Decoupling from China and Reshoring: The GVC Adjustment of the U.S. Government Procurement Contractors

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Abstract

We investigate whether public procurement plays a role in steering corporate America to restructure GVC to enhance its resilience. Utilizing the local projection approach, we detect a striking pattern of a decreasing dependence on Chinese suppliers and an increasing reliance on U.S. domestic suppliers by U.S. public-contractor listed companies. U.S. companies are, however, more tolerant of second-tier Chinese suppliers. Public-contractor firms that faced China-related GVC risk in the previous period, engaged in the upstream industries and are mature firms display a more salient delink with China and a pattern of reshoring. Our analysis does not detect significant patterns of nearshoring and ally-shoring for U.S. public-contractor listed firms.

Keywords: government procurement, global supply chain, China-US

JEL Classification:

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1 Introduction

Since the 1980s, thanks to various factors such as significant trade cost reduction and peaceful political development, global value chain (GVC) or global supply chain (GSC) have become a key feature of the world economy. In recent years, however, natural disasters, geopolitical and economic conflicts and public health crises such as the 2011 Tōhoku earthquake and tsunami, the US-China trade war and big-power rivalry, and the COVID-19 pandemic have posed serious threats to GVC resilience. Governments around the world strive to promote de-risking by encouraging reshoring or ally-shoring or GSC diversification. It intends to achieve a new balance between national security and economic efficiency.

The private sector, however, is typically slow or reluctant to embark on GVC reconfiguration for various reasons. As a public policy to forge GVC resilience, governments typically require public procurement contractors to assess GSC risk and restructure GSC. For example, U.S. Presidents Obama, Trump and Biden asked the public procurement agencies to increase GVC resilience by reducing reliance on foreign suppliers. The European and Japanese governments gave priority to upholding GVC resilience in the wake of COVID-19.

We explore whether governments can utilize public procurement contracting, on which they can exert direct influence, to induce government contractors and subcontractors to actively engage in GSC readjustment. Our analysis focuses on the sample of U.S. listed companies and examine whether those public-contractor U.S. firms with recent experience of government contracting exhibit a more salient pattern of GVC restructuring than their non-public-contractor counterparts. Our study sheds light on whether government guidance reflected in public procurement policy helps push firms to respond proactively to GVC disruption risk by conducting GSC readjustment.

We zoom in on public procurement serving as an instrument to implement governments' goal of achieving GSC resilience for the corporate sector. Policy

discussions and recommendations suggest that governments may push for GSC restructuring by emphasizing GVC resilience in public procurement contracting on which they can cast a direct influence and thus wishing to induce wide-ranging GSC readjustments across sectors through value chain interconnections given that public procurement accounts for a significant share of GDP around the world (White House, 2021; Schneider-Petsinger, 2021). This is likely to be the case in the US, and could be applicable to other countries.

Given the importance of China in GVC, we place primary emphasis on how U.S. public-contractor firms adjust their dependence on Chinese suppliers in the wake of the recent series of global events. As the world's factory, China enjoys the advantages of the abundance of lower-wage workers available in the country, the existence of an efficient and cost-effective extensive business ecosystem of networked suppliers, component manufacturers, and distributors that facilitate manufacturing, and a permissive regulatory environment with relatively lax health, safety, employment, and environmental regulations. Nevertheless, the recent geopolitical conflicts, economic shocks and public health crisis has put China at the center of vortex. To a large extent, the whole discussion on GVC restructuring is primarily concerned with how to cope with the reliance on China-related supply chain.

Motivated by this observation, this paper employs the shocks of the recent big events to GVC, e.g., China-U.S. trade war and COVID-19, and the subsequent policy responses, e.g., the Buy American executive orders, to investigate whether public procurement plays a role in steering corporate America to restructure GVC to enhance its resilience. Utilizing the local projection approach, we examine various issues related to GSC restructuring.

We detect a striking pattern of a decreasing dependence on Chinese suppliers and an increasing reliance on U.S. domestic suppliers by U.S. public-contractor listed companies, compared with their non-public-contractor counterparts. This finding substantiates the existence of corporate supply chain derisking by lowering dependencies on China and the existence of reshoring by increasing their domestic sourcing. It is noteworthy that the

reshoring pattern of public-contrator firms is much more salient than that found in the earlier studies for the general sample of U.S. firms. This demonstrates that the U.S. federal government's efforts to encourage domestic sourcing has achieved some success for public procurement contract awardee firms.

We further examine the second-tier suppliers. The relative shares of Chinese suppliers in the second tier and in the first and second tiers decrease first but rebound later. We do not find public-contractor firms substitute the second-tier Chinese suppliers for the first-tier ones to increase the circuitousness of their employment of Chinese suppliers. Instead, public-contractor U.S. firms without first-tier Chinese suppliers raise the share of Chinese second-tier suppliers after an initial period of decline, which suggests that U.S. companies are more tolerant of second-tier Chinese suppliers.

With an analysis of the heterogeneous effects, we find that public-contractor firms that faced China-related GVC risk in the previous period, public-contractor firms engaged in the upstream industries and mature public-contractor firms display a more salient delink with China and a shift of supplier base back to the U.S. than their counterparts having not faced prior China-related GVC risk, in the downstream industries, and being young, respectively.

Nevertheless, our analysis does not detect significant patterns of nearshoring and ally-shoring for U.S. public-contractor listed firms.

Contributions

This paper contributes to the literature in the following aspects. Earlier studies find that firm-level economic or political risk is distinct from the corresponding country-level or industry-level risks (Hassan et al., 2019). Our constructed firm-level GVC risk is likely to be the same case. Constructing firm-level GVC vulnerability index in different types of big events and examining how corporate GVC restructuring activities as a response to this

firm-level risk vary among firms with different government contracting prospects or experiences could help us understand better the role of public procurement in shaping GVC reconfiguration.

The nexus of the state and GVC is arguably one of the most crucial issues for contemporary research on global supply chains. According to Horner and Alford (2019), the role of the state as a buyer in shaping supply chains, through public procurement, is a considerably under-explored issue. This research intends to shed light on whether and how public procurement helps prompt firms to restructure supply chains. It can potentially contribute to our understanding of this under-explored area.

This project is related to the emerging and fast-growing literature on supply chain restructuring in the wake of natural disasters, geopolitical risk and public health crisis. We can add to this growing line of literature by examining the issue from a new perspective.

Our paper examines the GVC reconfiguration through the lens of public procurement as a lever. It may contain both academic and policy implications. It may enable us to understand better the role of government in GVC restructuring.

2 Background

2.1 GVC Restructuring: A New Trend

The recent geopolitical tensions and COVID-19 pandemic have tremendously accelerated GVC restructuring as it is imperative to enhance crisis preparedness and response and strengthen national strength. There is a surge in protectionism and inward-looking policies that put restrictions on trade, capital migration, and technology sharing between nations, and GVC reconfiguration is a prominent issue (Bellora and Fontagné, 2020; Cappariello et al., 2020; Ju et al., 2020; Grossman et al., 2021; Eugster et al., 2022; Góes and Bekkers, 2022; Boehm et al., 2023; Grossman et al., 2024). Governments around the world strive to promote de-risking by encouraging reshoring or ally-shoring or GSC diversification. It intends to achieve a new balance between national security and economic efficiency.

As the GSC disruption has come under the spotlight, many countries have given priority to strengthening supply-chain resilience. Proposed solutions include reshoring, friend or ally-shoring, nearshoring, and diversification. Although supply-chain resilience is ultimately strengthened at the level of firms, governments play a critical role by encouraging or constraining the sourcing and production decisions of companies, and by being the primary actor in areas such as public procurement and national stockpiles. The U.S. government has issued various executive orders to strengthen GVC resilience, especially in public procurement. The EU is pursuing a policy of 'open strategic autonomy' that helps retain its commitment to open and fair trade while strengthening the security of supply across key industries. The UK is addressing its perceived over-reliance on foreign suppliers for essential goods. Japan is offering financial grants to companies that undertake projects to diversify their supply chains away from a China-dominated one. In some sense, the current focus on supply-chain resilience aims at finding a new balance between globalization and sovereignty and between economic efficiency and national security (Schneider-Petsinger, 2021).

Nevertheless, firms are typically hesitant to initiate GSC restructuring. On the one hand, GSC readjustment involves considerable search costs, learning costs, fixed costs, etc. Although some governments subsidize GSC restructuring to some extent, firms still face mounting pressure and tremendous costs in relocating suppliers. On the other hand, firms often underestimate the GVC disruption risk and the urgency to make readjustment. First, private sector companies do not internalise the cost of GSC disruptions to their downstream buyers, including to final consumers. Second, private sector companies may lack information on the complexity of their supply chains, leading to the underestimation of risk. Third, policy makers may want to limit dependencies on foreign suppliers and foreign markets for geopolitical reasons, whereas private sector firms may underestimate the seriousness and persistence of the geopolitical risk and the resolve of their home governments to elevate GVC resilience (Schwellnus et al., 2023). Thus, even though firms realize they are facing GSC risk, they may not act promptly to readjust their GSC. For instance, it is claimed that US-based corporations were initially hesitant to incur the fixed and sunk costs of reconfiguring their GSC. Nonetheless, the continuation of tariffs on Chinese exports to the US under the Biden administration has pushed them to give up their "wait-and-see" approach (Alfaro and Chor, 2023).

The government strategies to strengthen supply-chain resilience can be divided into two broad groups, i.e., policy intervention and public procurement. Governments adopt policies to influence and shape the design of corporate GVC to promote supply chain restructuring. To strengthen supply chain resilience, governments can encourage or compel companies to revert to domestic production through subsidies, taxation, tariffs, local content requirements or restrictions on outbound foreign investment. Nevertheless, reshoring could result in higher production costs, loss of economies of scale, lower overall productivity and reduced growth. These measures could also lead to retaliatory action by other countries, thereby triggering a wave of protectionism.

Thus, many countries and firms are implementing a strategy of limited reshoring to balance economic efficiency and supply chain resilience. A broader and perhaps more realistic and economically sensible strategy is to conduct friendshoring or ally-shoring with suppliers based in those trusted like-minded countries and to diversify supply chains and the supplier network.

2.2 Buy American Order

In January 2012, following the 3/11 earthquake, the Obama administration issued *National Strategy for Global Supply Chain Security* to promote the efficient and secure movement of goods and to foster a resilient supply chain. It intended to integrate and spur efforts across the federal government as well as the state and local governments.

The Trump administration issued several executive orders to strengthen GSC resilience: the *Buy American and Hire American* order on April 18, 2017, the *Strengthening Buy-American Preferences for Infrastructure Projects* order on January 31, 2019, the order of *Maximizing Use of American-Made Goods, Products, and Materials* on July 15, 2019, and the order of *Encouraging Buy American Policies for the United States Postal Service* on January 14, 2021.

The Biden administration issued an executive order on January 25, 2021 to strengthen "Buy American" rules to increase the federal government's procurement of American-made goods. On February 21, 2021, President Biden signed another executive order that triggered a comprehensive review of U.S. supply chains to identify ways to secure the American economy against shortages of critical and essential goods.

Even when governments do not explicitly set requirements on encouraging reshoring, ally-shoring, etc. in public procurement, they may implicitly do so. It is therefore intriguing to explore the role of public procurement in GVC reconfiguration, and the recent large events provide a good platform for this study.

It is noteworthy that many advanced economies have negotiated the

Agreement on Government Procurement (GPA) within the framework of WTO to ensure open, fair and transparent conditions of competition in the government procurement markets. However, there is quite much room to defend public procurement preferences.

2.3 Supply Chain Restructuring in Arm's Length Contracting

GSC reconfiguration typically encompasses the following categories. (a) Reshoring, i.e., partial/limited or entire repatriation of supply chains to home countries. We can use the increase in the fraction of domestic suppliers to gauge the degree of reshoring. (b) Ally-shoring or friendshoring, i.e., choosing suppliers from like-minded countries. (c) Diversification of the foreign sources of supply. We adapt the construction of the Herfindahl-Hirschman index (HHI) to our setting to build a supplier-country concentration index, which is calculated as the sum of the squared fractions of suppliers from each supplier country. The index varies between 1, which indicates that there is only one suppling nation, to 1/N when all main supplying nations have the same fraction. We pay attention to whether the GSC restructuring reduces the firm's dependency on suppliers from the choke-point nation of the country-industry level supply network, especially when the choke-point nation is not a Western country or western ally. (d) Nearshoring. When the country-industry-level choke-point nation is not in the same megaregion as the firm's headquarters (e.g., the supply chain clusters in America, Europe and Asia), we examine whether firms increase their reliance on supply markets in their home megaregion to enhance supply chain safety. Supply chains can contain multiple-step or multiple-tier suppliers (suppliers of suppliers in different layers). Our analysis considers the changes in both the first-tier suppliers and in the multiple-tier ones.

3 Data

3.1 Global Supply Chain Data

The data on supply chain relationships for global firms come from FactSet Revere, which exposes and classifies the business relationships and interconnections among global companies. Relationship information is sourced from trusted primary sources and reverse-linked to non-disclosing parties, creating a comprehensive and consistent relationship graph through time. This dataset covers over 23,000 publicly traded companies worldwide, with 325,000 unique supply chain relationships. It has been widely used in the existing studies on supply chain relationships. [1]

3.2 Government Procurement Data

The data source for government procurement is Tender Alpha, a global public procurement dataset. It provides contract-level information on government procurement transactions and covers EU member states, U.K., some other non-EU European countries, U.S., Canada, Australia, New Zealand, South Korea, Japan, India, Philippines, Singapore, Russia, Ukraine, Argentina, Brazil, Chile, and Mexico. It has collected more than 85 million awarded contracts with full project information from 2010 onward. It incorporates more than 4 million companies including direct awardee companies with their entire subsidiary structure.

[1] A potential concern is that we classify suppliers into different locations based on headquarter country location rather than operating locations. Charoenwong et al. (2023) utilize S&P's Panjiva shipment dataset to show that foreign publicly listed suppliers that ship goods from foreign countries to domestic markets most likely had operational plants abroad, and thus this should not be a big concern.

3.3 Other Data Sources

We employ transcripts of quarterly earnings conference calls held by global publicly-listed firms to construct our measures of firm-level GVC risk. Earnings calls allow financial analysts and other market participants to discuss with corporate senior management on the company's state of affairs, financial performances, current developments and future business prospects. We collect English-language transcripts from Refinitiv Eikon that cover more than 10,000 firms headquartered in more than 80 countries.

The company-level data is available from Compustat Global, which provides authoritative financial and market data covering publicly traded companies in more than 80 countries, representing over 90% of the world's market capitalization.

3.4 Main Sample and Summary Statistics

Our main sample consists of 36568 observations, covering 1306 US listed firms and spanning from 2016 Q1 to 2022 Q4. We present the summary statistics in Table 1. For each variable, we report the number of observations, mean, and standard deviation.

[Table 1]

4 Methodology

In this section, we introduce our identification and empirical strategy. First, to rule out concerns over endogeneity and anticipation effects, we propose our method to construct exogenous government procurement shocks in Section 4.1. Second, in Section 4.2, we employ local projection with instrumental variables to investigate the dynamic effects of government procurement contracting experience on the relocation of global supply chains.

4.1 Identifying Government Procurement Shocks

To identify the exogenous variation in government procurement, we need to address the challenges posed by endogeneity and anticipation effects within the procurement process. We follow Barattieri et al. (2023) and estimate the following equation:

$$G_{it} = \sum_{k=1}^{K} \alpha_k G_{i,t-k} + \sum_{k=1}^{K} \gamma_k Y_{i,t-k} + \theta_i + \lambda_{jt} + \nu_{it} \tag{1}$$

where i, j and t indicate firm, sector, and quarter-by-year, respectively. G_{it} is the ratio of government procurement amount obtained by firm i to its total sales in quarter-by-year t. We include a series of lags of government procurement $G_{i,t-k}$ and the share of suppliers from the country of interest $Y_{i,t-k}$. We include firm fixed effect θ_i and sector-by-time fixed effect λ_{jt}. We set K to 4. Our goal is estimating the residual $\hat{v}_{it}$, which serves as the identifying government procurement shocks.

4.2 Empirical Strategy

We now estimate the effect of government procurement on restructuring global supply chain. We follow a large literature and use the local projections with IV method (Jordà, 2005, 2023; Cloyne et al., 2023). The equations for $h = 0, ..., H$ are:

$$Y_{i,t+h} = \beta^h \hat{G}_{it} + \sum_{k=1}^{K} \alpha_k^h \hat{v}_{i,t-k} + \sum_{k=1}^{K} \gamma_k^h Y_{i,t-k} + \theta_i^h + \lambda_{jt}^h + \nu_{i,t+h} \tag{2}$$

$$G_{it} = \beta \hat{v}_{it} + \sum_{k=1}^{K} \alpha_k \hat{v}_{i,t-k} + \sum_{k=1}^{K} \gamma_k Y_{i,t-k} + \theta_i + \lambda_{jt} + \nu_{it} \tag{3}$$

In this context, i, j and t indicate firm, sector, and quarter-by-year, respectively. The outcome variable, Y, is the share of suppliers from a country or region of interest. The main explanatory variable is G_{it}, which is instrumented by $\hat{v}_{it}$. We include a series of lags for both the instruments $\hat{v}_{i,t-k}$ and the outcomes of interest $Y_{i,t-k}$. Additionally, we control for firm fixed effect θ_i and sector-by-time fixed effect λ_{jt}. We set K to 4. The parameters of interest are the series of β^h.

5 Effects on Global Supply Chain

5.1 Do Firms Transfer Supply Chains out of China?

[Figure 1]

When we investigate the GVC restructuring of U.S. companies, the first question we naturally ask is whether they reduce their reliance on the Chinese suppliers. The left-hand-side figure in Figure 1 shows the estimated fraction of Chinese suppliers among the first-tier suppliers of U.S. public-contractor firms relative to that of their non-public-contractor counterparts from the quarter they obtained their government contracts (quarter 0) to the end of the three years after the commencement of the public contracts (quarter 12). It is striking that the relative Chinese supplier share starts to decline in the sixth quarter, and a precipitous drop occurs in the eighth quarter. Afterwards, the relative Chinese supplier share remains low until the 12th quarter.

This result suggests that U.S. public-contractor firms do transfer part of their GVC away from China more actively than do those non-contractor counterparts.

5.2 Do Firms Transfer Supply Chains to the United States?

The central tenet of a series of Buy American executive orders is to encourage reshoring, i.e., seek intermediate goods and raw materials from U.S. domestic suppliers. The right-hand-side figure in Figure 1 demonstrates that the share of American suppliers of U.S. public-contractor firms, relative to that of non-public-contractor U.S. firms, starts to rise in the seventh quarter after they obtained government contracts, and the share jumps sharply in the eighth and ninth quarters. The share fluctuates in the subsequent 10th-12th quarters, but it largely remains much higher than the previous quarters.

This finding substantiates that U.S. government-contract awardee firms indeed respond to the call of the government to embark on reshoring by displaying a more striking pattern of purchasing from domestic suppliers than

do non-government-contract awardees. This result is in sharp contrast to some earlier studies such as Alfaro and Chor (2023) that do not find a clear pattern of reshoring. This is probably because the earlier studies do not consider the initiatives of government contractors in complying with the call of the government. This finding, at the same time, also suggests that the Buy American orders have achieved success to some extent. **[[COULD GOVERNMENT CONTRACTING CHANCES INDUCE FIRMS TO RESTRUCTURE GSC?]]**

[Figure 1]

5.3 Sensitivity Analysis

[Figure 2]

In Figure 2, we carry out some sensitivity analyses. In the two left-hand-side figures, we add control variables total asset, the ratio of long-term debt to total asset, and the earning-per-share in the local projection analysis. The findings are consistent with those in Figure 1: compared with non-government-contractor firms, the government contractors' share of Chinese suppliers drops more significantly, while that of U.S. domestic suppliers rises more strikingly.

In the two right-hand-side figures, we narrow our sample by focusing on the subsample of sectors wherein companies have government procurement experiences. The pattern of the evolution of Chinese and American supplier fractions remains similar.

5.4 First and Second-tier Supply Chain

[Figure 3]

So far our analysis has primarily focused on the identity of the first-tier suppliers. It is intriguing to examine whether the "Buy American" trend penetrates into the second-tier suppliers. In the upper-left-hand-side figure of

Figure 3, the relative fraction of the second-tier Chinese suppliers starts to decline in the fifth quarter, decreases further in the eighth quarter and reaches the nadir in the ninth quarter. It rebounds in the tenth quarter and surpasses the initial level in the eleventh and twelfth quarters.

In the upper-right-hand-side figure of Figure 3, the relative share of Chinese suppliers in both the first and the second tier GVC displays a pattern equivalent to that of the second-tier Chinese suppliers. In other words, the pattern of the first and second-tier Chinese suppliers is mainly driven by that of the second-tier Chinese suppliers.

The lower-left-hand-side and lower-right-hand-side figures in Figure 3 show the evolution of the relative share of second-tier Chinese suppliers in the subsample of public-contractor U.S. firms with and that without first-tier Chinese suppliers, respectively. When there exist first-tier Chinese suppliers, the relative fraction of second-tier Chinese suppliers largely keeps declining from the fourth quarter onward. Instead, for public-contractor companies without first-tier Chinese suppliers, the relative proportion of second-tier Chinese suppliers decreases from the fourth quarter to the ninth quarter, but starts to rebound from the tenth quarter onwards. This finding does not support the hypothesis of the substitution of second-tier Chinese suppliers for the first-tier ones, that is, the Buy American policies have not encouraged U.S. companies to attempt to hide the presence of Chinese suppliers by shunning first-tier Chinese suppliers but increasing the second-tier Chinese suppliers. Instead, the results suggest that public-contractor firms reduce their reliance on both first-tier and second-tier Chinese suppliers, whereas U.S. public-contractor firms without employing first-tier Chinese suppliers start to increase their employment of second-tier Chinese suppliers after the initial decrease in the presence of Chinese suppliers. This rebound suggests that U.S. companies are more tolerant of the second-tier Chinese suppliers than the first-tier ones.

5.5 Nearshoring and Friendshoring

[Figure 4]

[Figure 5]

Reshoring is often claimed to be costly. One alternative strategy is nearshoring, i.e., sourcing from countries approximate to the U.S. In the upper panel of Figure 4, the relative shares of suppliers from both developed countries and developing ones adjacent to the U.S. slightly decline for public-contractor U.S. firms, albeit it is not statistically significant.

In Figure 5, the uppermost panel shows the relative shares of suppliers from the top three U.S. neighboring countries. All of them are not statistically significant.

We next examine friendshoring or ally-shoring. In the lower panel of Figure 4, the relative share of suppliers from developed countries or areas near China fluctuates first, and then decreases in the ninth quarter, but rebounds in the subsequent quarters. In contrast, the relative share of suppliers from developing countries or areas near China rises from the sixth quarter to the tenth quarter, but declines in the eleventh and twelfth quarters.

In Figure 5, the middle panel shows the evolution of the shares of suppliers from the top three developed countries or areas near China, namely, Japan, Korea and Taiwan. There is some sign of an increase in the share of Japanese suppliers, and Korea's share eventually rebounds after several quarters of decline. Taiwan's share, contrary to expectation, has kept decreasing from the seventh quarter onward.

The bottom panel of Figure 5 illustrates that the relative shares of suppliers from the top three developing countries adjacent to China increase first and then decrease, but these changes are not statistically significant.

6 Heterogeneous Effects Across Firms

6.1 Heterogeneity on China Risk

[Figure 6]

We employ natural language processing to construct text-based firm-level China-related GVC risk metrics. We utilize the extent of discussions on GVC risk related to China in the transcript of a quarterly earnings call to gauge the firm-level exposure to China-related GVC risk. **[[NEED MORE DETAILS]]**

In the upper panel of Figure 6, public-contractor firms that mentioned China-related GVC risk **in the preceding three years??** exhibit a more striking decline in the relative share of Chinese suppliers than do those that did not mention. When we compare these two types of firms in the same regression, the estimated coefficients of the interaction term confirms this finding.

In the lower panel of Figure 6, public-contractor firms having faced China-related GVC risk display a more salient increment in the relative share of U.S. domestic suppliers than do their non-public-contractor firms. At the same time, the regression analysis of the whole sample confirms this finding.

6.2 Heterogeneity on Upstreamness and Downstreamness

[Figure 7]

[Figure 8]

Firms engaged in more upstream industries, once meeting GVC disruption, are likely to propagate the shock to a longer chain of downstream industries. Government executive orders are likely to induce more active GSC restructuring in those more upstream industries by prompting firms to internalize GSC disruption externalities. **We can adopt the method of Fally (2011); Antràs et al. (2012); Alfaro and Chor (2023) to measure industry upstreamness, which is based on the number of stages that an industry's**

output will on average traverse before it is absorbed in final uses such as consumption or investment.

The definitions of upstream and downstream come from the paper "Positioning in Global Value Chains", they are highly negative correlated.

In the upper panel of Figure 7, public-contractor firms in the upstream industries indeed reduce their reliance on Chinese suppliers to a larger degree than do their counterparts in the downstream industries.

In the lower panel of Figure 7, public-contractor firms in the upstream industries embark on reshoring more strikingly by increasing the relative share of domestic suppliers than do those in the downstream industries.

6.3 Heterogeneity on Age

[Figure 9]

In Figure 9, we classify sample firms into young firms with below-median age and mature firms with above-median age. The upper panel shows that both mature and young public-contractor firms reduce their relative shares of Chinese suppliers. Nevertheless, mature public-contractor firms exhibit a larger degree of reduction than do their young counterparts. One possible reason is that mature firms are likely to have access to a wider network of alternative domestic and foreign suppliers than do young firms.

In the lower panel, both mature and young public-contractor firms display an increase in the relative share of U.S. domestic suppliers, while mature contractors show a larger increment. Again, mature companies are likely to gain access to a wider network of domestic suppliers.

7 Conclusion

In this study, We investigate whether public procurement plays an important role in steering U.S. companies to restructure GVC to enhance its resilience. Utilizing the local projection approach, we detect a striking pattern of decoupling from China and reshoring in the composition of first-tier suppliers for U.S. public-contractor listed companies. U.S. companies are, however, more tolerant of second-tier Chinese suppliers. We find further that Public-contractor firms that faced China-related GVC risk in the previous period, engaged in the upstream industries and are mature firms display a more salient delink with China and a pattern of reshoring. Meanwhile, our analysis does not detect significant patterns of nearshoring and ally-shoring for U.S. public-contractor listed firms.

Our study suggests that various Buy American executive orders have truly encouraged U.S. public-contractor companies to reduce their dependency on the first-tier Chinese suppliers and accelerate domestic sourcing.

References

Alfaro, Laura and Davin Chor, "Global supply chains: The looming "great reallocation"," Technical Report, National Bureau of Economic Research 2023.

Antràs, Pol, Davin Chor, Thibault Fally, and Russell Hillberry, "Measuring the upstreamness of production and trade flows," *American Economic Review*, 2012, *102* (3), 412–416.

Barattieri, Alessandro, Matteo Cacciatore, and Nora Traum, "Estimating the Effects of Government Spending Through the Production Network," Technical Report, National Bureau of Economic Research 2023.

Bellora, Cecilia and Lionel Gérard Fontagné, "Shooting oneself in the foot? Trade war and global value chains," 2020.

Boehm, Christoph E, Andrei A Levchenko, and Nitya Pandalai-Nayar, "The long and short (run) of trade elasticities," *American Economic Review*, 2023, *113* (4), 861–905.

Cappariello, Rita, Sebastian Franco-Bedoya, Vanessa Gunnella, and Gianmarco IP Ottaviano, "Rising protectionism and global value chains: Quantifying the general equilibrium effects," *Bank of Italy Temi di Discussione (Working Paper) No*, 2020, *1263.*

Charoenwong, Ben, Miaozhe Han, and Jing Wu, "Trade and foreign economic policy uncertainty in supply chain networks: Who comes home?," *Manufacturing & Service Operations Management*, 2023, *25* (1), 126–147.

Cloyne, James, Clodomiro Ferreira, Maren Froemel, and Paolo Surico, "Monetary policy, corporate finance, and investment," *Journal of the European Economic Association*, 2023, *21* (6), 2586–2634.

Eugster, Johannes, Ms Florence Jaumotte, Ms Margaux MacDonald, and Mr Roberto Piazza, *The effect of tariffs in global value chains*, International Monetary Fund, 2022.

Fally, Thibault, "On the Fragmentation of Production in the US," *University of Colorado mimeo*, 2011.

Góes, Carlos and Eddy Bekkers, "The impact of geopolitical conflicts on trade, growth, and innovation," *arXiv preprint arXiv:2203.12173*, 2022.

Grossman, Gene M, Elhanan Helpman, and Hugo Lhuillier, "Supply chain resilience: Should policy promote diversification or reshoring?," Technical Report, National Bureau of Economic Research 2021.

_ , _ , and Stephen J Redding, "When tariffs disrupt global supply chains," *American Economic Review*, 2024, *114* (4), 988–1029.

Hassan, Tarek A, Stephan Hollander, Laurence Van Lent, and Ahmed Tahoun, "Firm-level political risk: Measurement and effects," *The Quarterly Journal of Economics*, 2019, *134* (4), 2135–2202.

Horner, Rory and Matthew Alford, "The roles of the state in global value chains," in "Handbook on global value chains," Edward Elgar Publishing, 2019, pp. 555–569.

Jordà, Òscar, "Estimation and inference of impulse responses by local projections," *American economic review*, 2005, *95* (1), 161–182.

_ , "Local projections for applied economics," *Annual Review of Economics*, 2023, *15* (1), 607–631.

Ju, Jiandong, Hong Ma, Zi Wang, and Xiaodong Zhu, "Trade wars and industrial policy along the global value chains," Technical Report, Working paper 2020.

Schneider-Petsinger, Marianne, "US and European strategies for resilient supply chains," *Research paper*, 2021.

Schwellnus, Cyrille, Antton Haramboure, and Lea Samek, "Policies to strengthen the resilience of global value chains: Empirical evidence from the COVID-19 shock," 2023.

White House, "Building resilient supply chains, revitalizing American manufacturing, and fostering broad-based growth: 100-day reviews under Executive Order 14017," 2021.

Figures

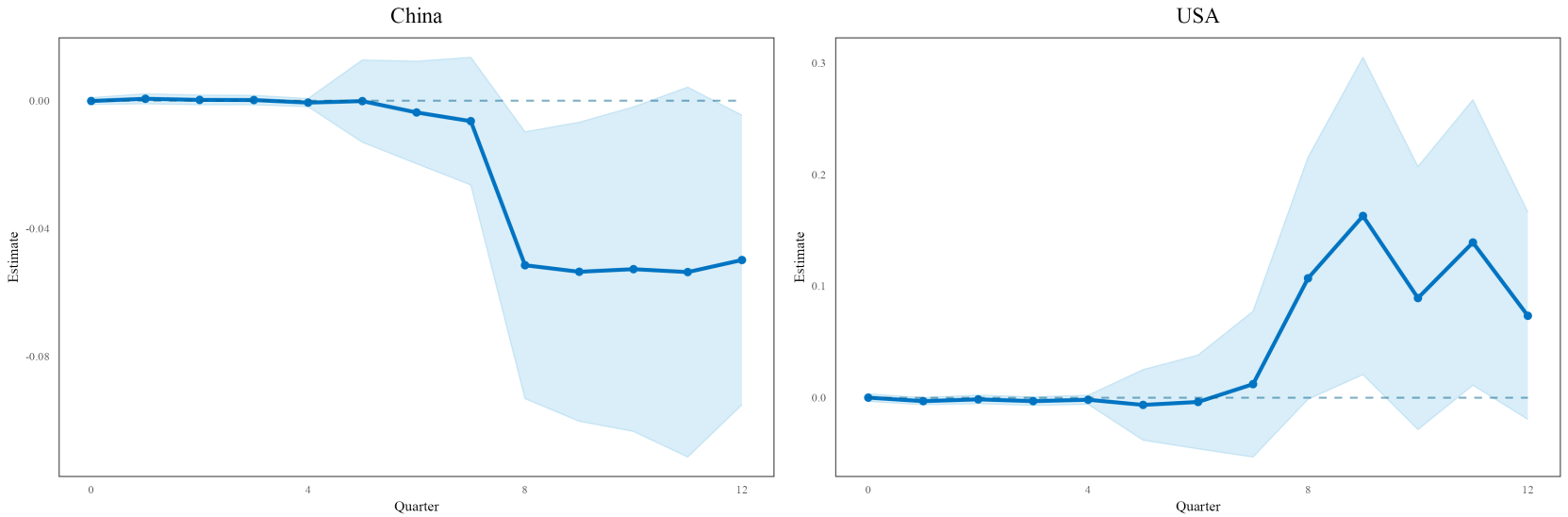


Figure 1: Main Results: China and USA

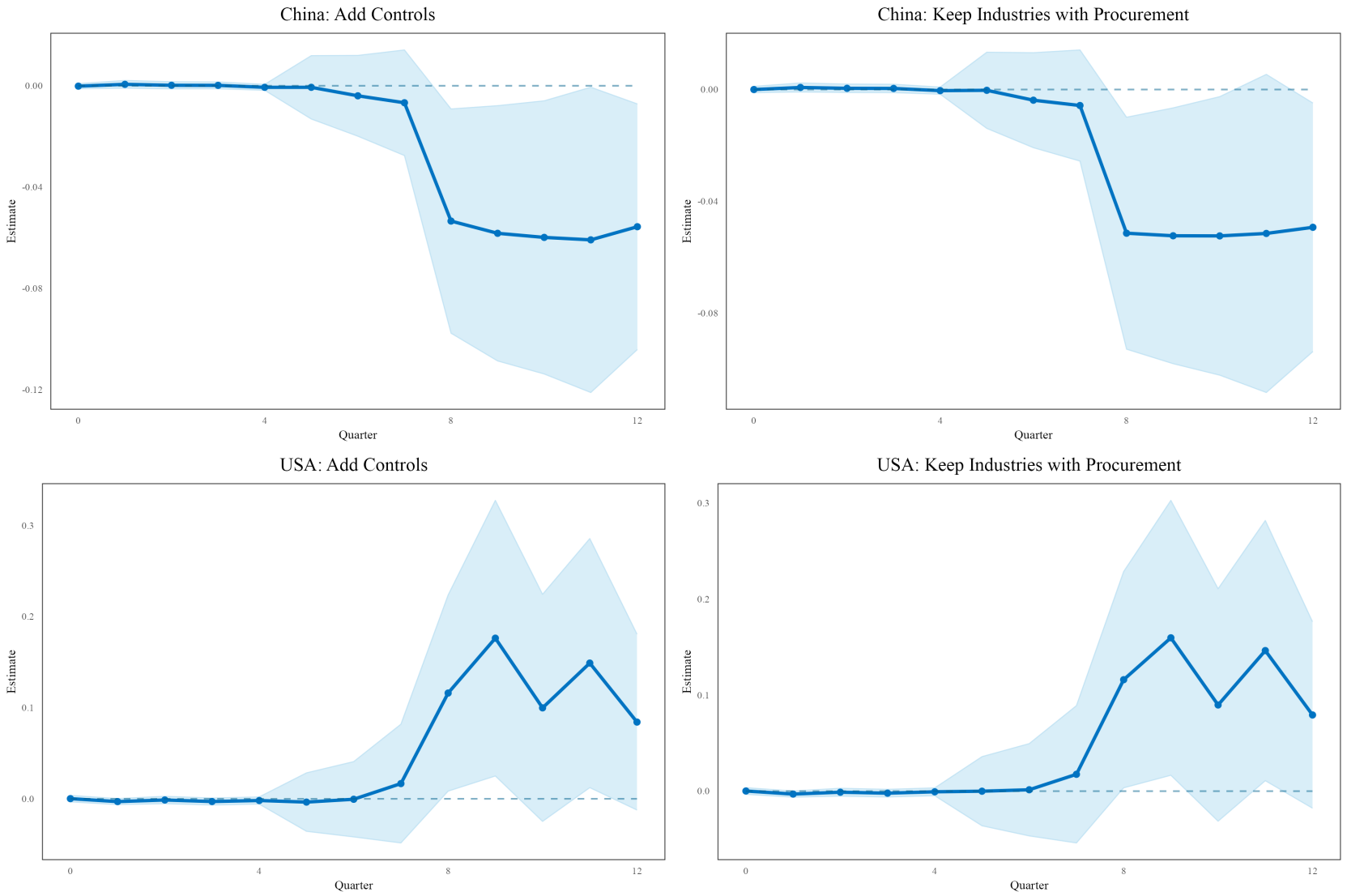


Figure 2: Robustness Checks: China and USA

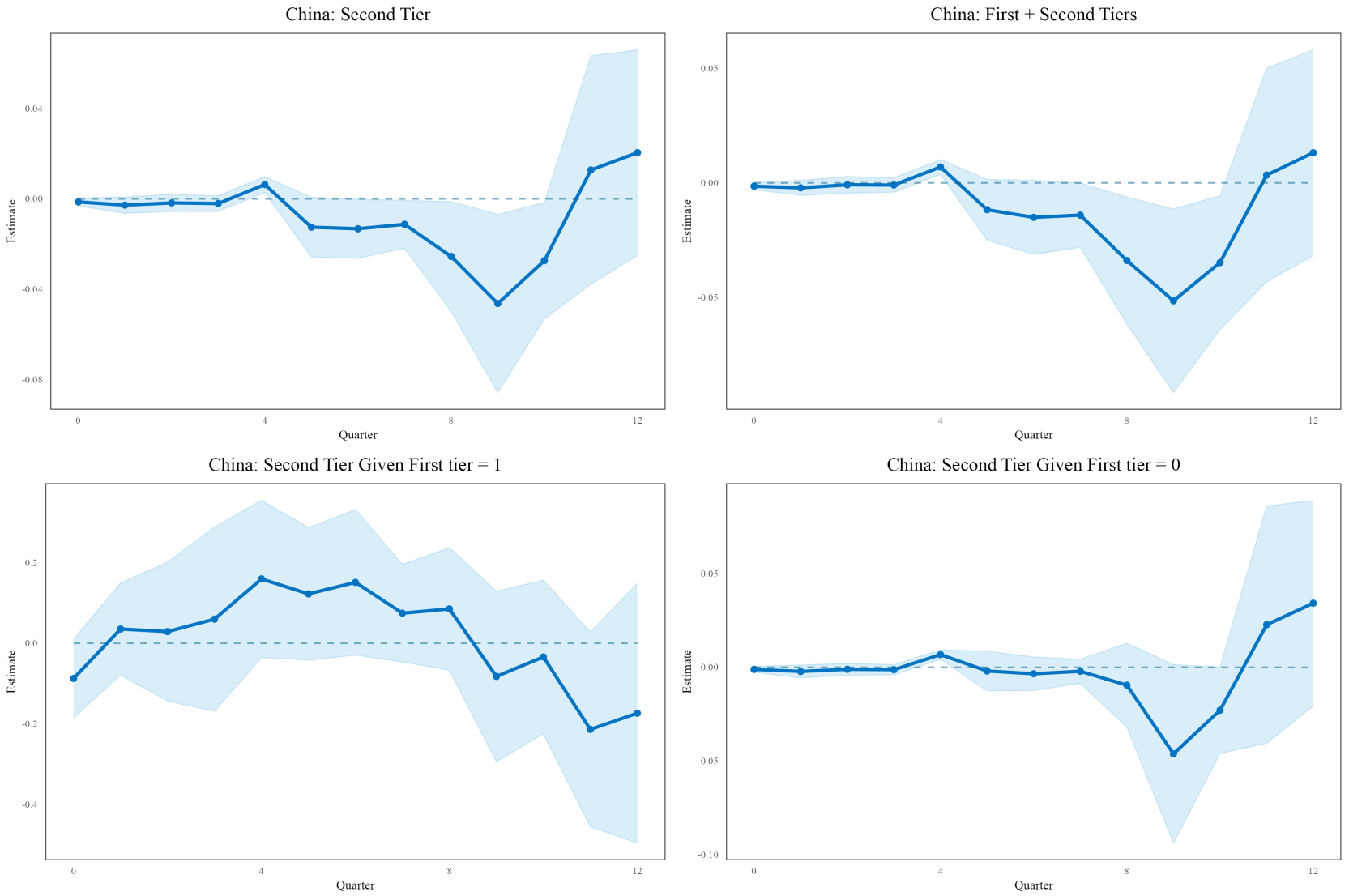


Figure 3: First and Second-tier Supply Chain

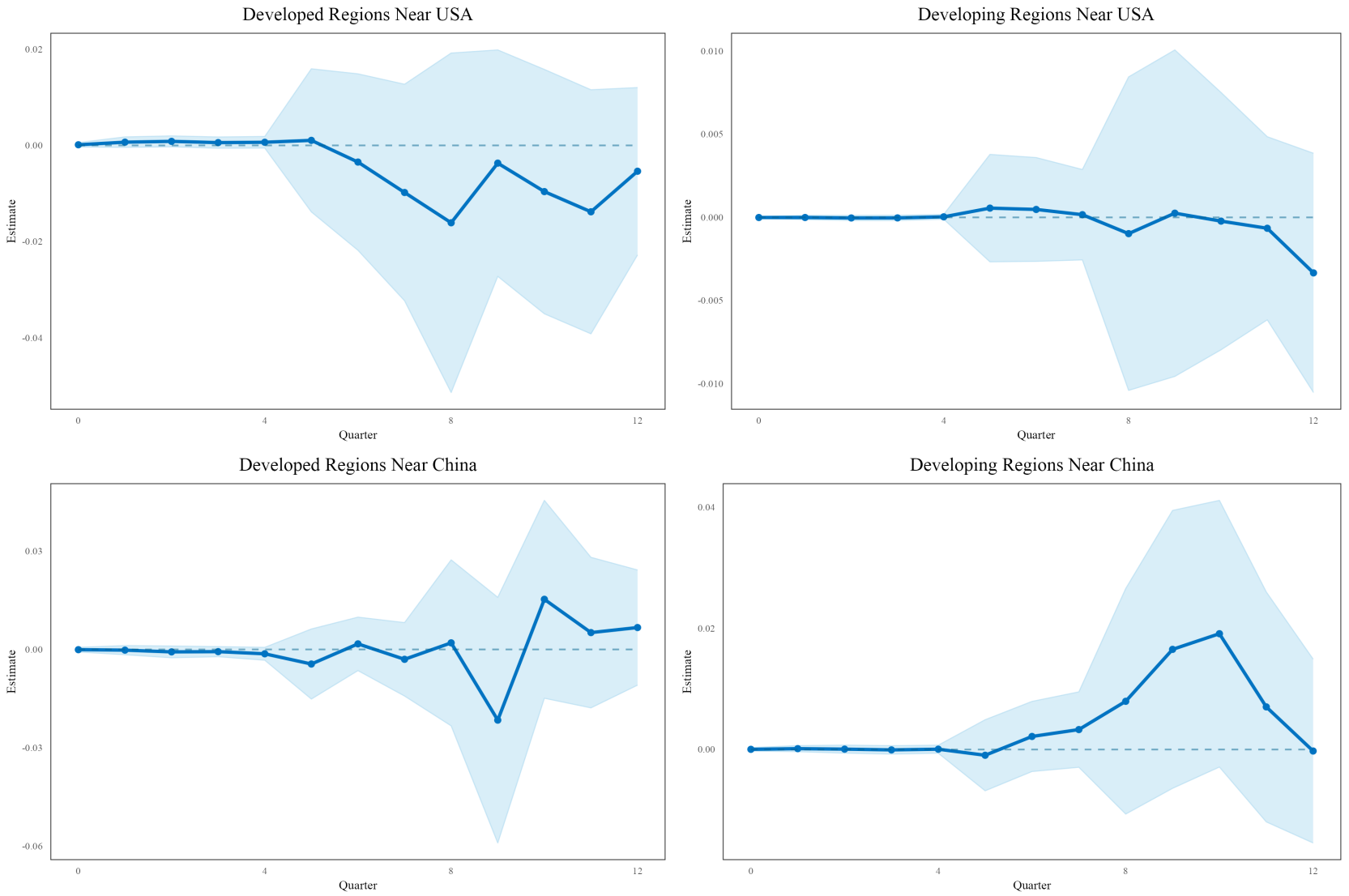


Figure 4: Nearshoring and Friendshoring: Aggregation



Figure 5: Nearshoring and Friendshoring

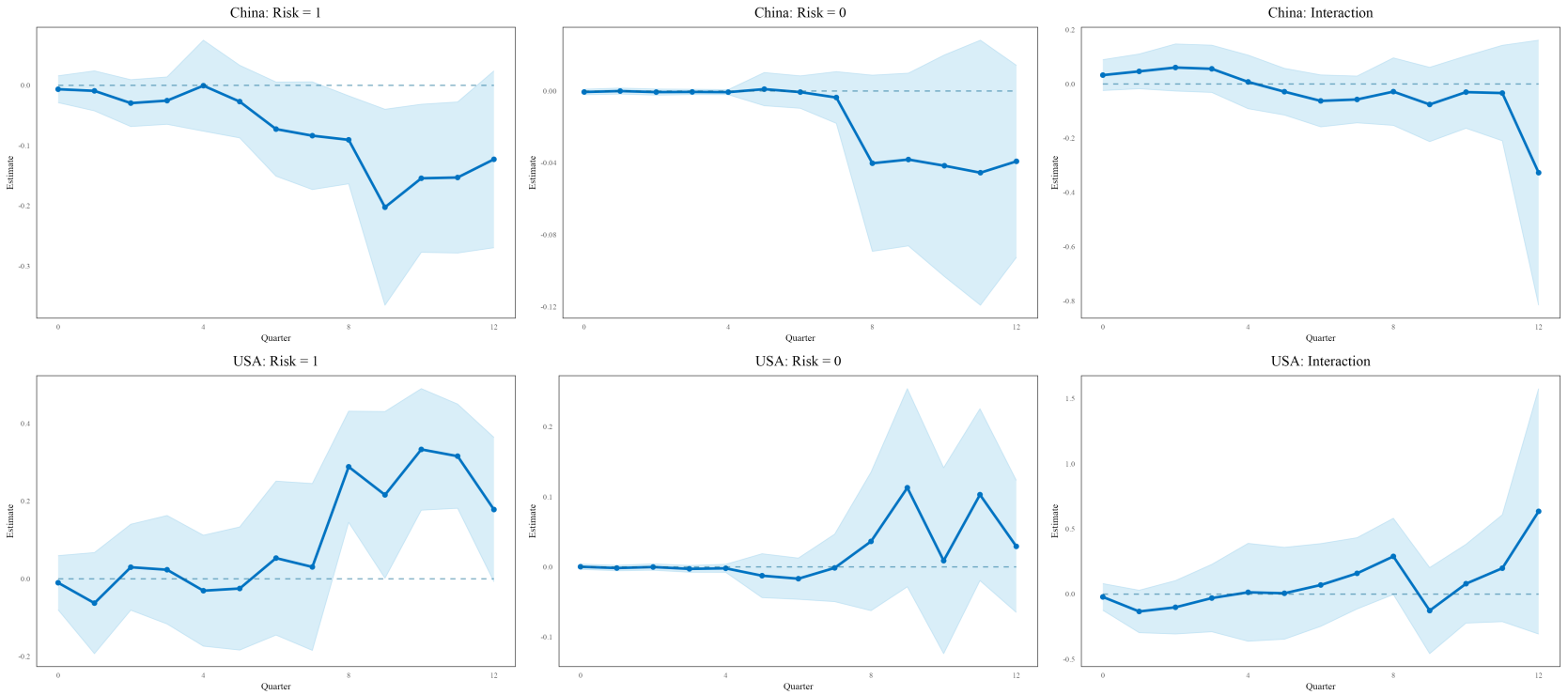


Figure 6: Heterogeneity on China Risk

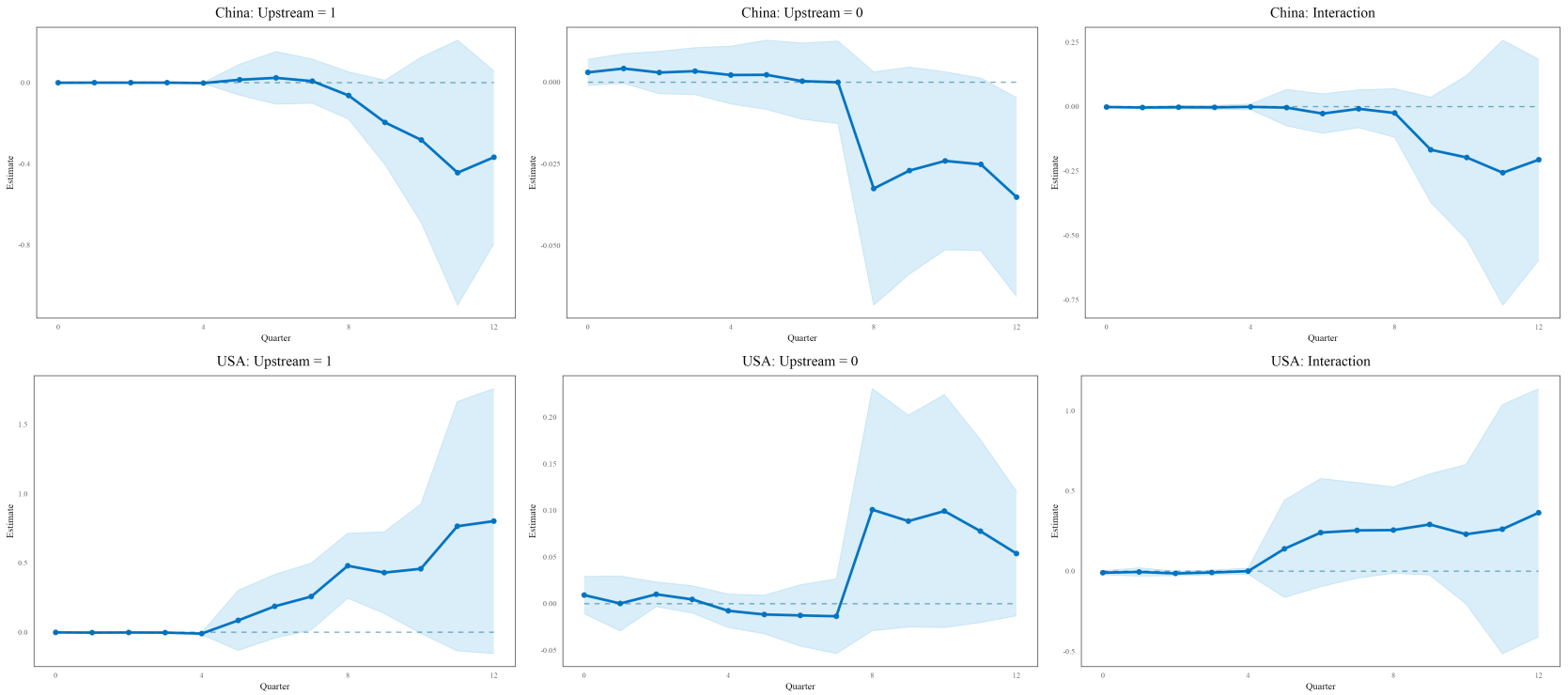


Figure 7: Heterogeneity on Upstreamness

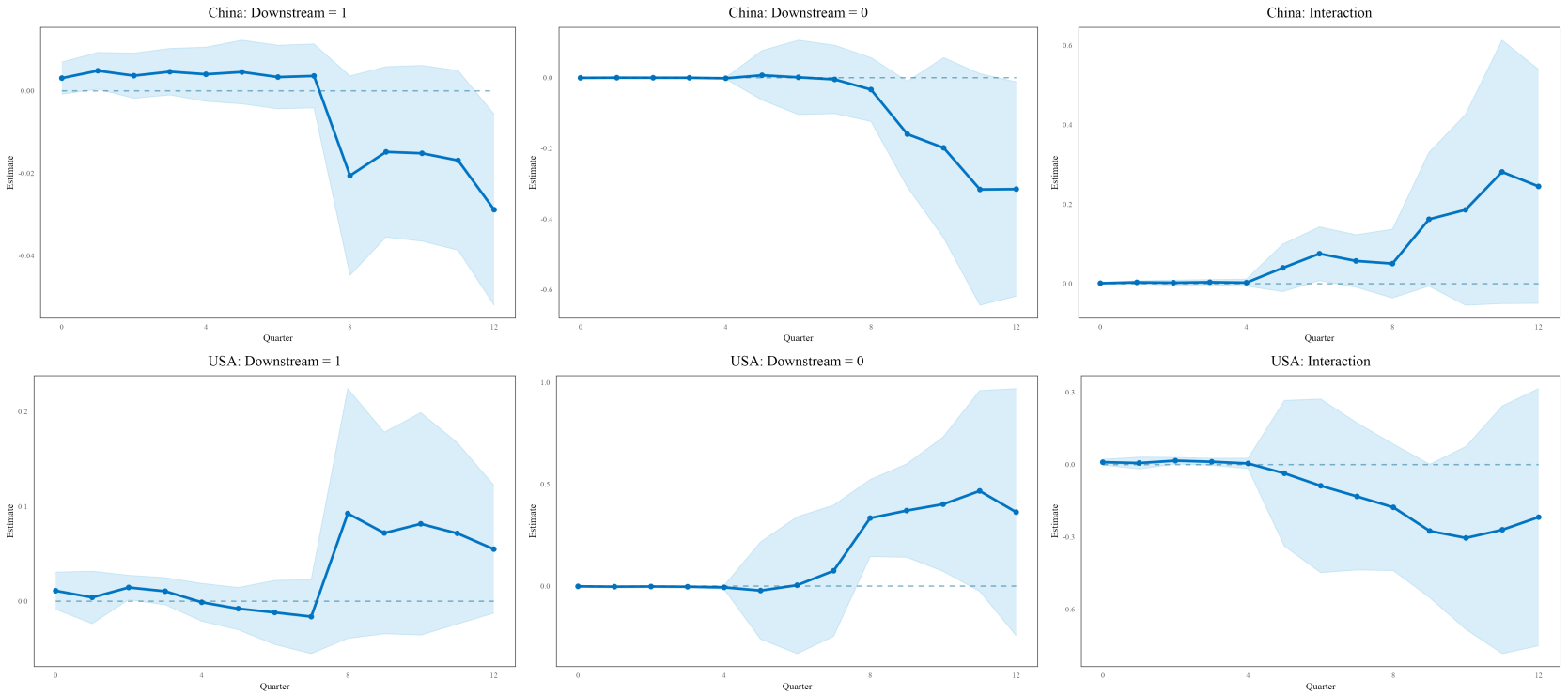


Figure 8: Heterogeneity on Downstreamness

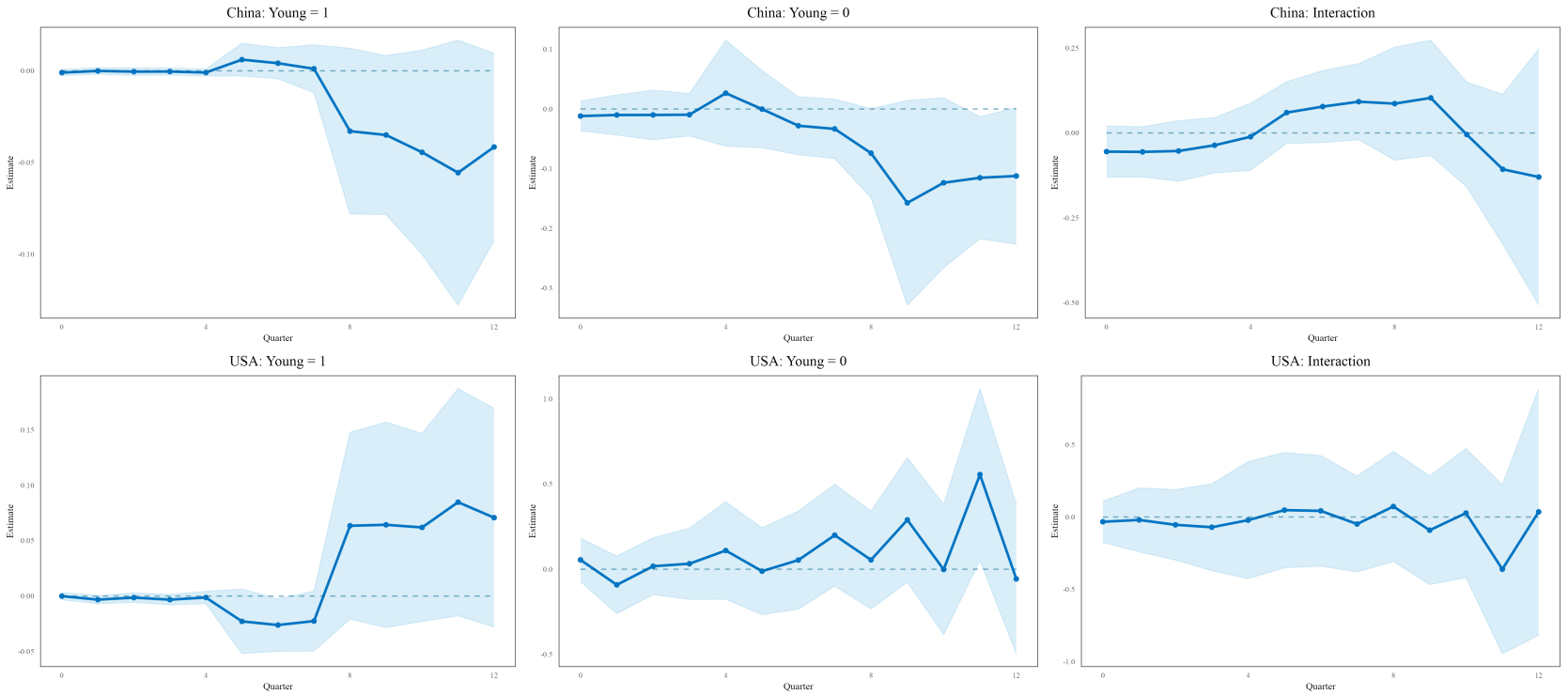


Figure 9: Heterogeneity on Age

Tables

Table 1: Summary Statistics

	Mean	S.D.	Obs
Panel A. Dependent Variables			
Number of Suppliers	21.094	43.691	36568
Number of China's Suppliers	0.817	4.622	36568
Share of China's Suppliers	0.020	0.061	36568
Number of USA's Suppliers	11.764	20.986	36568
Share of USA's Suppliers	0.648	0.274	36568
Panel B. Independent Variable			
Amount of Procurement/Sales	0.004	0.076	36568
Total Asset (Ln)	8.237	2.027	36568
Long-Term Debt/Total Asset	0.299	0.251	36500
Earning-Per-Share	2.391	12.835	36544

Notes: This table provides summary statistics for key variables.