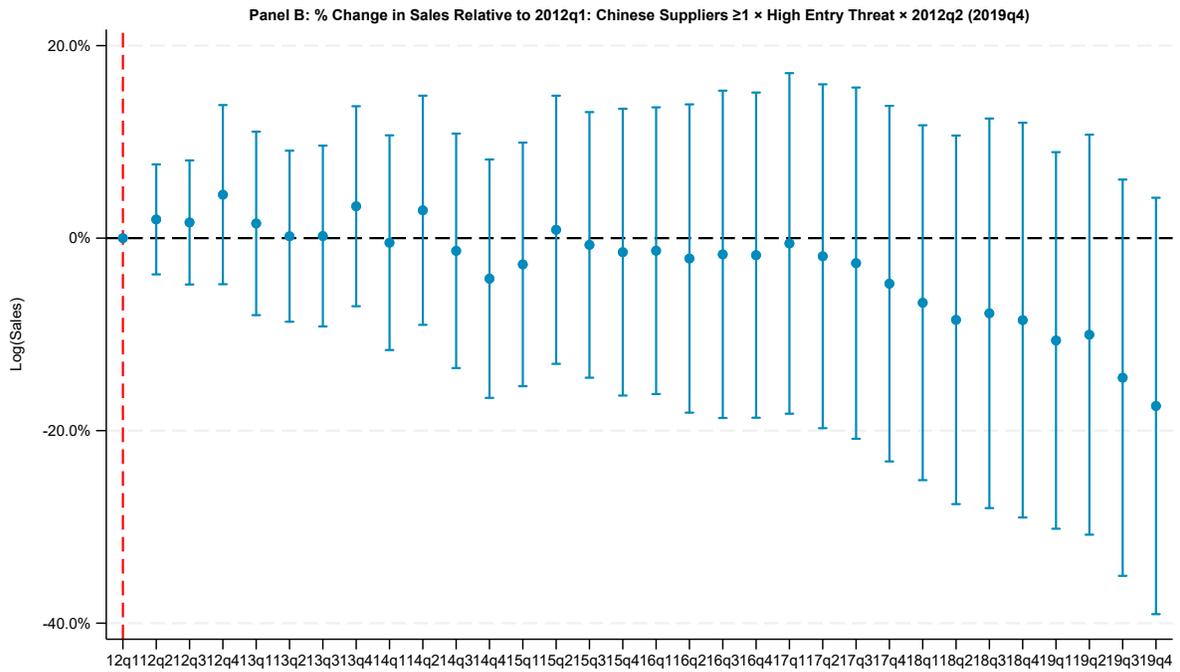Panel A: % Change in Sales Relative to 2012q1: Chinese Suppliers ≥1 × Low Entry Threat × 2012q2 (2019q4)
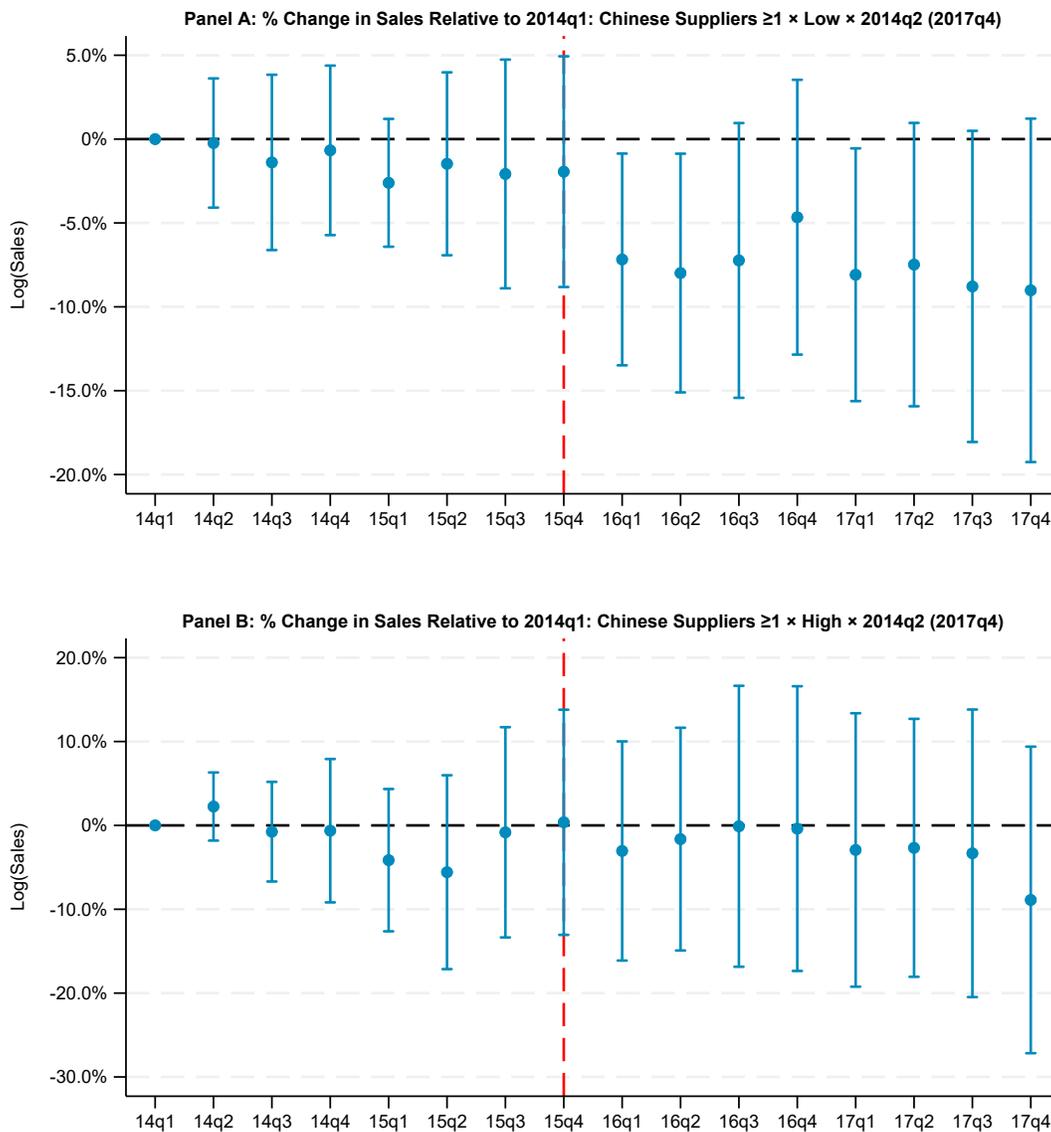
Figure IA.4: Sales During the US-China Trade War (cont.)

Panel B: % Change in Sales Relative to 2012q1: Chinese Suppliers ≥1 × High Entry Threat × 2012q2 (2019q4)

Panel C: % Change in Sales Relative to 2012q1: Chinese Suppliers ≥1 × Low Competition × 2012q2 (2019q4)

Figure A.4: Sales During the US-China Trade War (cont.)
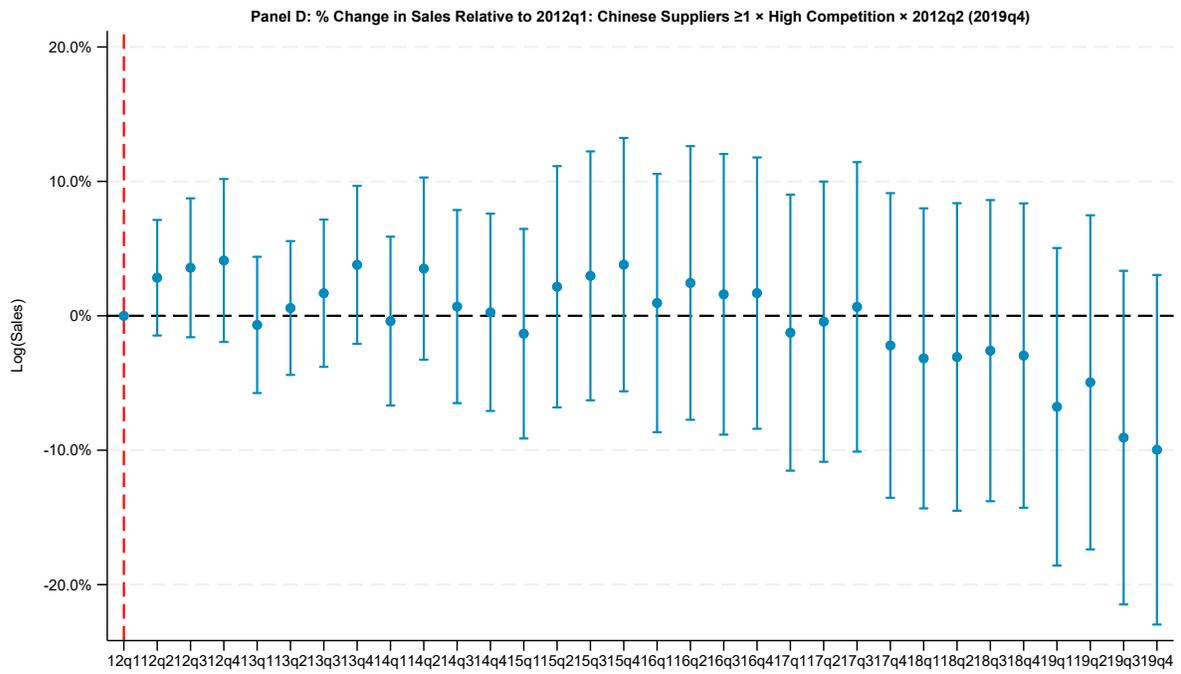
Panel D: % Change in Sales Relative to 2012q1: Chinese Suppliers ≥1 × High Competition × 2012q2 (2019q4)

Figure IA.5: Sales Around the US-China Trade War: By Sourcing Strategy and Supply Chain Diversification

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions with pre-shock interactions to test for the parallel trend assumption. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2015. Low (High) is an indicator for firms with low (high) supply chain diversification, that is, firms for which there is only one region (two or more regions) exporting at least 20% of their top 1 production factor in 2019 based on weight (tons; Panels A and B), and volume (TEU; Panels C and D), respectively. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1 – 2017q4. 2014q1 is the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Imports data is from the S&P Global Panjiva Supply Chain Intelligence Database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × Low × 2014q2 (2017q4)

Panel B: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × High × 2014q2 (2017q4)

Figure IA.5: Sales Around the US-China Trade War: By Sourcing Strategy and Supply Chain Diversification (cont.)

Panel C: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × Low × 2014q2 (2017q4)

Panel D: % Change in Sales Relative to 2014q1: Chinese Suppliers ≥1 × High × 2014q2 (2017q4)

Figure IA.6: Sales Around the Pandemic: By Sourcing Strategy and Supply Chain Diversification

This figure plots the coefficients on the triple interactions of the Chinese Suppliers≥1 indicator with year-quarter dummies and the Low (High) indicator from difference-in-difference sales regressions with pre-shock interactions to test for the parallel trend assumption. Ninety-five percent confidence intervals are also plotted. The dependent variable is the natural logarithm of sales. Chinese Suppliers≥1 is an indicator for firms with at least one Chinese supplier on December 31, 2019. Low (High) is an indicator for firms with low (high) supply chain diversification, that is, firms for which there is only one region (two or more regions) exporting at least 20% of their top 1 production factor in 2019 based on weight (tons; Panels A and B), and volume (TEU; Panels C and D), respectively. The sample includes all U.S. firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2018q1 – 2021q4. 2018q1 is the omitted case. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Imports data is from the S&P Global Panjiva Supply Chain Intelligence Database. Other firm-level data is from COMPUSTAT North America. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × Low × 2018q2 (2021q4)

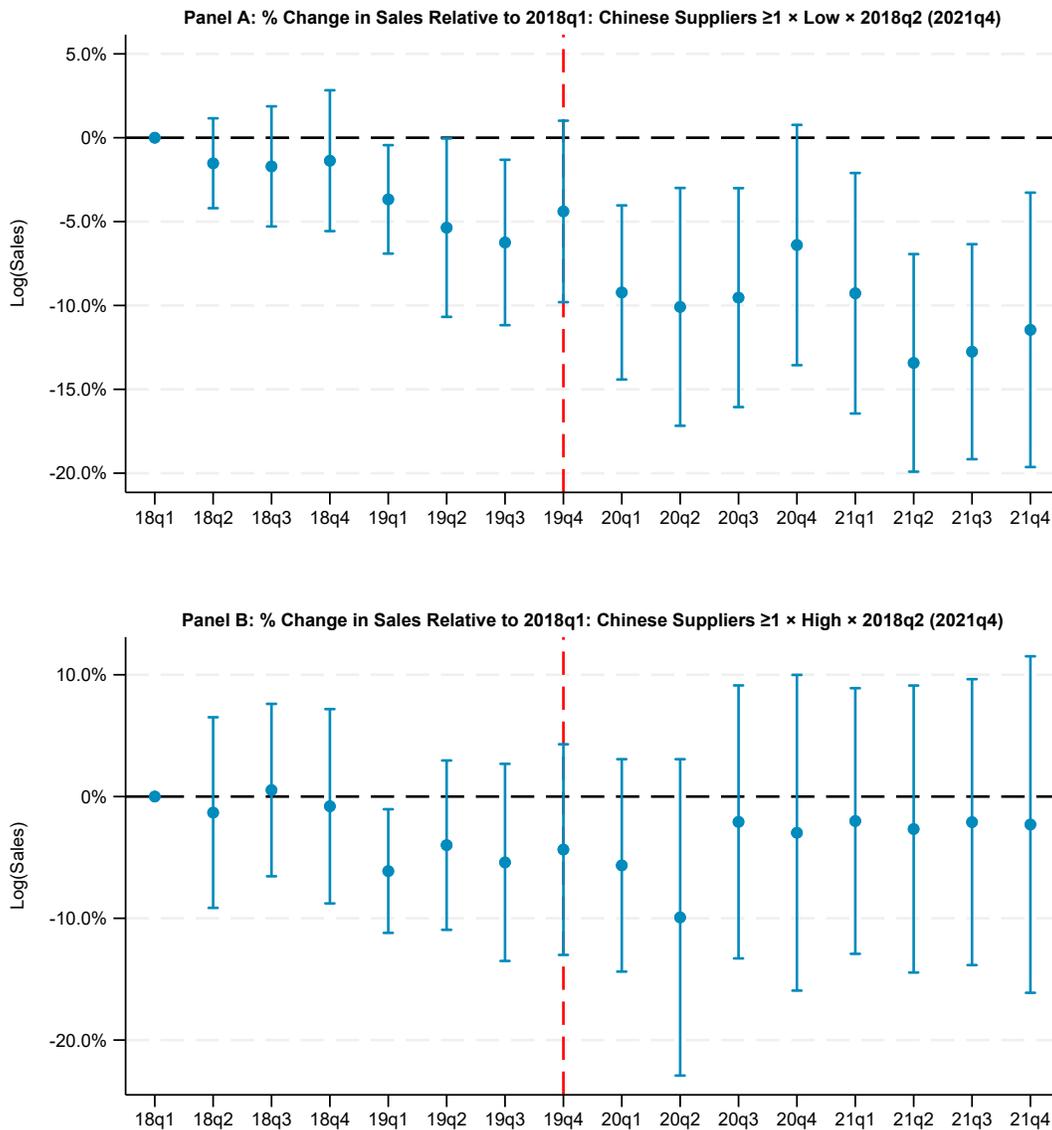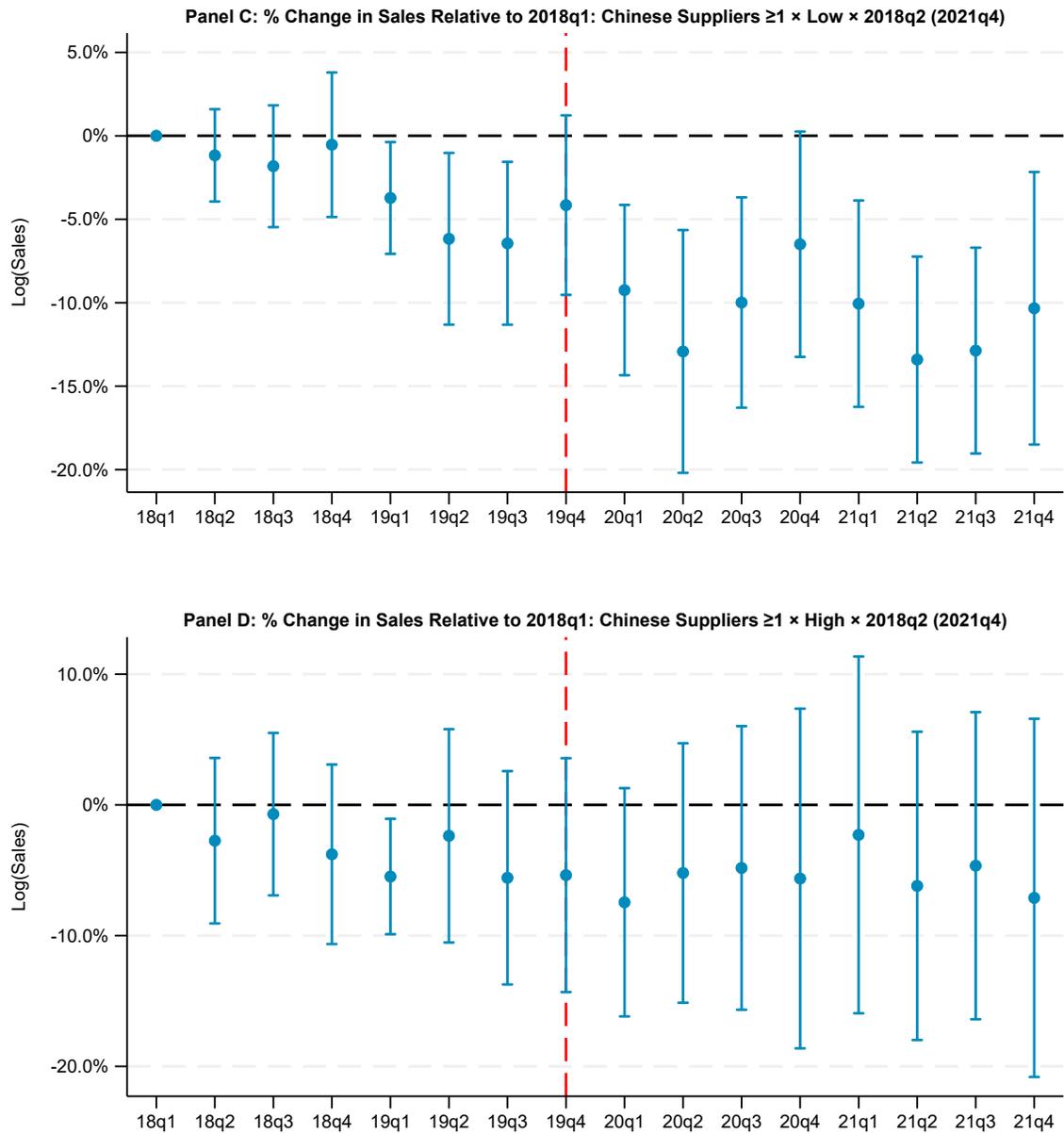Panel B: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × High × 2018q2 (2021q4)

Figure IA.6: Sales Around the Pandemic: By Sourcing Strategy and Supply Chain Diversification (cont.)

Panel C: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × Low × 2018q2 (2021q4)

Panel D: % Change in Sales Relative to 2018q1: Chinese Suppliers ≥1 × High × 2018q2 (2021q4)

Figure IA.7: Honest DiD Sensitivity Analysis

This figure presents sensitivity analysis for treatment confidence intervals for the log of sales regressions by sourcing strategy and supply chain diversification (Table 7 and Figure IA.6). Following Rambachan and Roth (2023), we construct 95% confidence sets under varying assumptions on the class of possible violations of parallel trends. We bound the effects using the following formula from section 2.4.1 in Rambachan and Roth (2023): $\Delta^{RM}(\bar{M}) = \{\delta : \forall t \geq 0, \ |\delta_{t+1} - \delta_t| \leq \bar{M} \cdot \max_{s<0} |\delta_{s+1} - \delta_s|\}$, where $\Delta^{RM}(\bar{M})$ bounds the maximum post-treatment violation of parallel trends between consecutive periods by $\bar{M}$ times the maximum pre-treatment violation of parallel trends. As $\bar{M}$ increases, the confidence intervals for the log of sales estimates become wider.


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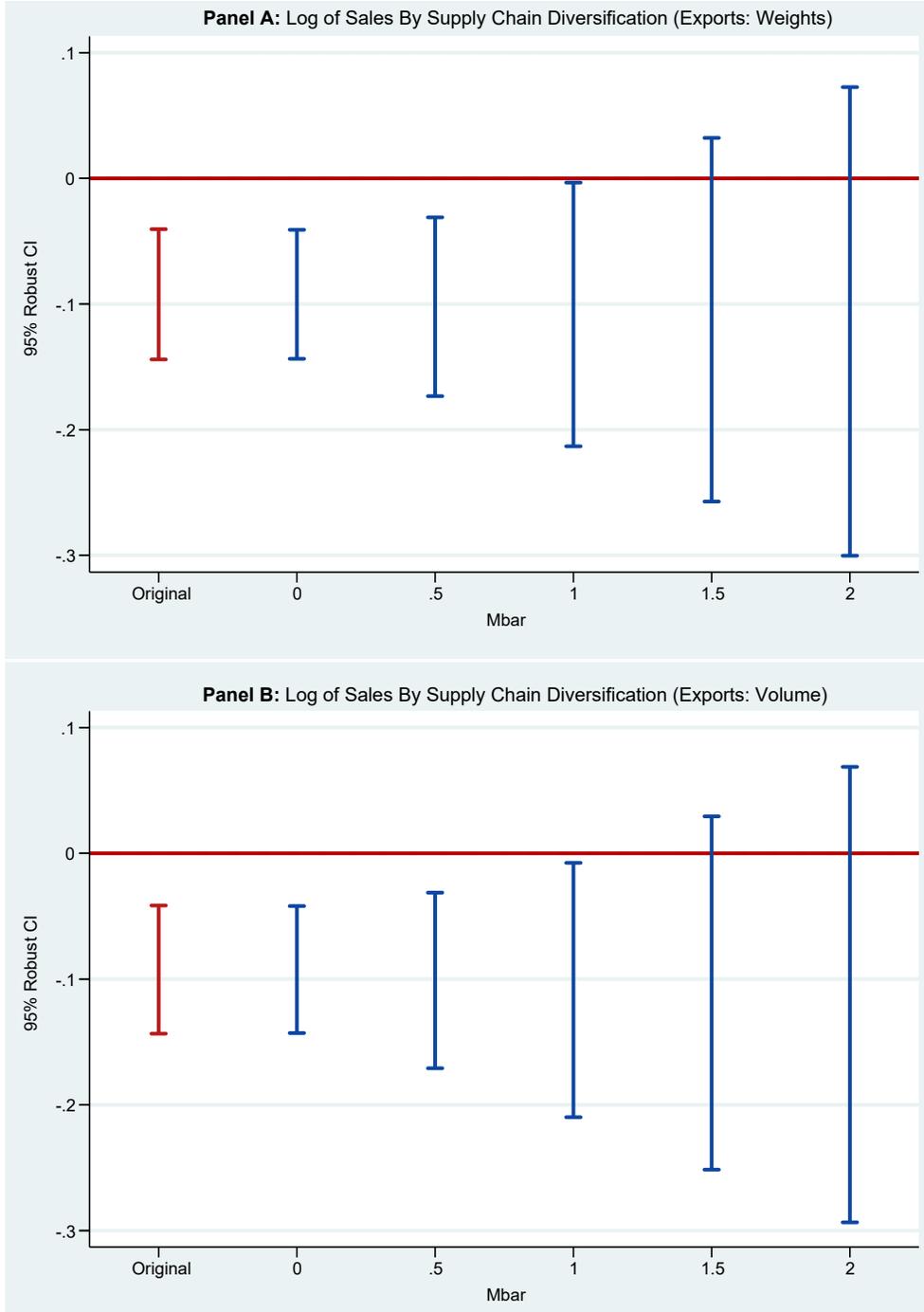
Figure IA.8: Industry Distribution of U.S. Firms with and without Chinese Suppliers

This figure plots the industry (2-digit SIC) distribution of U.S. (Panels A–D) firms with and without Chinese suppliers as a percentage of the total number of firms in each industry group in 2015q4 (Panels A–B) or 2019q4 (Panels C–D), respectively. We identify whether U.S. firms have Chinese suppliers on December 31, 2015 (Panels A–B) or on December 31, 2019 (Panels C–D), respectively. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database.

Panel A: U.S. Firms with Chinese Suppliers on December 31, 2015 (Treated)

Panel B: U.S. Firms without Chinese Suppliers on December 31, 2015 (Control)

Figure IA.8: Industry Distribution of U.S. Firms with and without Chinese Suppliers (cont.)

Panel C: U.S. Firms with Chinese Suppliers on December 31, 2019 (Treated)
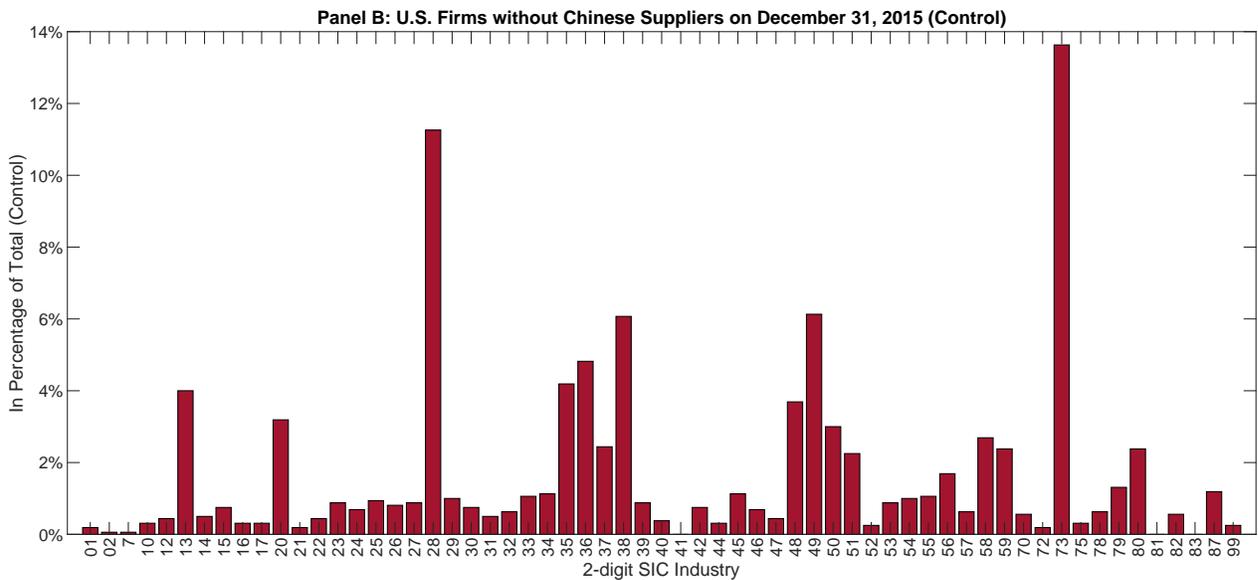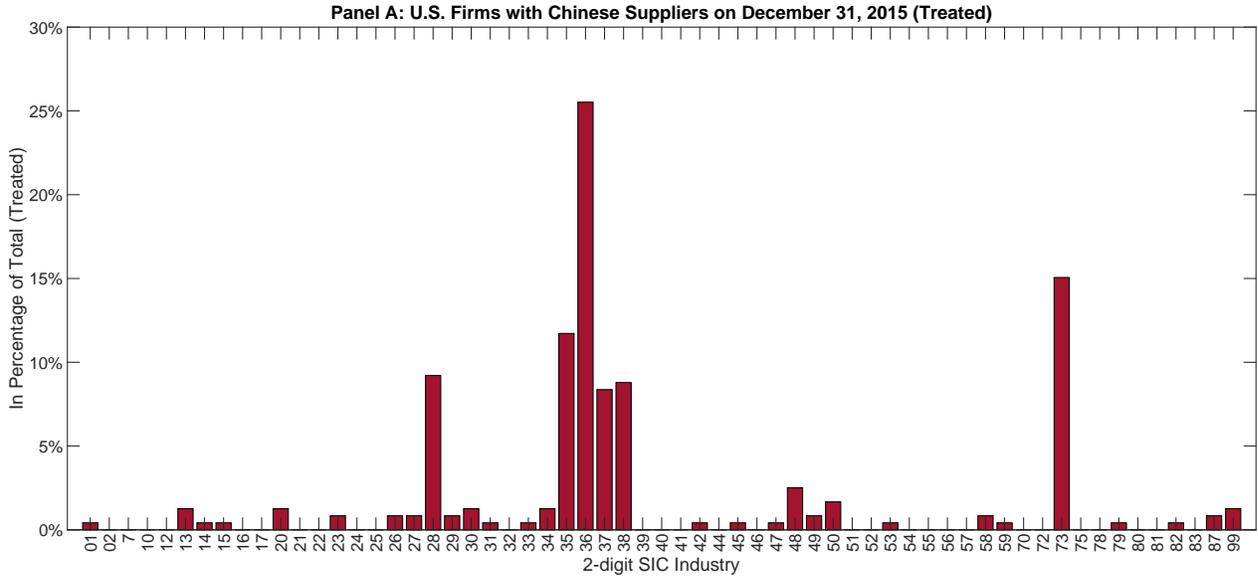
Panel D: U.S. Firms without Chinese Suppliers on December 31, 2019 (Control)
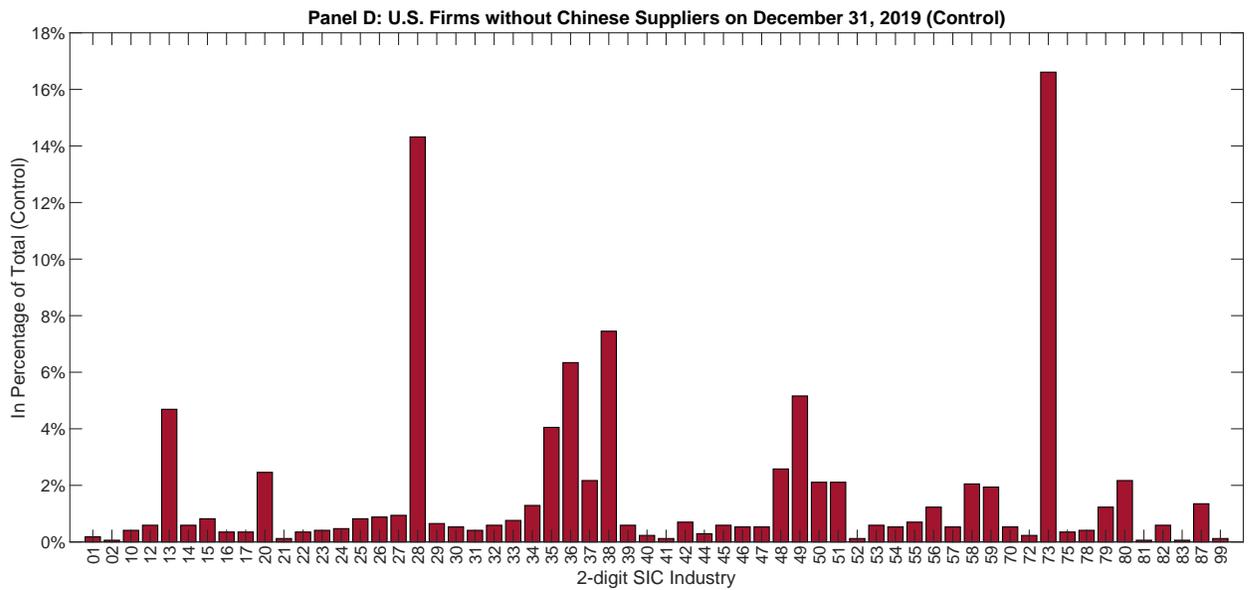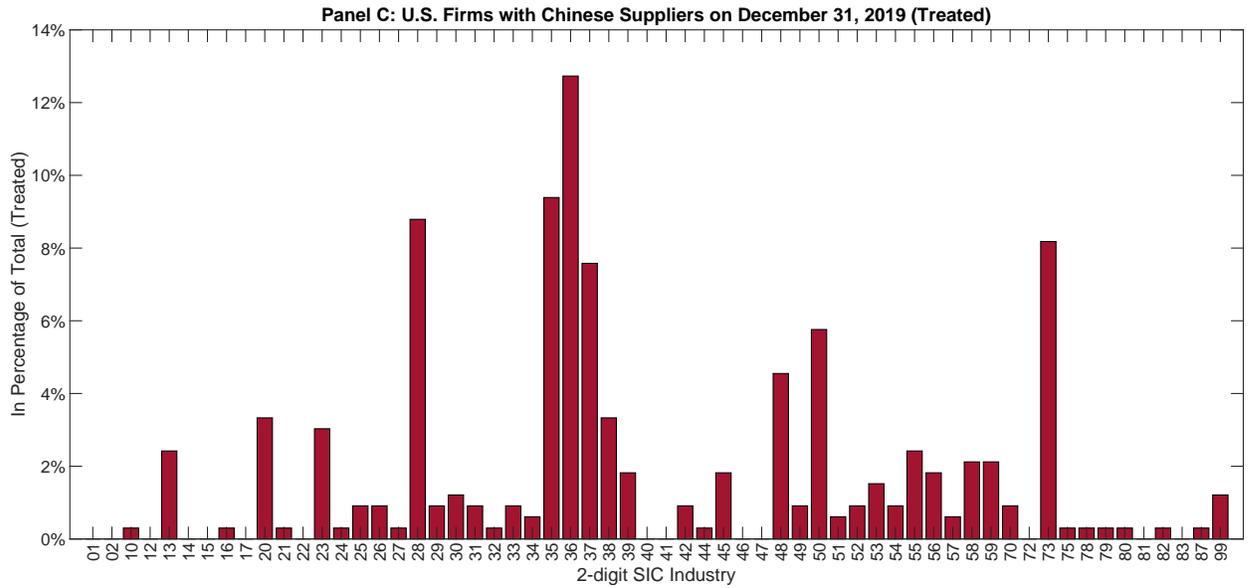
Figure IA.9: Sales of Chinese Firms During the US-China Trade War and the Pandemic

This figure plots the coefficient estimates (%) from difference-in-difference sales regressions. The sample includes all Chinese firms in both FactSet and COMPUSTAT, except financial firms (SICs 6000-6999), for the period 2014q1–2017q4 (Panel A), and period 2018q1 – 2021q4 (Panel B). The dependent variable in Panels A and B is the natural logarithm of sales. The right-hand side variables include interactions of year-quarter dummies and U.S. Suppliers≥1 which is an indicator for firms with at least one US supplier on December 31, 2015 (Panel A), and on December 31, 2019 (Panel B). The regression includes the inverse of lagged assets as a control variable. Panels A and B plot coefficients on the interactions of the year-quarter dummies with U.S. Suppliers≥1. Supply chain relationship data is from the FactSet Revere Supply Chain Relationships database. Other firm-level data is from COMPUSTAT Global. Refer to Table A.1 for detailed variable definitions. 95% confidence interval bands are based on standard errors clustered at the firm level.

Panel A: % Change in Sales Relative to 2014-2015: Chinese Firms with U.S. Suppliers - Chinese Firms without U.S. Suppliers

Panel B: % Change in Sales Relative to 2018-2019: Chinese Firms with U.S. Suppliers - Chinese Firms without U.S. Suppliers