Geopolitical Risk and Supply Chain Reshoring

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Abstract. Leveraging a news-based measure of geopolitical risk (GPR) and cross-border customer-supplier relationship data, we investigate how U.S. manufacturers adjust their supply chains in response to GPR fluctuations. As anticipated, we find that escalating GPR prompts manufacturers to reduce their reliance on foreign suppliers. However, the overall size of manufacturers' supplier bases remains unaffected, suggesting that reshoring is a strategic adjustment aimed at maintaining operational robustness. Intriguingly, the impact of GPR on reshoring is asymmetric; decreases in GPR do not lead to increased foreign engagements, indicating a "stickiness" in the reshoring process. Confirming the established understanding of the direct benefits of reshoring, we show that reshoring is more prevalent among firms with substantial domestic sales and extensive outsourcing. Interestingly, we also uncover a risk-mitigation channel; firms with a broader or more geographically dispersed customer base experience less pressure to reshore during periods of heightened GPR, suggesting that downstream diversification can act as a mitigation strategy. Moreover, the reshoring trend is significantly stronger among firms headquartered in Democratic-leaning states. Granular analysis shows that terminating relationships with foreign suppliers is more likely when their specific country's GPR rises. Finally, the operational flexibility achieved through reshoring enhances firm performance during such periods, demonstrating the strategic importance of adaptable supplier network management in mitigating the impacts of GPR.

Key words: Geopolitical risk; supply chain; reshoring; customer diversification.

"*[Geopolitical risk is defined as the] threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations.*" (Caldara and Iacoviello 2022)

1. Introduction

1.1 Motivation and Research Questions

Geopolitical risk (GPR) is universally recognized by corporations as a pivotal factor that critically shapes the resilience of their supply chains.[1] Geopolitical conflicts and tensions frequently disrupt

[1] According to a survey by McKinsey (2022), executives cited GPR as a top threat to global economies and supply-chain disruptions as one of major obstacles for the growth of their companies. In the 25th Annual Global CEO Survey by PwC (2022), 32% of the responded executives viewed GPR as a top threat to growth; 71% of these executives further said that GPR could inhibit their ability to sell products or services.

supply chains due to heightened uncertainty, increased regulatory burdens from tariffs and sanctions, and trade route disruptions. These factors collectively lead to higher operational costs, greater complexity, and reduced efficiency (PwC 2022). Recent disruptions such as the China-U.S. Trade War, the Ukrainian-Russian conflict, and the COVID-19 pandemic have significantly affected global trade, prompting widespread concern among policymakers and corporate leaders regarding supply chain resilience (KPMG 2022). For instance, companies have committed over $200 billion as of March 2023 to manufacturing projects in the U.S. since Congress passed comprehensive subsidies in 2022 (*Financial Times* 2023). Cohen et al. (2018) emphasize that "With dynamic changes in global economic, political, and technological conditions, the design of global supply chain strategies has become critically important for executives."

Despite widespread concerns, empirical analysis of how corporations respond to GPR is still limited. As highlighted by Cohen and Lee (2020), while existing studies focus on uncertainties in demand and supply, there is a significant gap in understanding the impact of regional political climates on supply chain strategies. Our research aims to bridge this gap by examining how U.S. manufacturers reshore their supply chains in response to escalating geopolitical conflicts and tensions. Utilizing a news-based GPR index and cross-border supply chain data, we explore the extent to which U.S. manufacturers relocate their supply chains back to, or near, the U.S.—a strategy known as reshoring or nearshoring. Additionally, we aim to identify the factors that drive or mitigate these decisions.

Unlike other types of risks that are often localized to specific regions, industries, or firms, GPR typically exerts a broader impact, affecting areas far beyond those directly involved in conflicts or tensions. Ahern (2018) notes that GPR exhibits a contagious effect, influencing individuals even outside the conflict zones. Major events like terrorist attacks and wars not only destabilize markets and erode consumer confidence but also impede free trade globally, as Glick and Taylor (2010) observe. Compared to other types of uncertainties, geopolitical threats pose broader and more pervasive risks and contribute to the fragmentation of the global financial system. For example, the unpredictable nature of wars introduces a level of radical uncertainty that is unfamiliar to most investors, as no two conflicts are identical (*The Economist* 2023, 2024).

In response to rising geopolitical tensions, firms may anticipate increased risks associated with disruptions in supply inputs and elevated cross-border transaction costs. This anticipation is likely to prompt manufacturers to either source from closer, presumably safer domestic suppliers or to

reduce the overall size of their supplier base. We propose that reshoring represents a strategic response to mitigate dependence on distant, high-risk suppliers. However, restructuring supply chains brings both benefits and costs, including those related to transportation, communication, coordination, and managing supplier relationships. Drawing on transaction cost theory as detailed by Coase (1937) and Williamson (2008), we hypothesize that firms are likely to reduce their dependence on foreign suppliers when the benefits of proximity outweigh the associated costs during periods of heightened GPR.

To gain a deeper understanding of the trade-offs involved in reshoring, it is essential to identify the factors that influence this decision. Beyond the factors that can either enhance the benefits of reshoring or reduce the necessity for it, politics are increasingly playing a significant role. This is due to the divergent views held by the Democratic and Republican parties on globalization, trade liberalization, domestic employment, environmental policies, and the role of government (Conconi et al. 2014, Colantone and Stanig 2018). A survey by the Pew Research Center (2017) highlights that partisan polarization has been growing centered on fundamental values.[2]

Addressing Cohen and Lee's (2020) point that "factors that must be considered include the need to mitigate the impact of supply chain disruptions caused by both economic and political events," our study poses the following questions: (1) To what extent do U.S. manufacturers reduce their reliance on foreign suppliers and/or decrease their outsourcing levels as GPR rises? (2) Do certain factors provide greater incentives for U.S. manufacturers to reshore their supply chains in the face of increased supply chain disruptions, such as having a larger proportion of domestic sales or extensive outsourcing? (3) Conversely, do certain factors act as a hedge against GPR exposure, thereby reducing the necessity for reshoring, such as serving a diverse and geographically dispersed customer base? and (4) Do political factors, such as the political orientation of a firm's headquarters state, affect its reshoring strategy in response to increased GPR?

1.2 Data and Risk Measure

To test our hypotheses, we examine a baseline sample of 1,342 publicly listed U.S. manufacturers from 2003 to 2022. We utilize a firm-level GPR index developed by Caldara and Iacoviello (2022). This index is constructed by calculating the proportion of articles that mention adverse geopolitical

[2] According to the survey, the gap between Democrats and Republicans across 10 political values has expanded to an average of 36 percentage points in 2017, up from 15 points in 1994.

events, sourced from ten leading newspapers in the United States, the United Kingdom, and Canada, relative to the total number of articles published each month. These newspapers are selected for their extensive coverage of globally significant geopolitical events, frequently involving the U.S. We assess reshoring activities by analyzing data from the FactSet Revere database, specifically by tracking changes in the proportion of foreign suppliers within a firm's supplier portfolio, indicating reshoring efforts.

To provide more direct evidence on reshoring, we compiled a customer-supplier-linked panel to assess whether relationships with foreign suppliers are more likely to be terminated as the GPR in the suppliers' countries increases. Unlike our baseline tests, which use a general GPR index aggregating risk across all countries and only providing time-series variation, the country-specific GPR indexes offer more meaningful variations in GPR across countries and over time, enhancing identification. This dataset consists of 1,044 U.S. manufacturers and their 2,818 foreign suppliers from 42 countries throughout our sample period.

1.3 Findings and Implications

Our baseline analysis reveals a negative and statistically significant relationship between GPR and the proportion of foreign suppliers. Specifically, a substantial increase in GPR—such as the one observed during the Paris attacks in the fourth quarter of 2015, which was roughly a 2.6 standard deviation increase—resulted in a quarterly reduction of 0.64 percentage points in the proportion of foreign suppliers, which is equivalent to an annualized decline of 2.57 percentage points. This corresponds to a decline of 1.15% quarterly (4.62% annualized) relative to the sample mean. Further analysis differentiates between foreign suppliers in proximity, i.e., those from NAFTA countries (Canada and Mexico), and distant ones, i.e., those from non-NAFTA countries. We find a negative association between GPR and the proportion of distant foreign suppliers, whereas no significant association is observed for suppliers from NAFTA countries. This indicates that the documented shifts in supplier networks do not reflect nearshoring but rather reshoring.

Another important discovery is that GPR does not influence the overall size of manufacturers' supplier bases. Consequently, the observed reductions in the reliance on foreign suppliers, without corresponding decreases in the overall size of the supplier base, indicate that manufacturers are strategically reconfiguring their supplier networks rather than fundamentally altering their make-versus-buy decisions.

Although our results likely indicate that U.S. manufacturers mitigate risks by relying less on foreign suppliers when facing increased GPR, they may also suggest that companies increase the share of foreign suppliers when GPR decreases. To resolve this ambiguity, we employ change regressions. The outcomes from these regressions not only corroborate our baseline results but also confirm that leading changes in GPR do not influence the variations in foreign supplier shares, thus addressing concerns about reverse causality. By decomposing GPR changes into positive and negative shifts, we find that adjustments in foreign supplier shares occur only in response to positive shifts in GPR, while decreases in GPR do not lead to similar adjustments. This asymmetry aligns with behavioral economics theories, which suggest that individuals tend to place a greater weight on downside losses relative to upside gains in their decision-making processes (Kahneman and Tversky 1979). In the context of reshoring, this asymmetry implies a certain "stickiness" in reshoring decisions; once firms adjust their supplier base in response to rising GPR, they are slow to revert in response to decreases in GPR.

There are concerns that the GPR index may be imprecise, capturing general economic uncertainty rather than strictly geopolitical tensions. To address this, we include proxies for general economic conditions—such as equity market returns, volatilities, and sentiment—along with state-level macroeconomic and uncertainty variables in our models. The inclusion of these controls does not alter our findings. Additionally, considering the strong economic ties between Canada and the U.S., we control for the Canadian GPR index to isolate the specific impact of geopolitical uncertainties from broader economic conditions. Our adjusted results remain robust, reinforcing the validity of our conclusions.

Analyzing the panel data associated with country-specific GPR indexes, we find a significant increase in the likelihood of U.S. manufacturers terminating supplier relationships when there is a substantial rise in the GPR of the suppliers' countries. Specifically, a 2.6 standard deviation increase in country-specific GPR is associated with a 2.0 percentage point increase, or a 27.4% increase relative to the sample mean, in the probability of terminating supplier relationships.

We further investigate the factors that influence the trade-offs involved in reshoring decisions. Firstly, our analysis explores factors that contribute to the direct benefits of reshoring, which incentivize firms to relocate production domestically. Supply chain disruptions can significantly increase transaction costs for firms with distant suppliers. The direct benefits of reshoring stem from reducing these transaction costs by bringing suppliers closer to their customer bases, which

enhances coordination and facilitates quicker recovery from disruptions. Consequently, U.S. firms with substantial domestic sales or extensive outsourcing are better positioned to gain from reshoring and are more likely to prioritize it, especially during periods of heightened GPR. Our analysis supports this hypothesis.

Secondly, we examine factors that mitigate the adverse effects of disruptions, potentially reducing the necessity for firms to restructure their supplier networks. We hypothesize that firms with a broad or geographically diverse customer base have this flexibility. Portfolio-selection theory suggests that revenue diversification can decrease vulnerability to external risks (Markowitz, 1952). This is because serving a diverse customer base provides greater flexibility in reallocating revenue streams and assigning suppliers to customers (Dhaliwal et al., 2016). Similarly, a geographically diversified customer base acts as a buffer against cross-border transaction disruptions by enabling firms to more flexibly reallocate their customer portfolios across different countries. With this increased flexibility, such firms can better manage their overall exposure to GPR. Conversely, firms with concentrated customer bases are more vulnerable and are more likely to reduce their foreign suppliers in response to rising GPR. Our empirical findings substantiate this hypothesis.

Thirdly, political orientation can significantly impact corporate decisions related to supply chain reshoring. There are two competing views on this issue. On one hand, previous research indicates that managers with Republican-leaning tendencies often adopt more conservative corporate strategies, including lower levels of debt, reduced spending on capital and R&D, and less risky investments (Hutton et al., 2014). This conservative stance might lead to reduction in reliance on foreign suppliers in response to increased GPR. On the other hand, Democratic-led states, which often prioritize infrastructure and logistics development, may facilitate domestic manufacturing, thereby decreasing dependence on foreign suppliers. Our findings corroborate this latter view, revealing a trend towards increased domestic sourcing by firms headquartered in Democratic-leaning states.

Additionally, we explore the performance implications of reshoring, specifically how lagged changes in the proportion of foreign suppliers impact future firm value and operational performance. We find that more negative changes in foreign supplier proportions, occurring during periods of increasing GPR, are associated with significantly higher Tobin's Q and return on assets (ROA). However, these associations are not evident during periods of decreasing GPR.

Our findings have significant implications for both practitioners and policymakers. For practitioners, in an era of increasing geopolitical volatility, it is essential to enhance supply chain resilience. This can be achieved not only through traditional methods but also by cultivating a diversified and geographically dispersed customer base, in line with the resource-based view. For policymakers, it is crucial to understand that firms with narrow or less geographically diversified customer bases are more susceptible to GPR. While policy interventions may be effective in incentivizing "bringing manufacturing back home," they should also consider the long-term benefits of enabling firms to geographically diversify their customer bases as a strategy to mitigate risk. This approach may encourage firms to expand their markets beyond their home countries, aligning with broader economic trends toward global diversification.

1.4 Contributions to the Literature

Our research makes several important contributions to the operations management literature, particularly in relation to empirical studies on how firms respond to uncertainties within their business environments. Previous research has predominantly focused on shocks related to demand and supply, including demand shocks (Kesavan et al. 2016), financial crises (Udenio et al. 2018), natural disasters (Hendricks et al. 2020), and idiosyncratic risks (Wang et al. 2021). Our study diverges by investigating how geopolitical tensions impact the composition of firms' supplier bases.

While limited research has explored alternative forms of uncertainty, several recent papers study uncertainties induced by economic policy. For example, Fan et al. (2022) examine how trade tariff increases during the U.S.-China trade conflict influence U.S. firms' inventory levels and profitability, finding that a greater exposure to Chinese suppliers leads to more losses. Leung and Sun (2021) reveal that firms diversify their customer base in response to economic policy uncertainties (EPUs) and this behavior positively impacts firm performance. Additionally, Charoenwong et al. (2023) find that firms adjust their supplier bases across countries in response to EPUs. Our work extends these insights by exploring a novel form of uncertainty—geopolitical climates—and their effect on cross-border supply chain strategies.[3] Our study also adds to recent

[3] The nature of GPR differs considerably from that of EPU. Conceptually, EPU arises from unclear economic and trade policy remits, frameworks, and institutional structures that affect fiscal, monetary, and regulatory authorities (Baker et al. 2016). In contrast, GPR stems from the conflicts and tensions among hostile political stakeholders, which often result in wars, terrorism, and political unrest, impacting not only economic activities but also human lives. Moreover, GPR represents a tail risk with structural effects, whereas EPU tends to result from endogenous reactions

research on the stock market response to U.S. firms' reshoring decisions or global sourcing strategies (e.g., Brandon-Jones et al. 2017, Jain and Wu 2023, Cheng et al. 2024) by demonstrating that reshored firms experience improved profitability and shareholder value amidst GPR increases.

Furthermore, our study contributes to understanding the role of cross-firm heterogeneity in shaping firms' ability to respond to uncertainties. Prior studies have focused on the impact of supply-side factors or strategies on firm performance or their role in mitigating uncertainties. For instance, Jain et al. (2022) show that supplier diversification negatively impacts supply chain recovery speed, while long-term supplier relationships have a positive effect. Kesavan et al. (2016) find that firms with operational flexibility characterized by higher inventory turnovers can better manage demand uncertainties by promptly adjusting their order quantities. Guo et al. (2024) conduct a comprehensive review of inventory-related strategies that can serve as a hedge against both supply- and demand-side uncertainties. We extend this line of research by offering new evidence indicating that demand-side flexibility characterized by customer base diversification can reduce firms' vulnerability to uncertainties associated with supply chain disruptions.

2. Framework

2.1 Main Hypotheses

In this section, we present our theoretical framework and develop our hypotheses. Our theoretical framework draws upon the transaction cost theory (Williamson 2008) to elucidate the decision-making process of firms that engage in global sourcing. Within this framework, firms evaluate the trade-offs between the benefits, such as lower factor costs (Grossman and Helpman 2005), and the costs, including monitoring and coordinating expenses (Steven et al. 2014) and additional inventory investment due to extended lead time (Jain et al. 2014).

On one hand, heightened GPR may drive firms to proactively mitigate operational risks by consolidating their supply chains, anticipating potential future upward shocks to their transaction costs. According to the transaction cost theory, uncertainties elevate the firm's cost of maintaining and monitoring offshore sourcing (Grover and Malhotra 2003). GPR introduces such uncertainties. For instance, transportation to and communication with foreign manufacturing plants typically

to business cycle fluctuations and follow cyclical patterns (Ludvigson et al. 2021, Caldara and Iacoviello 2022). Therefore, GPR differs conceptually and represents a distinct construct from EPU and is often unpredictable. Our analysis confirms that the EPU (trade policy uncertainty (TPU)) and GPR indexes are only moderately (weakly) correlated (see Table OA.1 in the Online Appendix), indicating that GPR contains considerable variation independent of that of the EPU and TPU indexes. All our analyses explicitly control for both EPU and TPU indexes.

become highly unstable during periods of heightened GPR (Ellram et al. 2008). Additionally, geopolitical conflicts between nations may lead to discriminatory and retaliatory measures against firms originating from opposing countries, which increase the cost of sourcing between them, as evidenced by the recent U.S.-China trade wars (Charpin et al 2021, Fan et al. 2022). Therefore, withdrawing offshore manufacturing in response to heightened GPR aligns with rational decision making under the transaction cost framework.

On the flip side, reshoring imposes considerable fixed costs on firms due to the need for substantial initiation expenses in establishing new supplier links, while terminating existing supply chain links involves significant exit costs (Cohen and Lee 2020). Finding suitable supply chain partners incurs various upfront expenses, such as search costs and negotiation costs. Once new links are established, firms must make relationship-specific investments (Crawford 1990), which are tailored to specific relationships, including specialized equipment or facilities dedicated to serving a particular buyer or supplier, integrated systems facilitating operations or information flows between the parties, and joint R&D initiatives, among others. Consequently, firms must carefully weigh the benefits against the costs associated with the forging of new foreign relationships.

When the costs or risks of maintaining existing offshoring supply chains outweigh the benefits, firms may opt to terminate their current relationships. This decision can take a few forms. First, firms may decide to "reshore," establishing new links with domestic suppliers to mitigate potential disruptions stemming from adverse international geopolitical events, such as trade wars and border controls (Fan et al. 2022). Alternatively, firms may choose to shift their supplier base from high-GPR to low-GPR countries rather than opting for reshoring. They might also diversify their geopolitical exposure by spreading their suppliers across various locations, using a risk management approach similar to those used for other supply chain disruptions (Kleindorfer and Saad 2005, Hendricks et al. 2009).

We argue that when facing these options, firms may prefer reshoring over the others because GPR not only poses a direct risk but also adversely affects firms' perception about cross-border trade and interactions on a global scale (Glick and Taylor 2010, Charpin et al. 2021). Behavioral economics studies show that GPR, such as those arising from terror attacks, induce anxiety and insecurity among affected populations as well as individuals outside the immediate conflict zones (Metcalfe et al. 2011), resulting in a sustained negative sentiment in the capital market (Cuculiza

et al. 2020). Geopolitical tensions also generate negative externalities for nearby countries, such as increased immigration and refugee flows, which can have adverse implications for resource distribution, economic welfare, and international trade (Hatton 2016). Consequently, as GPR increases, firms may become more hesitant about engaging in cross-border interactions in general.

Drawing on the preceding arguments, we hypothesize a positive association between U.S. firms' reshoring decisions and GPR:

Hypothesis 1: GPR is significantly and negatively associated with the proportion of foreign suppliers, i.e., greater reshoring.

Despite an overall positive relationship between GPR and reshoring, the effect of GPR on firms' reshoring decisions is likely to stem from the increases rather than decreases in GPR, indicating an asymmetry. We argue that once firms adjust their supplier base in response to rising GPR, they are slow to revert even when GPR decreases. The economics literature has long recognized that agents often assign greater importance to potential losses compared to gains in their decision-making under uncertainty (Kahneman and Tversky 1979). Portfolio management studies also often use semi-variance, rather than total variance, to better capture downside losses than upside gains (Markowitz 1952). Moreover, firms face significant constraints in expanding their risk-taking activities due to creditors holding claims that depreciate with increasing firm risk (Ljungqvist et al. 2017). Consequently, while firms often proactively manage risk when GPR increases, they may face limitations in expanding their foreign supplier base when GPR decreases. Hence, we propose the following hypothesis:

Hypothesis 2: An increase in GPR reduces the proportion of foreign suppliers for U.S. firms, while a decrease in GPR does not.

Below, we further explore how the relationship between GPR and reshoring is moderated by several factors: those that enhance the direct benefits of reshoring, thereby driving firms to reshore; those that alleviate the adverse effects of disruptions, thereby reducing the need for reshoring; and political considerations that might influence these dynamics.

2.2 Factors Driving Reshoring

In this section, we propose that U.S. firms with a larger share of domestic sales or a higher level of outsourcing are more vulnerable to supply chain disruptions. Consequently, they tend to benefit

more from reshoring their supply chains, as it reduces the distance between their suppliers and customers and helps alleviate increases in transaction costs.

First, proximity between supply chain partners ensures rapid recovery during supply chain disruptions. Bringing them closer facilitates information sharing, trust-building, and streamlined coordination; conversely, greater distance can impede firm responsiveness and customer service levels (Cohen and Lee 2015). Moreover, prior studies find that managing suppliers across multiple countries introduces complexity and escalates coordination costs (e.g., Lampel and Giachetti 2013, Jain et al. 2022). Hence, for U.S. firms who have higher domestic sales, the benefit of reshoring their supplier network should be more pronounced in the face of increasing GPR.

Second, outsourcing involves contracting a firm's business functions and processes to external third-party providers. In comparison with vertical integration, outsourcing offers advantages such as cost savings, especially when tasks are outsourced to low-cost locations, and increased efficiency by leveraging the expertise of specialists. However, outsourcing or supply chain distance also comes with disadvantages such as reduced flexibility in adapting to market changes or supply disruptions (Choi and Krause 2006) and relinquished quality control (Steven et al. 2014, Bray et al. 2019). These drawbacks become more significant with the extent of outsourcing, making firms heavily reliant on outsourcing more susceptible in uncertain environments (Kleindorfer and Saad 2005, Alfaro et al. 2016).

Consequently, when confronted with GPR increases, firms with a larger proportion of domestic sales or a higher level of outsourcing can derive greater benefits from reshoring as this strategy reduces exposure to potential disruptions. Therefore, we hypothesize that a larger proportion of domestic sales or a higher degree of outsourcing will exacerbate the relationship between GPR and reshoring.

2.3 Factors Mitigating Reshoring

In this section, we argue that GPR can be diversified through the development of demand-side flexibility. A diversified customer base serves as a buffer against firms' exposure to GPR, operating on a similar principle as it does for mitigating other risks (Kleindorfer and Saad 2005, Leung and Sun 2021). This diversification includes both the breadth and geographical diversity of the customer base.

First, firms with more concentrated customer bases, whether in terms of the number of customers or their geographical distribution, are exposed to higher risk. Specifically, having a

broad or geographically diversified customer base creates operational flexibility, allowing firms to better navigate and manage uncertainty. When GPR shocks a region where a firm's customers are concentrated, it can result in heightened transportation or coordination costs associated with serving these customers. However, for firms with geographically diversified customers, maintaining a large or dispersed supplier base provides an advantage because this setup provides greater flexibility for reallocating revenue streams, especially when GPR escalates in specific regions.

Second, a diversified customer base increases the payoff to uncertainty because not all customers are simultaneously affected to the same extent. This diversification essentially provides firms with a real option, giving them an advantage over competitors to expand in less affected regions where existing customers are located (Kogut and Kulatilaka 1994, Sting and Huchzermeier 2014). Additionally, this argument aligns with the resource-based view (Hitt et al. 2016), suggesting that diversified revenue sources empower firms to navigate uncertainties and capitalize on growth opportunities beyond their existing markets or relationships. Moreover, prior research has shown that firms with a broader customer base have the ability to capitalize on economies of scope, enabling them to adjust production levels effectively in response to external changes (Leung and Sun 2021).

In summary, having a broad and geographically diverse customer base provides firms with greater flexibility, serving as a strategic lever to manage risk and thereby reducing the necessity to reshore. We hypothesize that the negative association between GPR and the proportion of foreign suppliers is stronger among firms with a smaller or less geographically diversified customer base.

2.4 Political Considerations

Finally, political orientation also influences preferences for reshoring, particularly evident in U.S. firms, where evidence shows that partisan and political polarization have significantly impacted corporate behaviors (Kempf and Tsoutsoura 2021, Kempf et al. 2023). Specifically, there may be speculation regarding whether firms based in Democratic- or Republican-leaning states are more inclined to reshore, considering two opposing effects.

On one hand, when geopolitical conflicts take center stage, individuals may lean towards conservative parties advocating national security, economic nationalism, protectionism, and even populism. When these parties come into power, they are inclined to implement conservative policies, erecting more barriers to cross-border exchanges of capital, human talent, and

technologies (Dinc and Erel 2013, Charpin et al. 2021). A survey by the Pew Research Center (2017) shows that Republicans tend to be less supportive than Democrats of an active global role for the U.S. Consequently, under political pressure to "take back control" and prioritize domestic employment and investment (Colantone and Stanig 2018), companies based in Republican-leaning states may find it increasingly challenging to sustain offshoring sourcing, especially if they heavily rely on domestic resources.

On the flip side, Democratic administrations typically prioritize infrastructure development projects, allocating resources towards the construction of roads, bridges, ports, and airports. These infrastructure investments play a crucial role in enhancing transportation and logistics networks, ultimately lowering costs for companies engaged in domestic manufacturing and facilitating smoother domestic production processes. Moreover, recent studies show that Democrats exhibit a lower propensity to support trade liberalization compared to Republicans (e.g., Conconi et al. 2014). For example, Che et al. (2022) investigate the voting in the U.S. House of Representatives between 1993 and 2010. They find that Congressional Democrats are more likely to vote for legislation aimed at protecting U.S. workers from international trade pressures or mitigating the impact of trade competition through the promotion of economic assistance programs.

Therefore, it remains ambiguous which effect will predominate. We empirically examine whether firms headquartered in states leaning Democratic or Republican are more inclined to reshore their supplier base.

3. Data and Variable Construction

3.1 Data and Sample Selection

Our sample is constructed using various databases. We collect detailed information, including company names, identifiers, countries, the start and end dates of each relationship reported, etc., of all suppliers for all U.S. manufacturing firms (SIC codes between 2,000 and 3,999) covered by the FactSet Revere database over the period from 2003:Q2 to 2020:Q3. Such relationship-level data is aggregated into a firm-quarter panel dataset, on which we construct our main measures of supplier foreignness. To measure GPR, we utilize monthly indexes of adverse geopolitical events and associated risks, which are constructed from text searches in mainstream newspapers. These

indexes are provided by Caldara and Iacoviello (2022).[4] These include the global GPR indexes, two component indexes of geopolitical threats and acts, and country-specific GPR indexes. All accounting and stock information for the U.S. manufacturing firms is retrieved from the CRSP/Compustat Merged Quarterly database. Variables capturing macroeconomic conditions in the U.S., including quarterly GDP and CPI growth rates, are downloaded from the Federal Reserve Bank of St. Louis (FRED) database. We also collect monthly indexes of economic and trade policy uncertainty from Baker et al. (2016) as prior studies (e.g., Leung and Sun 2021, Charoenwong et al. 2023) show that these indexes may determine firms' operational and reshoring decisions.[5]

After merging the datasets, we exclude manufacturing firms that have a total asset of less than $10 million at the end of the last quarter because small manufacturers are unlikely to consider reshoring as a viable strategy due to their resource constraints. Further, we follow Charoenwong et al. (2023) and remove observations where firms have no foreign suppliers in the previous quarter to alleviate potential selection issues as firms with and without foreign suppliers may differ substantially in various unknown aspects. Our sample construction yields a final sample consisting of 30,488 firm-quarter observations from 1,342 U.S. manufacturing firms over the period between 2003:Q3 and 2020:Q3.

In a subsequent section, we perform a more granular analysis of relationship termination at the customer-supplier-quarter level, examining whether the U.S. manufacturers' decisions to terminate existing relationships depend on their foreign suppliers' country-specific GPR. To facilitate such tests, we further download accounting and stock data for foreign suppliers from the Compustat Global Quarterly database and country-level macroeconomic variables, including annual growth rates in national GDP and CPI as well as real GDP per capita, from the World Bank. More details about the construction of this alternative customer-supplier linked dataset are provided in the relevant section subsequently.

[4] The GPR indexes are downloaded from https://www.matteoiacoviello.com/gpr.htm. We are grateful to Professors Dario Caldara and Matteo Iacoviello for making their indexes publicly available.

[5] The policy uncertainty indexes are downloaded from https://www.policyuncertainty.com/. We are grateful to Professors Scott Baker, Nick Bloom, and Steven Davis for making these indexes publicly available.

3.2 Measuring GPR

We measure GPR using a monthly index developed by Caldara and Iacoviello (2022), which is constructed based on automated text searches for words/phrases related to adverse geopolitical events and risk in mainstream newspaper articles.

Using a dictionary-based method, the authors compile bags of words whose occurrence in newspaper articles are related to geopolitical events and threats from a few sources: (1) geopolitical textbooks and the Corpus of Historical American English (e.g., "war on terror" or "nuclear weapon") and (2) manual searches in newspapers on days of high geopolitical tension (e.g., "terror," "blockade," "invasion," "troops," and "war)." After building the dictionaries, the authors formulate search queries that specify two words/phrases whose joint occurrence likely signifies adverse geopolitical events. These queries are organized into eight categories: (1) war threats, (2) peace threats, (3) military buildups, (4) nuclear threats, (5) terror threats, (6) beginning of war, (7) escalation of war, and (8) terror acts. In each category, the search query includes two sets of words: the first set consists of topic words (e.g., "war," "nuclear," or "terrorism"), and the second set includes "threat" words for categories (1) through (5) and "act" words for categories (6) through (8).[6]

The search queries are then performed on all published articles in 10 newspapers, including the *Chicago Tribune*, the *Daily Telegraph,* the *Financial Times,* the *Globe and Mail,* the *Guardian,* the *Los Angeles Times,* the *New York Times, USA Today,* the *Wall Street Journal*, and the *Washington Post*, over the period from 1985 to the end of our sample period. Based on the results from the automated text searches, the authors construct a monthly GPR index (*GPR*), defined as the number of articles discussing rising GPR divided by the total number of published articles in each month. The index increases with geopolitical tension and risk. To facilitate interpretation, we divide the index by 100 throughout the study.

Insert Figure 1 about here

In Figure 1, we plot the monthly GPR index over time (from 1985 to 2020), which shows considerable time-series variation. Consistent with the index readily capturing changing geopolitical tension and risk, we observe spikes in the index that coincide with the occurrence of

[6] In six of the eight categories, the search query involves the use of proximity searches (e.g., the first and second words occur within two words of each other). In the remaining two categories, the authors search for either two words appearing in the same article or for one bigram and one word appearing in the same article. For more details, please refer to Caldara and Iacoviello (2022).

several major geopolitical events, including the Gulf War in the early 1990s, September 11 attacks in 2001, the Paris attack in 2015, and the increasing tension between the U.S. and North Korea and Iran in the late 2010s. The mean (median) values, unreported, of the index over the period from 1985 to 2020 is 0.99 (0.90).

In addition to the overall GPR index, the authors construct two component indexes of geopolitical "threats" (*GPR threat*) and geopolitical "acts" (*GPR act*), the former capturing the *ex-ante* threats of future adverse geopolitical events and the latter the *ex-post* risk arising due to the realization of adverse geopolitical events. Specifically, *GPR threat* is constructed based on search queries of phrases related to threats and military buildups, i.e., categories (1) through (5). *GPR act* is based on searches of phrases related to the realization or the escalation of adverse geopolitical events, i.e., categories (6) through (8).

Finally, the authors also construct country-specific indexes of GPR for 43 countries. These country-specific indexes are constructed by counting joint occurrences of the geopolitical terms and the name of the country (or its capital or main city) in three U.S. newspapers. For example, the GPR index for Japan is defined as the proportion of articles meeting the inclusion criterion for the GPR index and containing the words "Japan" or "Tokyo."

3.3 Foreign Suppliers

To capture U.S. manufacturers' reshoring decisions, we construct variables based on the composition of their supplier base. To examine whether GPR drives U.S. manufacturers' decisions to reduce their reliance on foreign suppliers, we calculate the proportion of non-U.S.-based suppliers in a given firm-year-quarter as follows:

$$\%\ of\ foreign\ suppliers_{it} = \frac{\#\ of\ foreign\ suppliers_{it}}{Total\ \#\ of\ suppliers_{it}}, \quad (1)$$

where *Total # of suppliers*$_{it}$ is the total number of suppliers manufacturing firm *i* has in year-quarter *t*; *# of foreign suppliers*$_{it}$ is the total number of foreign suppliers manufacturing firm *i* has in year-quarter *t*.

We further divide the foreign suppliers into two groups. The first consists of non-U.S. suppliers from countries that are geographically near to and have mutually maintained close trade ties with the U.S., including Canada and Mexico, both of which are signatories of the North American Free Trade Agreement (NAFTA) with the U.S. The second consists of suppliers from the remaining

countries that are out of the NAFTA and relatively far away from the U.S. geographically. We then construct two additional foreign-supplier variables as follows:

$$\%\ of\ foreign\ (far)\ suppliers_{it} = \frac{\#\ of\ foreign\ (far)\ suppliers_{it}}{Total\ \#\ of\ suppliers_{it}}\ , \quad (2)$$

$$\%\ of\ foreign\ (near)\ suppliers_{it} = \frac{\#\ of\ foreign\ (near)\ suppliers_{it}}{Total\ \#\ of\ suppliers_{it}}\ , \quad (3)$$

where *# of foreign (far) suppliers*$_{it}$ [*# of foreign (near) suppliers*$_{it}$] is the total number of non-NAFTA [NAFTA] foreign suppliers of manufacturing firm *i* in year-quarter *t*.

Moreover, we measure the size of the supplier base using the natural logarithm of the total number of suppliers and use it as an additional dependent variable in the baseline analysis.

3.4 Descriptive Statistics

Table 1 presents descriptive statistics for our sample by year. The coverage by FactSet Revere database appears to increase gradually over time. In 2003:Q3, our sample contains 184 firms and it has increased to 708 firms in 2020:Q3. The average number of firms per year-quarter is 442. Both the number of suppliers and the number of foreign suppliers increase steadily over our sample period. Specifically, the average number of suppliers in 2003:Q3 is 9.8 and 2.5 of them are foreign, while there are on average 16.4 suppliers in total with 9.9 being foreign in 2020:Q3. To gauge whether U.S. manufacturers indeed contract more with foreign suppliers over the years, we turn to the average proportion of foreign suppliers (*% of foreign suppliers*). Our statistics reveal a similarly increasing trend in average *% of foreign suppliers* over our sample period. Specifically, the average proportion of foreign suppliers in 2003:Q3 is 46.6%, while that in 2020:Q3 has gone up to 60.8%. Overall, our descriptive statistics show that U.S. manufacturers have increasingly used suppliers from abroad over the recent two decades.

Insert Table 1 about here

Table 2 reports summary statistics of the main variables in our study. The mean (median) of *% of foreign suppliers* in our sample is 55.7% (50.0%), and those of *% of foreign (far) suppliers* and *% of foreign (near) suppliers* are 51.6% (50.0%) and 3.9% (0.0%), respectively. The mean (median) of *# of suppliers* is 12.4 (5.0). The pairwise correlations of the variables can be found in Table OA.1 of the Online Appendix.

Insert Table 2 about here

4. Empirical Results

4.1 GPR and Supply Chain Reshoring

To examine the relationship between GPR and U.S. manufacturers' reshoring decisions, we estimate the following baseline model:

$$\%\ of\ foreign\ suppliers_{it} = \beta_0 + \beta_1\, GPR_{t-1} + \delta \cdot X_{it-1} + \lambda \cdot M_{t-1} + Firm\ FE + Industry \times Year\ FE + Industry \times Calendar\ quarter\ FE + \varepsilon_{it}, \quad (4)$$

where i denotes a manufacturer and t denotes a year-quarter. *% of foreign suppliers* represents our variables of foreign suppliers, defined in Section 3.3; GPR_{t-1} is the GPR index compiled by Caldara and Iacoviello (2022) and explained in Section 3.2; the GPR index measured at the end of fiscal quarter $t - 1$ is used to explain the proportion of foreign suppliers in the current quarter.

X_{it-1} is a vector of one-quarter-lagged firm control variables that may affect firms' operating and reshoring decisions, including the natural logarithm of total assets (*ln(TA)*), return on assets (*ROA*), the ratio of R&D expenses to total sales (*R&D/Sale*),[7] financial leverage (*Leverage*), the tangibility of firm assets (*Asset tangibility*), the proportion of selling, general, and administrative expenses in total sales (*SG&A/Sale*), the natural logarithm of firm age (*ln(Age)*), and the 3-digit SIC industry sales Herfindahl–Hirschman index (*HHI*). The detailed definitions of the variables included can be found in Appendix A.1. All continuous variables are winsorized at the 1st and 99th percentiles.

Since *GPR* is a time-series variable, we are unable to include time fixed effects in equation (4) to completely sweep out unobserved heterogeneity across time. Nonetheless, to account for the effect of unobserved marketwide shocks on manufacturers' reshoring decisions, we include four macroeconomic variables (in vector M_{t-1}). The first two are the lagged economic and trade policy uncertainty indexes (EPU_{USA} and TPU_{USA}), compiled by Baker et al. (2016) using textual analysis on newspapers. Charoenwong et al. (2023) document that U.S. economic and trade-related policy uncertainties significantly drive U.S. firms' reshoring decisions. As Table OA.1 of the Online Appendix shows, the pairwise correlation between *GPR* and EPU_{USA} has a coefficient of -0.42 and that of the correlation between *GPR* and TPU_{USA} is only -0.03. Thus, despite a moderate correlation at best, GPR contains substantial variation that is independent of those of the U.S. economic and

[7] Our R&D variable (*R&D/Sale*) has outliers even after winsorization due to some firms having very small sales in some periods. All our test results are robust to using an alternative ratio of R&D expenses to total assets. These results are available upon request.

trade policy uncertainty indexes. Nonetheless, we control for the two policy uncertainty indexes throughout our analysis to isolate the effect of GPR.

The third and fourth are the lagged quarterly growth in GDP and CPI (*ΔGDP* and *ΔCPI*) in the model capturing economic growth and inflation. Moreover, we include industry-year interacted fixed effects to eliminate industry-specific annual trends and industry-calendar-quarter interacted fixed effects to account for potential industry-specific seasonalities.

Firm fixed effects are included in equation (4) to control for the effect of time-invariant unobserved firm characteristics on manufacturers' reshoring decisions. The identification of the relationship between GPR and reshoring decisions relies on their within-firm variation. Standard errors are double-clustered at the firm and year-quarter levels.

Insert Table 3 about here

Table 3 reports the estimation results for equation (4). In column (1) with *% of foreign suppliers* as the dependent variable, we find that the estimate on *GPR* is -0.013, significant at the 5% level, consistent with our hypothesis that GPR is conducive to manufacturers' reshoring decisions. In economic terms, a large increase in *GPR* of 0.495 (e.g., during the Paris attacks in 2015:Q4), i.e., about 2.592 (= 0.495/0.191) standard deviations in *GPR*, reduces the proportion of foreign suppliers by 0.64 (= 0.495 × -0.013) percentage points on a quarterly basis (annualized = 2.57 percentage points), corresponding to a decline of 1.15% (annualized = 4.62%) relative to the sample mean.

In columns (2) and (3), foreign suppliers are divided into two groups, the first consisting of foreign suppliers from geographically far and non-NAFTA countries and the other comprising NAFTA suppliers, i.e., those from Canada and Mexico. In column (2) where *% of foreign (far) suppliers* is the dependent variable, the estimate on *GPR* is -0.013 and significant at the 1% level. On the other hand, column (3) shows that *GPR* has an insignificant relationship with *% of foreign (near) suppliers*. The evidence suggests that GPR induces manufacturers to switch from suppliers of geographically far and non-NAFTA countries back to those in the U.S. as opposed to nearshoring (i.e., switching to those in NAFTA countries).

Finally, we examine whether GPR also affects the manufacturers' supplier base. In column (4), we use *ln(# of suppliers)* as the dependent variable, finding that the association between GPR and the supplier base size is small and insignificant. This suggests that GPR affects the composition

rather than the overall size of the supplier base, thus lending more evidence consistent with supply chain reshoring. Overall, our evidence lends support to Hypothesis 1.

4.2 Change-On-Change Regressions

In this section, we estimate an alternative first-difference version of our baseline model of equation (4):

$$\Delta\%\ of\ foreign\ suppliers_{it} = \beta_0 + \beta_1\, \Delta GPR^{\,at\ t=-1} + \delta \cdot \Delta X_{it-1} + \lambda \cdot \Delta M_{t-1} + Industry \times Year\ FE + Industry \times Calendar\ quarter\ FE + \varepsilon_{it}, \quad (5)$$

where all variables are quarterly changes instead of in level; $\Delta GPR^{\,at\ t=-1}$ is the one-quarter lagged quarterly changes in *GPR* (i.e., changes from $t-2$ and $t-1$). This first-difference model allows us to: (1) examine whether our baseline results are robust to an alternative estimation approach, (2) assess the dynamics and timing of the effect of GPR, and (3) detect whether the effects of increasing and decreasing GPR on foreign suppliers is asymmetric.

Insert Table 4 about here

The estimation results of equation (5) are reported in Table 4. As column (1) shows, the estimate on $\Delta GPR^{\,at\ t=-1}$ is negative (coefficient = -0.008) and significant at the 5% level. Despite being somewhat smaller, the economic magnitude is not far off from our baseline model estimate (see column (1) of Table 3). Thus, our results remain robust when examined using this alternative estimation approach in changes.

In column (2), we examine the dynamics of the GPR effect by augmenting equation (5) with $\Delta GPR^{\,at\ t=0}$ and $\Delta GPR^{\,at\ t=+1}$. If the estimate on $\Delta GPR^{\,at\ t=+1}$ is statistically significant, it would mean that future changes in *GPR* can affect firms' past reshoring decisions, i.e., a finding that is suggestive of endogeneity problems such as reverse causality (from firms' reshoring decisions to future changes in GPR). Reassuringly, we find that the estimate on $\Delta GPR^{\,at\ t=+1}$ is small and statistically insignificant, thus ruling out the reverse causality concern. The estimate on $\Delta GPR^{\,at\ t=0}$ is moderately negative (coefficient = -0.008) but statistically insignificant. More importantly, after controlling the contemporaneous and leading GPR changes, the negative estimate on $\Delta GPR^{\,at\ t=-1}$ becomes larger (coefficient = -0.011) and significant at the 1% level. The economic magnitude of this estimate is remarkably close to that of the baseline estimate from Table 3.

In column (3), we further include leading GPR change variables up to 4 quarters ahead, again finding that the estimates on these leading GPR change variables are all small and insignificant.

The estimate on $\Delta GPR^{\,at\ t=-1}$ becomes -0.013 and is significant at the 5% level, which is almost identical to that of the baseline estimate in Table 3.

In column (4), building on the model specification of column (3), we decompose our variable of interest, i.e., $\Delta GPR^{\,at\ t=-1}$, into two variables, one capturing the positive changes and other the negative changes. Specifically, $+ve\ \Delta GPR^{\,at\ t=-1}$ ($-ve\ \Delta GPR^{\,at\ t=-1}$) takes on the value of $\Delta GPR^{\,at\ t=-1}$ when $\Delta GPR^{\,at\ t=-1}$ is positive (negative), and it takes on the value of zero otherwise. As shown, we find that the negative estimate on $+ve\ \Delta GPR^{\,at\ t=-1}$ is large and significant at the 1% level, whereas that on $-ve\ \Delta GPR^{\,at\ t=-1}$ is small and insignificant. The evidence suggests that the significantly negative effect of GPR changes stem mainly from the increases in GPR as opposed to its decreases, thus lending support to Hypothesis 2.

4.3 GPR: Threat or Act?

A related question is whether the positive association between GPR and reshoring we document stems from the *ex-ante* threat or the *ex-post* realization/escalation of GPR and tensions, or both. To address this question, we perform baseline tests regressing *% of foreign suppliers* on the two component indexes of geopolitical threat (*GPR threat*) and acts (*GPR act*) and report these results in Table 5.

Insert Table 5 about here

In column (1), the estimate on *GPR threat* is -0.009 and significant at the 5% level. In column (2), we find a similarly negative relationship between *% of foreign suppliers* and *GPR act* (coefficient = -0.008) but its statistical significance is relatively weaker (i.e., significant at the 10% level). Overall, both geopolitical threats and acts are significant determinants of U.S. manufacturers' reshoring decisions.

4.4 Robustness Tests

In this section, we perform robustness checks for our baseline tests and report them in Table 6. For brevity, we only report the estimates for the main independent variables of interest, along with the number of observations and the R-squared values.

Insert Table 6 about here

First, in row (1), we use an alternatively constructed GPR index (*GPR basic*) that is based only on core words (as opposed to broader sets consisting of both core words and synonyms) when performing the search queries. Our results hold.

Second, it may not be entirely clear whether our analysis should be performed using the levels or first differences of the GPR index as both could yield interesting insights. For instance, studying the first differences in GPR may address the question of whether manufacturers' reshoring decisions are affected by short-term shocks in GPR. While our focus is on the levels of *GPR* in our main tests, as robustness check, we re-estimate the baseline tests, replacing *GPR* with its quarterly changes (*ΔGPR*), in row (2). The estimate on *ΔGPR* is -0.012 and significant at the 1% level, closely aligning with the results from our baseline tests using *GPR*.

Third, we check the robustness of our results by using alternative fixed effects specifications. In rows (3) and (4), we use alternative 2- and 3-digit SIC industry classifications for constructing the industry-year and industry-calendar-quarter interacted fixed effects. In row (5), we exclude the industry-interacted fixed effects and retain only year and calendar-quarter fixed effects in the baseline model. In row (6), we drop firm fixed effects in the baseline model. Our results hold in the above tests.

Fourth, because time fixed effects cannot be included in our baseline tests, and if negative shocks from financial crises lead to increased geopolitical tensions and simultaneously influence U.S. manufacturers' operations decisions, our results may be driven by inadequate control for these omitted negative shocks. Hence, in row (7), we exclude firm-quarter observations during crisis years, i.e., calendar years 2008 and 2009, confirming that our results are intact. The negative shocks of the global financial crisis do not account for our results.

Finally, instead of double clustering, we alternatively cluster standard errors at the firm level, finding that our results remain qualitatively similar.

4.5 Additional Controls for General Uncertainty and Economic Conditions

While our baseline model controls for various macroeconomic and policy uncertainty variables, a potential concern is that the newspaper-based GPR index might be subject to measurement errors and could potentially capture general uncertainty and/or economic conditions unrelated to geopolitical tensions. We take two approaches to address this concern.

Insert Table 7 about here

First, we augment the baseline model with additional proxies of general uncertainty and economic conditions and report these results in Table 7. In columns (1) and (2), we introduce two additional measures of general uncertainty: the lagged CBOE Volatility Index (*VIX*) and a text-based measure of equity market volatility (*EMV*) compiled by Baker et al. (2019) using textual

analysis on 11 mainstream newspapers. In columns (3), we control for the effect of market conditions by including a lagged stock market sentiment index compiled by American Association of Individual Investors (AAII) and the lagged CRSP value-weighted market quarterly index returns in the model. Since economic conditions and uncertainty may differ across states, in column (4), we introduce lagged annual state-level GDP growth, unemployment rates, and natural logarithm of state population to the model; we further include a state-level index of EPU compiled by Baker et al. (2022) using text searches of relevant key words in state local newspapers in the model. In all four columns, the estimates on *GPR* remain similar in both magnitude and statistical significance after these additional controls are included.

Second, we follow prior studies (e.g., Gulen and Ion 2016) and make use of the country-specific GPR index for Canada in our analysis. Canada and the U.S. share strong economic ties with each other due to extensive trade and cross-border investments; hence, shocks affecting general economic uncertainty and/or conditions in the U.S. likely also drive those in Canada, despite to a lesser extent, and vice versa. If the GPR index constructed based on text searches on mainstream U.S. newspapers in part captures general economic uncertainty and/or conditions unrelated to geopolitical tensions, we expect the Canadian GPR index to be driven by the same shocks to general uncertainty and/or conditions that impact the U.S. Therefore, we seek to eliminate such common shocks by explicitly controlling for the lagged Canadian GPR index (GPR_{Canada}) in the baseline model. As column (5) shows, our results remain robust after controlling for GPR_{Canada}.

Overall, the concern that the GPR index captures general and local economic uncertainty and/or conditions is unlikely to be severe.

4.6 Country-Specific GPR and Relationship-Termination Decisions

Our firm-level analysis thus far has shown that GPR is associated with a lowered reliance of manufacturers on foreign suppliers, consistent with reshoring. In this section, we construct a customer-supplier linked panel dataset and analyze the manufacturers' termination decisions.

The termination analysis has two benefits. First, analysis at the customer-supplier-year-quarter level allows us to uncover more direct evidence on whether GPR influences manufacturers' decisions to terminate existing relationships with foreign suppliers. Second, the GPR index (*GPR*) used in our baseline firm-level tests is an aggregation of geopolitical tensions/risks across countries and it only consists of time-series variation, which precludes the inclusion of time fixed effects in

the models. In the analysis here, we are able to measure the extent of GPR faced by the U.S. manufacturers using the country-specific GPR indexes of their foreign suppliers depending on the latter's country information. As such, we benefit from having considerably more meaningful variation across countries and time in GPR for identifying the relationship in question.

Based on the relationship information provided by the FactSet Revere database, we put together a customer-supplier-linked quarterly panel for our sample U.S. manufacturers. We retain customer-supplier pairs where the suppliers are non-financial and are based in a foreign country. For the foreign suppliers, we download their accounting and stock information from the Compustat Global Quarterly database and several country-level macroeconomic variables from the World Bank. After excluding observations with missing data, our final sample for the termination analysis consists of 75,752 observations from 1,044 U.S. manufacturing customers linked with 2,818 foreign supplier firms from 42 countries over our sample period.

To examine the relationship between foreign suppliers' country-specific GPR and U.S. manufacturers' termination decisions, we estimate the following linear probability model:

$$Termination_{ijt} = \beta_0 + \beta_1\, GPR\, country_{jt-1} + \delta_1 \cdot X_{it-1} + \delta_2 \cdot V_{jt-1} + \lambda_1 \cdot M_{t-1} + \lambda_2 \cdot C_{jt-1} + Pair\ FE + C.Industry \times Year\ FE + C.Industry \times Calendar\ quarter\ FE + S.Industry \times Year\text{-}Quarter\ FE + \varepsilon_{it}, \quad (5)$$

where i, j, and t denote a U.S. manufacturer, a foreign supplier, and year-quarter, respectively. $Termination_{ijt}$ is a dummy variable equal to one if the reported relationship between manufacturer i and foreign supplier j ends within year-quarter t, and zero otherwise. In our final sample, the unconditional mean of Termination is 7.3% (unreported). $GPR\ country_{jt-1}$ is the country-specific GPR index for foreign supplier j in year-quarter $t-1$.

The vector, X_{it-1}, consists of baseline firm control variables for manufacturer i in year-quarter $t-1$. The vector, V_{jt-1}, consists of the same set of baseline firm control variables for foreign supplier j in year-quarter $t-1$, except for the natural logarithm of firm age.[8] The vector, M_{t-1}, consists of the same set of U.S. economic and trade policy uncertainty and quarterly GDP and CPI growth rates as in equation (4). To control for the country-level economic conditions of foreign

[8] Firm age is defined as the number of years since a firm enters the database in question. We drop firm age for the foreign suppliers because the coverage of the Compustat Global Quarterly database only begins in 1989 and thus firm age is estimated with less accuracy given the shorter data history.

supplier *j*, C_{jt-1} is a vector containing the lagged national GDP and CPI annual growth rates and the natural logarithm of real GDP per capita.

Customer-supplier pair fixed effects are included in the model to eliminate any time-invariant unobserved heterogeneity in each customer-supplier dyad. To stay as close to our baseline model specification, we include customer firms' industry-year and industry-calendar-quarter interacted fixed effects in the model. Further, we include suppliers' industry-year-quarter interacted fixed effects to completely sweep out any time-varying industry-specific trends (inclusive of time fixed effects) for the foreign suppliers. Since *GPR country* varies across foreign suppliers' countries and over time, we double cluster standard errors at the suppliers' country and year-quarter levels.

Insert Table 8 about here

The estimation results of equation (5) are reported in Table 8. In column (1), we only include *GPR country* and the fixed effects, finding that *GPR country* enters the model positively (coefficient = 0.022) and significantly (at the 5% level). Column (2) reports the results based on the full model including the control variables. The coefficient on *GPR country* is 0.021 and similarly significant at the 5% level. Based on the estimates in column (2), a 2.592-standard-deviation increase (i.e., 0.952 = 0.367 × 2.592, unreported) in *GPR country* is expected to raise the probability of U.S. manufacturers in terminating an existing relationship with foreign suppliers by 2.00 percentage points (= 0.021 × 0.952), or 27.38% (= 0.0200/0.073) relative to the unconditional mean value 0.073 of *Termination*, on a quarterly basis.

Since our baseline tests show that the U.S. manufacturers do not reduce foreign suppliers from Canada and Mexico but rather from countries that are more geographically far and non-NAFTA, in column (3), we exclude all customer-supplier pairs where the foreign suppliers are from Canada and Mexico. The results are similar after excluding these pairs, consistent with our baseline test results at the firm level.

Overall, the results from our termination analysis show that when foreign suppliers' country-specific GPR escalates, the propensity of U.S. manufacturers in terminating relationships with them increases, consistent with Hypothesis 1.

4.7 Heterogeneity Tests

In this section, we examine the heterogeneous effect of GPR on manufacturers' reshoring decisions. First, due to the increased costs and challenges in coordinating relationships, firms with a larger share of domestic sales or a higher level of outsourcing tend to be more susceptible to supply

disruptions. When GPR escalates, such firms are likely to experience larger increases in transaction costs and thus can benefit more from reshoring their supply chains, suggestive of a more pronounced, negative association between GPR and the proportion of foreign suppliers.

To test this conjecture, based on sales data of geographical segments, we construct a dummy variable (*High % domestic sales*) that is equal to one if a firm's proportion of domestic sales is above sample median and zero otherwise. To capture the level of outsourcing, we collect firm-level data of vertical relatedness (*Vertical relatedness*), i.e., the potential of a firm's products to be vertically related to the other products sold by the same firm, from Frésard et al. (2020), who construct these data using textual analysis on firms' 10-Ks and dollar flows data between producers and purchasers from the BEA input-output (IO) tables. Specifically, *High degree of outsourcing* is a dummy variable equal to one if the inverse of 3-year (i.e., from year $t-2$ to t) average *Vertical relatedness* of a manufacturer is above sample median, and zero otherwise. We interact the two dummy variables with *GPR* to explain *% of foreign suppliers* in the baseline model.

Insert Table 9 about here

As columns (1) and (2) of Table 9 show, we find that the estimates on *GPR* × *High % domestic sales* and *GPR* × *High degree of outsourcing* are both negative and statistically significant at the 5% or higher, indicating that the negative relationship between *GPR* and foreign suppliers are significantly more pronounced among the firms with a larger share of domestic sales or a higher level of outsourcing, consistent with our conjecture.

Second, since firms with a narrower customer base and lower customer geographical diversity tend to have lower flexibility and capabilities in reallocating revenue streams or customer portfolios across different countries, they are likely to face a greater difficulty in handling the disruptions caused by rising GPR. Hence, we conjecture that the negative association between GPR and foreign suppliers is stronger among firms with a narrower customer base or a lower geographical scope. Specifically, we capture a firm's customer base size and geographical diversity with two dummy variables. The first is *Low # of customers*, which is a dummy variable equal to one if the number of customers a firm has is below sample median, and zero otherwise. The second is *High geographic segment sales HHI*, which is a dummy variable equal to one if a firm's sales concentration across geographic segments is above sample median and zero otherwise.

In columns (3) and (4) where the two dummy variables are interacted with GPR in the baseline model, we find that the interaction terms between *GPR* and them enter the model negatively and

statistically significantly (at the 10% level or higher). The evidence supports our conjecture that firms with a more diversified or geographically dispersed customer base have a reduced need to reshore.

Finally, the political orientation of the firms may moderate the GPR-reshoring relationship in two opposing ways. On the one hand, Republican-leaning states may be inclined to implement protectionist policies and erecting barriers to cross-border business activities, making it more challenging for companies to sustain offshoring sourcing. On the other hand, Democratic parties typically prioritize infrastructure investments, which in turn enhance logistic networks and lower the costs for companies engaged in domestic manufacturing. If the former (latter) effect dominates, we would find that the negative association in question to be more pronounced among firms in Republican-leaning (Democratic-leaning) states. To test this, we collect state governor party data from the openICPSR and National Governors Association databases and construct a dummy variable, *Democratic governor*, that is equal to one if a firm's headquarters state has a Democrat governor and zero otherwise.

As shown in column (5), the estimate on *GPR* × *Democratic governor* is -0.013 and statistically significant at the 5% level. This finding reveals that the negative relationship in question is significantly stronger among firms located in Democratic-leaning states compared to those in Republican-leaning states.

4.8 Implications of Reshoring for Firm Performance

A final question we ask is whether reshoring motivated by GPR considerations has implications for future shareholder value and firm performance. To test this question, we perform OLS regressions that examine the cross-sectional relationship between past changes in *% of foreign suppliers* and future firm value and profitability, and we further study whether such relationship differs between periods of increasing and decreasing GPR. Specifically, we estimate the following regression:

$$\textit{Firm performance}_{it} = \beta_0 + \beta_1\, \Delta\textit{\% of foreign suppliers}_{it-1} + \delta \cdot X_{it-1} + \textit{Industry} \times \textit{Year-Quarter FE} + \varepsilon_{it}, \quad (6)$$

where $\textit{Firm performance}_{it}$ is either the ratio of market capitalization to total assets (*Q*), i.e., a proxy of shareholder value, or return of assets (*ROA*) of manufacturer *i* in year-quarter *t*; $\Delta\textit{\% of foreign suppliers}_{it-1}$ is the changes in *% of foreign suppliers* of manufacturer *i* from quarters $t-2$ to $t-1$; a negative value in $\Delta\textit{\% of foreign suppliers}_{it-1}$ is likely to be indicative of reshoring. X_{it-1} is a

vector containing the baseline firm control variables. Industry-year-quarter interacted fixed effects are included in the model to sweep out industry-specific trends and time fixed effects. Standard errors are clustered at the manufacturer firm and year-quarter levels.

Insert Table 10 about here

Table 10 reports the estimation results of equation (6). In column (1) where *Q* is the dependent variable, we find that the estimate on *Δ% of foreign suppliers* is negative but insignificant. In column (4) with *ROA* as the dependent variable, the estimate on *Δ% of foreign suppliers* is negative, significant at the 10% level. The findings lend some support to the notion that reshoring is associated with higher future firm earnings.

In columns (2), (3), (5), and (6), we divide our sample into two groups based on whether GPR increases (i.e., $\Delta GPR > 0$) or decreases (i.e., $\Delta GPR < 0$) from year-quarters $t-2$ to $t-1$. In both columns (2) and (5), the estimates on *Δ% of foreign suppliers* are negative and significant at the 5% level when explaining both *Q* and *ROA* during periods of increasing GPR. However, columns (3) and (6) show that when GPR decreases, reshoring has an insignificant relationship with *Q* and *ROA* as shown by the small and insignificant estimates on *Δ% of foreign suppliers*. In other words, during periods of increasing GPR, firms with one-standard-deviation lower *Δ% of foreign suppliers* (0.086) have higher *Q* by 2.45 percentage points (= -0.086 × -0.286), i.e., 1.4% (= 0.0245/1.735) relative to the 1.735 (unreported) sample mean value of *Q*, or higher ROA by 8.0 basis points (= -0.086 × -0.009), i.e., 6.6% (= 0.0008/0.0121) relative to the 0.0121 (unreported) sample mean value of *ROA*, per quarter.

Overall, our evidence suggests that manufacturers' reshoring in response to escalating geopolitical tensions enhances firm performance and shareholder value. However, no such performance gain is observed when manufacturers alter the proportion of foreign suppliers during GPR decreases.

5. Conclusions

The design of global supply chain strategies has become increasingly critical due to the rising uncertainties in global political and economic regimes (Cohen et al. 2018, Cohen and Lee 2020). In particular, GPR is widely acknowledged as a critical factor affecting supply chain resilience due to their impact on the foundations of the free market and globalization. Unlike other uncertainties

confined to specific regions or industries, GPR poses broader and more pervasive risks, extending beyond directly involved areas.

Our empirical analysis shows that firms reduce dependence on foreign suppliers when faced with heightened GPR. However, this shift in supplier composition is not accompanied by changes in the overall size of their supplier bases, indicating a strategic reconfiguration in supplier network patterns rather than a fundamental change in the make-versus-buy structure. Interestingly, we observe an asymmetry in the impact of GPR between periods of increasing and decreasing GPR. Specifically, the negative effect is significant only during periods of rising GPR, whereas it becomes insignificant during periods of declining GPR.

Our findings carry significant implications. Firstly, our study emphasizes how heightened GPR prompts U.S. manufacturers to reconfigure their supply chains to mitigate rising transaction costs. Firms with substantial domestic sales and extensive outsourcing are more inclined to shift their supply chains domestically, capitalizing on the direct benefits of reshoring. Secondly, heightened GPR may lead to broader implications beyond merely reshoring supply chains. Firms might implement strategies to diversify and expand their customer bases across multiple countries as a risk mitigation measure during periods of increased GPR. This insight is important for policymakers, as it underscores the importance of supporting firms in diversifying their customer bases and establishing new customer relationships to better withstand future supply chain disruptions.

Finally, our results highlight the moderating role of firms' home state political dominance in the relationship between GPR and reshoring. Political parties have distinct views on issues such as globalization, trade policies, and economic regulations, and these perspectives can influence reshoring decisions through various incentives and policies. Amidst political polarization, business leaders should carefully consider how firms dependent on political resources might respond differently to GPR-induced reshoring incentives.

While our study represents one of the initial attempts to empirically document the impact of GPR on supply chain restructuring, it also underscores several avenues for future research. First, it is important to consider other forms of uncertainties, such as climate change, epidemic outbreaks, and the adoption of decentralized technology, which may have longer-term effects on supply chain network structure (Cohen et al. 2022). Examining the influence of these changes could add valuable insights to the current literature that has primarily focused on uncertainties at the

operational level. Second, other contingent factors that could influence individuals' views on geopolitical shifts, such as executives' political orientations, board diversity (e.g., gender, ethnicity, and professional backgrounds), and corporate culture (e.g., values related to innovation and risk-taking), may mitigate or amplify the effects of geopolitical tensions on supply chain reshoring. Furthermore, there is a need for theoretical research that integrates policy- and politics-induced uncertainties into supply chain risk management frameworks (e.g., Dong and Kouvelis 2022). As risks and uncertainties continue to shape global supply chains today, we hope this study encourages further investigations into how firms navigate geopolitical and other externalities.

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Figure 1
Geopolitical Risk Index by Caldara and Iacoviello (2022)

This figure plots the monthly geopolitical risk index compiled by Caldara and Iacoviello (2022) using text search on mainstream newspapers.

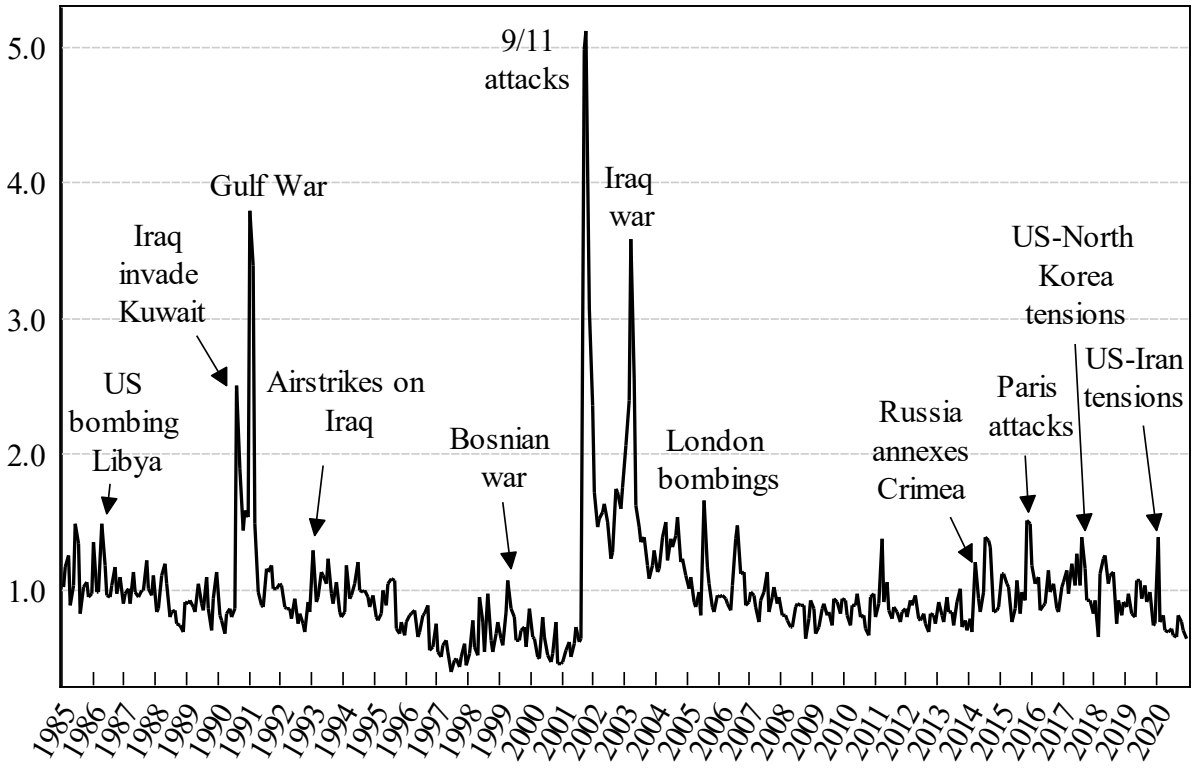

Table 1
Descriptive Statistics

This table reports the descriptive statistics of our main variables by year. Our sample is a firm-year-quarter panel dataset consisting of 1,342 U.S. manufacturing firms over the period between 2003:Q3 and 2020:Q3. *# of suppliers* is the total number of suppliers a firm has. *# of foreign suppliers* is the total number of non-U.S. suppliers a firm has. % of foreign suppliers is the proportion of non-U.S. suppliers a firm has. *GPR* is the news-based measure of geopolitical risk index proposed and compiled by Caldara and Iacoviello (2022).

Date	Obs.	*# of suppliers*	*# of foreign suppliers*	*% of foreign suppliers*	*GPR*
2003:Q3	184	9.8	2.5	46.6%	1.182
2003:Q4	203	8.8	2.3	48.1%	1.295
2004:Q1	193	8.9	2.4	50.6%	1.385
2004:Q2	209	11.9	3.0	47.5%	1.372
2004:Q3	247	9.7	2.7	49.4%	1.539
2004:Q4	247	9.7	2.6	49.4%	1.099
2005:Q1	257	9.9	2.6	49.5%	0.904
2005:Q2	253	10.5	2.8	48.0%	0.811
2005:Q3	254	9.4	2.5	44.7%	1.038
2005:Q4	237	9.8	2.4	44.3%	0.954
2006:Q1	236	9.6	2.4	46.3%	0.928
2006:Q2	238	10.5	2.6	46.1%	1.026
2006:Q3	267	8.5	2.2	47.2%	1.117
2006:Q4	259	8.3	2.2	50.4%	0.906
2007:Q1	259	8.4	2.2	50.8%	0.873
2007:Q2	260	9.2	2.4	49.9%	0.980
2007:Q3	278	8.5	2.3	51.5%	0.945
2007:Q4	273	8.7	2.3	52.6%	0.950
2008:Q1	275	8.6	2.3	53.1%	0.776
2008:Q2	275	9.8	2.7	50.3%	0.875
2008:Q3	324	8.0	2.3	49.2%	0.885
2008:Q4	310	8.3	2.4	50.2%	0.924
2009:Q1	314	8.1	2.4	50.0%	0.726
2009:Q2	308	8.8	2.5	49.5%	0.811
2009:Q3	317	8.0	2.3	49.9%	0.928
2009:Q4	316	8.2	2.4	50.8%	0.929
2010:Q1	325	8.4	2.5	51.0%	0.741
2010:Q2	334	8.6	2.7	50.3%	0.965
2010:Q3	340	8.0	2.6	51.4%	0.712
2010:Q4	337	8.4	2.9	52.7%	0.972
2011:Q1	354	9.1	3.2	52.6%	1.369
2011:Q2	374	9.8	3.7	53.1%	0.844
2011:Q3	413	9.3	3.9	57.0%	0.834
2011:Q4	430	8.6	3.7	57.4%	0.853
2012:Q1	427	9.4	3.9	56.6%	0.888
2012:Q2	439	9.6	4.0	55.5%	0.778
2012:Q3	455	10.0	4.2	55.1%	0.693
2012:Q4	472	10.3	4.2	54.6%	0.748
2013:Q1	471	10.8	4.5	55.1%	0.759
2013:Q2	476	10.5	4.3	53.1%	0.830
2013:Q3	483	11.1	4.9	56.5%	1.005
2013:Q4	489	11.2	4.8	55.7%	0.704
2014:Q1	503	11.7	5.1	55.5%	1.198
2014:Q2	520	11.9	5.6	55.6%	0.988
2014:Q3	552	12.0	5.9	57.7%	1.316

2014:Q4	558	11.7	5.7	57.3%	0.865
2015:Q1	556	12.6	6.1	56.6%	1.042
2015:Q2	570	12.5	6.1	56.4%	0.859
2015:Q3	581	12.3	6.3	57.6%	0.988
2015:Q4	578	12.8	6.6	57.6%	1.482
2016:Q1	594	14.1	7.1	56.6%	1.097
2016:Q2	620	13.9	7.4	58.9%	0.902
2016:Q3	625	14.0	7.8	59.1%	1.045
2016:Q4	635	14.3	7.9	59.5%	1.022
2017:Q1	644	15.5	8.4	58.2%	0.966
2017:Q2	661	15.1	8.5	59.9%	1.268
2017:Q3	674	15.0	8.6	59.8%	1.155
2017:Q4	659	15.2	9.0	59.7%	0.827
2018:Q1	664	16.2	9.3	59.5%	1.120
2018:Q2	662	16.1	9.4	59.2%	1.040
2018:Q3	676	15.9	9.5	60.2%	0.751
2018:Q4	677	15.8	9.4	61.1%	0.906
2019:Q1	683	16.7	9.5	59.3%	0.823
2019:Q2	685	16.8	9.7	59.4%	1.066
2019:Q3	703	16.3	9.5	59.3%	0.904
2019:Q4	692	16.9	9.9	59.9%	0.743
2020:Q1	696	17.2	9.8	58.6%	0.815
2020:Q2	700	16.5	10.1	61.5%	0.712
2020:Q3	708	16.4	9.9	60.8%	0.804
All	30,488	12.4	6.0	55.7%	0.965

Table 2
Summary Statistics

This table reports summary statistics of our main variables, including the number of observations, mean, standard deviation, and percentile statistics. Their detailed definitions can be found in Appendix A.1.

	Obs.	Mean	Stdev	25%	Median	75%
% of foreign suppliers	30,488	0.557	0.292	0.333	0.500	0.768
% of foreign (far) suppliers	30,488	0.516	0.308	0.273	0.500	0.732
% of foreign (near) suppliers	30,488	0.039	0.106	0.000	0.000	0.000
# of suppliers	30,488	12.420	29.034	2.000	5.000	10.000
ln(# of suppliers)	30,488	1.645	1.159	0.693	1.609	2.303
GPR	30,488	0.961	0.191	0.823	0.924	1.046
GPR threat	30,488	0.982	0.225	0.813	0.953	1.109
GPR act	30,488	0.924	0.332	0.678	0.841	1.072
ΔGPR	29,526	-0.010	0.227	-0.162	-0.013	0.144
TA	30,488	9245.606	28989.610	281.121	1426.667	5524.369
ln(TA)	30,488	7.152	2.085	5.639	7.263	8.617
ROA	30,488	0.011	0.060	0.006	0.027	0.041
R&D/Sale	30,488	1.225	6.588	0.000	0.051	0.173
Leverage	30,488	0.241	0.214	0.053	0.215	0.358
Asset tangibility	30,488	0.184	0.148	0.077	0.142	0.252
SG&A/Sale	30,488	0.369	0.561	0.110	0.247	0.419
Firm age	30,488	11.533	5.604	7.000	12.000	16.000
ln(Firm age)	30,488	2.277	0.654	1.946	2.485	2.773
HHI	30,488	0.200	0.195	0.059	0.138	0.263
EPU_{USA}	30,488	1.283	0.444	0.988	1.152	1.501
TPU_{USA}	30,488	1.862	2.844	0.296	0.606	1.823
ΔGDP	30,488	0.003	0.015	0.003	0.006	0.008
ΔCPI	30,488	0.002	0.004	-0.001	0.001	0.004

Table 3
Geopolitical Risk and Foreign Suppliers

This table examines the relationship between geopolitical risk and foreign suppliers. The dependent variables include the proportion of foreign suppliers (*% of foreign suppliers*), foreign suppliers excluding those from Canada and Mexico (*% of foreign (far) suppliers*), Canadian and Mexican suppliers (*% of foreign (near) suppliers*), and the natural logarithm of the total number of suppliers (*ln(# of suppliers)*). The main independent variable of interest is the one-quarter-lagged geopolitical risk index compiled by Caldara and Iacoviello (2022) (*GPR*). One-quarter-lagged control variables include the natural logarithm of total assets (*ln(TA)*), profitability (*ROA*), R&D intensity (*R&D/Sale*), financial leverage (*Leverage*), asset tangibility (*Asset tangibility*), the ratio of selling, general, and administrative expenses to total sales (*SG&A/Sale*), natural logarithm of firm age (*ln(Age)*), the 3-digit SIC industry sales Herfindahl–Hirschman index of industry concentration (*HHI*), the economic policy and trade policy uncertainty indexes by Baker et al. (2016) (EPU_{USA} and TPU_{USA}), and quarterly growth in U.S. GDP and CPI. The detailed definitions of all variables can be found in Appendix A.1. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	% of foreign suppliers	*% of foreign (far) suppliers*	*% of foreign (near) suppliers*	*ln(# of suppliers)*
	(1)	(2)	(3)	(4)
GPR	-0.013**	-0.013***	0.001	-0.006
	(-2.220)	(-2.793)	(0.636)	(-0.364)
ln(TA)	-0.029***	-0.029***	0.001	0.194***
	(-2.904)	(-2.700)	(0.248)	(7.102)
ROA	0.022	0.052	-0.033	-0.307
	(0.252)	(0.559)	(-1.182)	(-1.354)
R&D/Sale	-0.001	-0.001	-0.000	0.000
	(-1.160)	(-0.997)	(-0.591)	(0.083)
Leverage	-0.006	-0.005	-0.001	0.077
	(-0.203)	(-0.173)	(-0.084)	(1.081)
Asset tangibility	-0.150**	-0.152**	0.004	0.394***
	(-2.441)	(-2.448)	(0.171)	(2.735)
SG&A/Sale	-0.000	0.006	-0.006	-0.019
	(-0.012)	(0.684)	(-1.238)	(-1.087)
ln(Firm age)	-0.097***	-0.098***	0.004	0.113**
	(-4.348)	(-4.087)	(0.556)	(2.104)
HHI	-0.130*	-0.160**	0.018	0.074
	(-1.739)	(-2.051)	(0.583)	(0.484)
EPU_{USA}	0.004***	0.004***	0.001	-0.016
	(3.293)	(3.146)	(0.818)	(-1.408)
TPU_{USA}	-0.001**	-0.001***	0.000***	0.003**
	(-2.167)	(-3.765)	(4.828)	(2.245)
ΔGDP	0.009	-0.007	0.028***	0.127
	(0.373)	(-0.337)	(3.839)	(1.122)
ΔCPI	-1.206***	-1.257***	0.037	0.661
	(-7.387)	(-12.698)	(0.918)	(0.554)
Firm FE	Yes	Yes	Yes	Yes
Industry × Year	Yes	Yes	Yes	Yes
Industry × Quarter	Yes	Yes	Yes	Yes
Observations	30,488	30,488	30,488	30,488
R-squared	0.693	0.706	0.659	0.898

Table 4
Geopolitical Risk and Foreign Suppliers: Asymmetric Effect

This table examines whether the effect of geopolitical risk on foreign suppliers is asymmetric between GPR increases and decreases. The dependent variable is the quarterly changes in the proportion of foreign suppliers (Δ*% of foreign suppliers*). $\Delta GPR^{\,at\ t\,=\,n}$ is n^{th}-quarter-lagged or leading quarterly changes in the geopolitical risk index compiled by Caldara and Iacoviello (2022). For instance, $\Delta GPR^{\,at\ t\,=\,-1}$ is one-quarter-lagged changes in GPR (i.e., changes in *GPR* from quarter $t-2$ to $t-1$). +ve $\Delta GPR^{\,at\ t\,=\,-1}$ (-ve $\Delta GPR^{\,at\ t\,=\,-1}$) takes on the value of $\Delta GPR^{\,at\ t\,=\,-1}$ when $\Delta GPR^{\,at\ t\,=\,-1}$ is positive (negative) and it takes on the value of zero otherwise. We include the quarterly changes in the lagged firm controls, U.S. economic and trade policy indexes by Baker et al. (2016), and U.S. GDP and CPI growth in all models. The detailed definitions of all variables can be found in Appendix A.1. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Δ*% of foreign suppliers*			
	(1)	(2)	(3)	(4)
$\Delta GPR^{\,at\ t\,=+4}$			-0.001	-0.005
			(-0.222)	(-0.745)
$\Delta GPR^{\,at\ t\,=+3}$			-0.006	-0.009
			(-0.616)	(-1.069)
$\Delta GPR^{\,at\ t\,=+2}$			-0.008	-0.012
			(-0.849)	(-1.319)
$\Delta GPR^{\,at\ t\,=+1}$		-0.000	-0.007	-0.013
		(-0.086)	(-0.725)	(-1.309)
$\Delta GPR^{\,at\ t\,=\,0}$		-0.008	-0.013	-0.019**
		(-1.483)	(-1.605)	(-2.232)
$\Delta GPR^{\,at\ t\,=\,-1}$	-0.008**	-0.011***	-0.013**	
	(-2.145)	(-2.842)	(-2.566)	
+ve $\Delta GPR^{\,at\ t\,=\,-1}$				-0.030***
				(-2.905)
-ve $\Delta GPR^{\,at\ t\,=\,-1}$				-0.003
				(-0.317)
ΔFirm controls	Yes	Yes	Yes	Yes
ΔEPU_{USA} and ΔTPU_{USA}	Yes	Yes	Yes	Yes
ΔState macro. controls	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
Industry × Quarter FE	Yes	Yes	Yes	Yes
Observations	24,136	24,136	24,136	24,136
R-squared	0.033	0.033	0.033	0.033

Table 5
Geopolitical Risk and Foreign Suppliers: Threat or Act?

This table reports the results based on the two components of the geopolitical risk index developed by Caldara and Iacoviello (2022). The dependent variable is the proportion of foreign suppliers (*% of foreign suppliers*). The main independent variables of interest are the one-quarter-lagged geopolitical threat (*GPR threat*) and geopolitical act indexes (*GPR act*) compiled by Caldara and Iacoviello (2022). The former was constructed based on text search for phrases related to threats and military buildups in newspapers and the latter for phrases related to the realization or the escalation of adverse events. The same set of baseline controls is included in all models. The detailed definitions of all variables can be found in Appendix A.1. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	% of foreign suppliers	
	(1)	(2)
GPR threat	-0.009**	
	(-2.048)	
GPR act		-0.008*
		(-1.777)
Controls	Yes	Yes
Firm FE	Yes	Yes
Industry × Year FE	Yes	Yes
Industry × Quarter FE	Yes	Yes
Observations	30,488	30,488
R-squared	0.693	0.693

Table 6
Robustness Tests

This table reports robustness test results. The dependent variable is the proportion of foreign suppliers (*% of foreign suppliers*). The same set of baseline control variables is included in all models. For brevity, we only report the coefficient estimate and corresponding *t*-statistics (double-clustered at the firm and year-quarter levels if not stated otherwise) of the main independent variable of interest, along with the number of observations and R-squared of the model. In row (1), we use an alternative geopolitical risk index (*GPR basic*), constructed based on narrower search criteria. In row (2), we replace *GPR* with its quarterly changes (*ΔGPR*) in the baseline model. In rows (3) and (4), we use alternative 2- and 3-digit SIC industry classifications for constructing the industry fixed effects. In row (5), we do not interact industry with calendar year and calendar quarter when constructing the fixed effects, i.e., we only have firm, calendar year, and calendar quarter fixed effects in the baseline model. In row (6), we drop firm fixed effects in our baseline model. In row (7), we drop observations in years 2008 and 2009 from our estimation to minimize the effect of the global financial crisis on our results. In row (8), we alternatively cluster standard errors at the firm level only. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

			% of foreign suppliers		
Row	Description	Variable	Coefficient	Observations	R-squared
(1)	GPR (narrower search criteria)	*GPR basic*	-0.010***	30,488	0.693
			(-2.681)		
(2)	Change in *GPR*	*ΔGPR*	-0.012***	29,526	0.694
			(-10.828)		
(3)	2-digit SIC industry FE	*GPR*	-0.013**	30,488	0.688
			(-2.349)		
(4)	3-digit SIC industry FE	*GPR*	-0.010*	30,488	0.726
			(-1.708)		
(5)	No industry interaction	*GPR*	-0.012**	30,488	0.673
			(-2.234)		
(6)	Drop firm FE	*GPR*	-0.011***	30,488	0.242
			(-5.241)		
(7)	Remove crisis years	*GPR*	-0.014**	28,049	0.687
			(-2.373)		
(8)	Single S.E. clustering at the firm level	*GPR*	-0.013**	30,488	0.693
			(-2.296)		

Table 7
Controlling for General Uncertainty and/or Conditions

This table reports baseline tests that include additional controls for general economic uncertainty and conditions. The dependent variable is the proportion of foreign suppliers (*% of foreign suppliers*). *VIX* is the lagged CBOE volatility index. *EMV* is the lagged text-based measure of stock market volatility compiled by Baker et al. (2019). *AAII sentiment* is a lagged index of stock market sentiment constructed by the American Association of Individual Investors (AAII). R_{MKT} is lagged CRSP value-weighted market index quarterly returns. *State GDP growth*, *State unemployment rate*, and *State ln(Population)* are state real GDP growth, state unemployment rates, and the natural logarithm of state population. $EPU_{USA\ state\text{-}level}$ is state-level economic policy uncertainty indexes compiled by Baker et al. (2022) based on text analysis on local newspapers. GPR_{Canada} is the country-specific geopolitical risk index for Canada. The same set of baseline control variables is included in all models. The detailed definitions of all variables can be found in Appendix A.1. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	% of foreign suppliers				
	(1)	(2)	(3)	(4)	(5)
GPR	-0.014**	-0.013**	-0.014**	-0.013**	-0.014**
	(-2.394)	(-2.139)	(-2.261)	(-2.083)	(-2.060)
VIX	0.024				
	(1.553)				
EMV		-0.013			
		(-0.954)			
AAII sentiment			-0.012**		
			(-2.117)		
R_{MKT}			0.017*		
			(1.924)		
State GDP growth				0.230	
				(1.337)	
State unemployment rate				0.086	
				(0.208)	
State ln(Population)				-0.282	
				(-1.252)	
$EPU_{USA\ state\text{-}level}$				0.003	
				(1.142)	
GPR_{Canada}					0.003
					(0.296)
Firm controls	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes
Industry × Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	30,488	30,488	30,488	29,256	30,488
R-squared	0.693	0.693	0.693	0.683	0.693

Table 8
Country-Specific Geopolitical Risk and Decisions to Terminate Relationships with Foreign Suppliers

This table reports results from linear probability models examining whether country-specific geopolitical risk affects U.S. manufacturing firms' decisions to terminate existing relationships with foreign suppliers. The analysis is performed on a customer-supplier-year-quarter panel dataset that links 1,044 U.S. manufacturing firms with 2,819 foreign suppliers. All customer-supplier pairs involving domestic suppliers are excluded from the analysis. The dependent variable is a dummy variable equal to one if this is the last year-quarter before a given customer-supplier relationship ceases to exist in our sample as reported by the FactSet Revere database. The main independent variable of interest is the one-quarter-lagged country-specific geopolitical risk index (*GPR country*) compiled by Caldara and Iacoviello (2022). For the customer firms, we include the same set of lagged baseline control variables and fixed effects. For the supplier firms, we include the same set of lagged firm control variables (except firm age), constructed using data from Compustat Global Quarterly database, and further include country-level annual GDP and CPI growth and the natural logarithm of real GDP per capita, collected from the Federal Reserve Economic Data (FRED) database, in the models. In addition to the customers' baseline fixed effects, we further include customer-supplier pair fixed effects and supplier industry-year-quarter interacted fixed effects. Columns (1) and (2) report results from full-sample estimation while column (3) reports results based on a subsample excluding Mexican and Canadian suppliers. *T*-statistics based on double-clustered standard errors at the supplier country and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Termination		
			w/o Mexico & Canada
	(1)	(2)	(3)
GPR country	0.022**	0.021**	0.023**
	(2.442)	(2.160)	(2.390)
Customer firm controls	No	Yes	Yes
Customer EPU and TPU	No	Yes	Yes
Customer macro controls	No	Yes	Yes
Supplier firm controls	No	Yes	Yes
Supplier country controls	No	Yes	Yes
Pair FE	Yes	Yes	Yes
Customer industry × Year FE	Yes	Yes	Yes
Customer industry × Quarter FE	Yes	Yes	Yes
Supplier industry × Year-quarter FE	Yes	Yes	Yes
Observations	75,752	75,752	73,222
R-squared	0.260	0.261	0.260

Table 9
Heterogeneity Tests

This table examines the heterogeneity in the effect of geopolitical risk on foreign suppliers. The dependent variable is the proportion of foreign suppliers (*% of foreign suppliers*). The main independent variable of interest is the one-quarter-lagged geopolitical risk index compiled by Caldara and Iacoviello (2022) (*GPR*). *High % domestic sales* is a dummy variable that is equal to one if a firm's proportion of domestic sales is above sample median and zero otherwise. *High degree of outsourcing* is a dummy variable that is equal to one if a firm's *Degree of outsourcing* is above sample median and zero otherwise. *Degree of outsourcing* is the inverse of the average vertical relatedness (i.e., the potential of a firm's products to be vertically related to the other products sold by the same firm) from year $t-2$ to t; the vertical relatedness measure is compiled by Frésard et al. (2020) using textual analysis on firms' 10-Ks and dollar flows data between producers and purchasers from the BEA input-output (IO) tables. *Low # of customers* is a dummy variable that is equal to one if the number of customers is below sample median and zero otherwise. *High geographic segment sales HHI* is a dummy variable that is equal to one if a firm's segment sales concentration across geographic segments is above sample median and zero otherwise. *Democratic governor* is a dummy variable that is equal to one if the governor of the firm's headquarters state is a Democrat and zero otherwise. The same set of baseline firm and macroeconomic control variables as well as their interaction with the dividing variable is included in all models. The detailed definitions of all variables can be found in Appendix A.1. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	% of foreign suppliers				
	(1)	(2)	(3)	(4)	(5)
GPR	0.000	-0.003	0.001	0.001	-0.004
	(0.042)	(-0.634)	(0.155)	(0.149)	(-0.436)
GPR × *High % domestic sales*	-0.023***				
	(-3.950)				
GPR × *High degree of outsourcing*		-0.010**			
		(-2.552)			
GPR × *Low # of customers*			-0.020***		
			(-2.995)		
GPR × *High geographic segment sales HHI*				-0.008*	
				(-1.768)	
GPR × *Democratic governor*					-0.013**
					(-2.150)
All controls (interacted with the dividing variable)	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes
Industry × Quarter FE	Yes	Yes	Yes	Yes	Yes
Observations	30,488	28,449	23,976	25,984	22,279
R-squared	0.731	0.722	0.743	0.734	0.778

Table 10
Firm Performance Implications of Reshoring Amidst Changes in Geopolitical Risk

This table examines the relation between changes in the proportion of foreign suppliers and firm performance at times of changing geopolitical risk. The dependent variables are firm value (*Q*) and profitability (*ROA*). *Q* is computed as market capitalization divided by total assets; *ROA* is defined as operating income before depreciation divided by total assets. The main independent variable of interest is the lagged quarterly changes in the proportion of foreign suppliers (*Δ% of foreign suppliers*). Control variables include the natural logarithm of total assets (*ln(TA)*), R&D intensity (*R&D/Sale*), financial leverage (*Leverage*), asset tangibility (*Asset tangibility*), the ratio of selling, general, and administrative expenses to total sales (*SG&A/Sale*), natural logarithm of firm age (*ln(Age)*), and 3-digit SIC industry sales Herfindahl–Hirschman index of industry concentration (*HHI*). Columns (1) and (4) report full-sample estimation results. Columns (2) and (5) [(3) and (6)] report results based on subsamples during which the lagged quarterly changes in the geopolitical risk index (*GPR*) are positive [negative]. *T*-statistics based on double-clustered standard errors at the firm and year-quarter levels are provided in the parentheses. Symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Q			*ROA*		
		ΔGPR			*ΔGPR*	
		>0	<0		>0	<0
	(1)	(2)	(3)	(4)	(5)	(6)
Δ% of foreign suppliers	-0.086	-0.286**	0.072	-0.005*	-0.009**	-0.001
	(-1.376)	(-2.508)	(0.711)	(-1.893)	(-2.100)	(-0.403)
ln(TA)	-0.018	-0.023	-0.016	0.009***	0.009***	0.010***
	(-0.866)	(-1.112)	(-0.801)	(13.937)	(13.365)	(13.803)
R&D/Sale	0.014**	0.016**	0.012*	-0.003***	-0.003***	-0.003***
	(2.204)	(2.284)	(1.888)	(-13.239)	(-11.763)	(-12.548)
Leverage	-0.939***	-0.937***	-0.934***	-0.020***	-0.022***	-0.018***
	(-4.261)	(-4.048)	(-4.091)	(-3.362)	(-3.529)	(-2.844)
Asset tangibility	-0.834***	-0.780***	-0.808***	0.017**	0.020**	0.015**
	(-3.338)	(-3.094)	(-3.198)	(2.444)	(2.673)	(2.101)
SG&A/Sale	0.162**	0.169***	0.153**	-0.026***	-0.026***	-0.026***
	(2.643)	(2.686)	(2.469)	(-11.584)	(-10.578)	(-11.328)
ln(Firm age)	0.011	-0.025	0.044	0.008***	0.009***	0.008***
	(0.186)	(-0.407)	(0.703)	(4.937)	(5.049)	(4.588)
HHI	-0.675***	-0.679***	-0.689***	-0.007	-0.009	-0.005
	(-2.858)	(-2.967)	(-3.031)	(-1.335)	(-1.646)	(-1.046)
Industry × Year-quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28,327	13,622	14,705	28,217	13,563	14,654
R-squared	0.261	0.283	0.263	0.530	0.529	0.542

Appendix A.1
Variable Definitions

Variables	Definition	Source
% of foreign suppliers	The proportion of suppliers that are not based in the U.S.	FactSet Revere
% of foreign (far) suppliers	The proportion of suppliers that are not based in the U.S. and are not based in Canada or Mexico.	FactSet Revere
% of foreign (near) suppliers	The proportion of suppliers that are based in Canada or Mexico.	FactSet Revere
ln(# of suppliers)	Natural logarithm of total number of suppliers.	FactSet Revere
GPR	A geopolitical risk index, computed as the number of articles related to adverse geopolitical events in ten newspapers for each month divided by the total number of news articles published. The 10 newspapers include Chicago Tribune, the Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, the Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post. The automated text search is organized in eight categories: War Threats (Category 1), Peace Threats (Category 2), Military Buildups (Category 3), Nuclear Threats (Category 4), Terror Threats (Category 5), Beginning of War (Category 6), Escalation of War (Category 7), Terror Acts (Category 8). *GPR* is divided by 100 for a more convenient interpretation.	Caldara and Iacoviello (2022)
GPR country	A country-specific index of geopolitical risk, computed by counting the monthly share of all newspaper articles from 1985 that both (1) meet the criterion for inclusion in *GPR* and (2) mention the name of the country or its major cities.	Caldara and Iacoviello (2022)
GPR threat	An ex-ante threat-based geopolitical risk subindex, in which the search includes only words belonging to categories 1 to 5 above. *GPR threat* is divided by 100 for a more convenient interpretation.	Caldara and Iacoviello (2022)
GPR act	An ex-post act-based geopolitical risk subindex, in which the search includes only words belonging to categories 6 to 8 above. *GPR act* is divided by 100 for a more convenient interpretation.	Caldara and Iacoviello (2022)
$\Delta GPR^{\,at\ t\,=\,n}$	n^{th}-quarter-lagged or leading quarterly changes in the geopolitical risk index compiled by Caldara and Iacoviello (2022). For instance, $\Delta GPR^{\,at\ t\,=\,-1}$ is one-quarter-lagged changes in GPR (i.e., changes in *GPR* from quarter $t-2$ to $t-1$).	Caldara and Iacoviello (2022)
+ve $\Delta GPR^{\,at\ t\,=\,-1}$ (-ve $\Delta GPR^{\,at\ t\,=\,-1}$)	A variable of positive (negative) changes in GPR from $t-2$ to $t-1$. It takes on the value of $\Delta GPR^{\,at\ t\,=\,-1}$ when $\Delta GPR^{\,at\ t\,=\,-1}$ is positive (negative), and it takes on the value of zero otherwise.	Caldara and Iacoviello (2022)
ΔGPR	Quarterly changes in *GPR.*	Caldara and Iacoviello (2022)

ln(TA)	Natural logarithm of total assets.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
ROA	Return on assets, computed as operating income before depreciation divided by total assets.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
R&D/Sale	R&D expenditure divided by total sales. Missing R&D expenses are treated as zero.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
Leverage	Financial leverage, computed as the sum of short- and long-term debts divided by total assets.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
Asset tangibility	Plant, property, and equipment divided by total assets.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
SG&A/Sale	Selling, general, and administrative (SG&A) expenditure divided by total sales. Missing SG&A expenditure is treated as zero.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
ln(Firm age)	Natural logarithm of firm age.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
HHI	3-digit SIC industry sales Herfindahl–Hirschman index.	CRSP/Compustat Merged Quarterly; Compustat Global Quarterly
EPU_{USA}	An overall index of economic-policy uncertainty, computed as the weighted averages (weights in brackets) of the four individual components: (1/2) News-based policy-uncertainty index, (1/6) tax code expiration-based uncertainty index, (1/6) CPI forecast disagreement measure, and (1/6) the federal/state/local purchases disagreement measure.	Baker et al. (2016)
TPU_{USA}	An index of U.S. trade policy uncertainty, capturing the frequency of articles in American newspapers that discuss policy-related economic uncertainty and also contain one or more references to trade policy.	Baker et al. (2016)
ΔGDP	Quarterly GDP growth.	FRED
ΔCPI	Quarterly CPI growth.	FRED
VIX	The CBOE volatility index.	FRED
EMV	A text-based measure of equity market volatility, constructed based on the monthly counts of newspaper articles containing at least one term in three sets of words pertaining to the economy, stock market, and volatility in eleven major U.S. newspapers.	Baker et al. (2019)
AAII sentiment	A stock market sentiment index, i.e., % Bullish minus % Bearish, measured at the end of month t.	American Association of Individual Investors (AAII)
R_{MKT}	CRSP value-weighted market index quarterly returns.	CRSP
State GDP growth	State real GDP growth.	Bureau of Economic Analysis
State unemployment rate	State unemployment rates.	Bureau of Economic Analysis

State ln(Population)	Natural logarithm of state population.	Bureau of Economic Analysis
$EPU_{USA\ state\text{-}level}$	State-level economic policy uncertainty index, compiled by Baker et al. (2022) using textual analysis on more than 3,500 local newspapers	Baker et al. (2022)
GPR_{Canada}	The country-specific geopolitical risk index for Canada.	FactSet Revere
High degree of outsourcing	A dummy variable equal to one if a firm's *Degree of outsourcing* is above sample median and zero otherwise. *Degree of outsourcing* is the inverse of the average vertical relatedness (i.e., the potential of a firm's products to be vertically related to the other products sold by the same firm) from year $t-2$ to t; the vertical relatedness measure is compiled by Frésard et al. (2020) using textual analysis on firms' 10-Ks and dollar flows data between producers and purchasers from the BEA input-output (IO) tables	Fresard-Hoberg-Phillips Vertical Relatedness Data Library
High % domestic sales	A dummy variable equal to one if a firm's proportion of domestic sales is above sample median and zero otherwise.	Compustat Segment Files
Low # of customers	A dummy variable equal to one for firms with below sample median # *of customers*. # *of customers* is the total number of customers reported by a firm.	FactSet Revere
High geographic segment sales HHI	A dummy variable equal to one for firms with above sample median *Geographic segment sales HHI*. *Geographic segment sales HHI* is the Herfindahl index of sales concentrations across geographic segments.	Compustat Segment Files
Democratic governor	A dummy variable equal to one if a firm's headquarters state has a Democrat governor and zero otherwise.	openICPSR; National Governors Association
Q	The ratio of market capitalization to total assets.	CRSP/Compustat Merged Quarterly
Δ% of foreign suppliers	Quarterly changes in *% of foreign suppliers*.	FactSet Revere

Geopolitical Risk and Supply Chain Reshoring

Online Appendix

Table OA.1 Pairwise Correlations

This table reports the pairwise correlations of our main variables. The variable definitions can be found in Appendix A.1 in the main table.

		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19	V20
% of foreign suppliers	V1	1.000																			
	p-value																				
% of foreign (far) suppliers	V2	0.912	1.000																		
	p-value	0.000																			
% of foreign (near) suppliers	V3	0.061	-0.346	1.000																	
	p-value	0.000	0.000																		
ln(# of suppliers)	V4	-0.466	-0.420	-0.023	1.000																
	p-value	0.000	0.000	0.000																	
GPR	V5	-0.014	-0.017	0.011	0.009	1.000															
	p-value	0.018	0.004	0.056	0.137																
GPR threat	V6	0.038	0.030	0.016	0.046	0.730	1.000														
	p-value	0.000	0.000	0.006	0.000	0.000															
GPR act	V7	-0.052	-0.049	0.000	-0.027	0.758	0.115	1.000													
	p-value	0.000	0.000	0.973	0.000	0.000	0.000														
ΔGPR	V8	-0.007	-0.006	-0.001	-0.005	0.577	0.558	0.288	1.000												
	p-value	0.251	0.273	0.923	0.400	0.000	0.000	0.000													
ln(TA)	V9	-0.372	-0.374	0.075	0.709	-0.008	0.017	-0.025	-0.002	1.000											
	p-value	0.000	0.000	0.000	0.000	0.182	0.004	0.000	0.775												
ROA	V10	-0.180	-0.187	0.047	0.282	0.019	-0.021	0.045	-0.002	0.522	1.000										
	p-value	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.795	0.000											
R&D/Sale	V11	0.087	0.096	-0.039	-0.136	0.001	0.019	-0.014	-0.006	-0.215	-0.471	1.000									
	p-value	0.000	0.000	0.000	0.000	0.824	0.001	0.012	0.319	0.000	0.000										
Leverage	V12	-0.069	-0.086	0.061	0.131	-0.007	0.072	-0.072	-0.004	0.217	-0.004	-0.058	1.000								
	p-value	0.000	0.000	0.000	0.000	0.213	0.000	0.000	0.539	0.000	0.498	0.000									
Asset tangibility	V13	-0.069	-0.094	0.083	0.095	-0.010	-0.012	-0.005	-0.002	0.235	0.209	-0.114	0.166	1.000							
	p-value	0.000	0.000	0.000	0.000	0.069	0.033	0.420	0.724	0.000	0.000	0.000	0.000								
SG&A/Sale	V14	0.083	0.085	-0.025	-0.138	0.007	0.018	-0.007	0.007	-0.287	-0.426	0.010	-0.001	-0.199	1.000						
	p-value	0.000	0.000	0.000	0.000	0.224	0.002	0.258	0.220	0.000	0.000	0.072	0.906	0.000							
ln(Firm age)	V15	-0.043	-0.045	0.018	0.233	-0.095	0.086	-0.209	0.017	0.285	0.244	-0.166	0.087	0.058	-0.131	1.000					
	p-value	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000						
HHI	V16	-0.080	-0.101	0.073	0.100	-0.006	0.017	-0.024	-0.001	0.197	0.215	-0.129	0.104	0.161	-0.158	0.132	1.000				
	p-value	0.000	0.000	0.000	0.000	0.291	0.003	0.000	0.884	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
EPU_{USA}	V17	0.046	0.044	-0.001	0.011	-0.419	-0.218	-0.384	0.015	0.019	-0.038	-0.002	0.061	0.027	-0.013	0.154	0.016	1.000			
	p-value	0.000	0.000	0.902	0.052	0.000	0.000	0.000	0.008	0.001	0.000	0.790	0.000	0.000	0.026	0.000	0.005				
TPU_{USA}	V18	0.065	0.054	0.021	0.069	-0.034	0.361	-0.393	0.052	0.033	-0.050	0.031	0.140	0.015	0.010	0.169	0.029	0.164	1.000		
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.099	0.000	0.000	0.000			
ΔGDP	V19	-0.024	-0.026	0.010	-0.018	0.248	0.144	0.207	0.019	-0.017	0.039	-0.011	-0.067	-0.018	-0.003	-0.078	-0.009	-0.516	0.073	1.000	
	p-value	0.000	0.000	0.095	0.002	0.000	0.000	0.000	0.002	0.003	0.000	0.065	0.000	0.002	0.566	0.000	0.133	0.000	0.000		
ΔCPI	V20	-0.020	-0.019	-0.001	-0.008	0.034	0.074	-0.043	0.089	-0.003	-0.001	-0.001	-0.019	0.000	0.005	-0.010	-0.012	-0.130	-0.132	-0.082	1.000
	p-value	0.000	0.001	0.842	0.179	0.000	0.000	0.000	0.000	0.626	0.921	0.802	0.001	0.982	0.393	0.073	0.036	0.000	0.000	0.000	