Not Coming Home: Trade and Economic Policy Uncertainty in American Supply Chain Networks

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Problem Definition: We study the impact of trade and other economic policy uncertainty on supply chain networks of American firms.

Academic/Practical Relevance: The uncertainty around the trade and other economic policy contributes to supply chain risk. Whether such policy uncertainty will bring production back to the U.S. or only a redistribution of the global supply chains is theoretically ambiguous and warrants an empirical analysis.

Methodology: Using firm-level global supply chain data, transaction-level shipping container data, and policy uncertainty indexes, we investigate the question using reduced-form empirical specification with high dimensional fixed effects.

Results: Rather than inducing production to come "home", on average higher U.S. trade policy uncertainty predicts an increase in foreign supplier relationships, driven by firms with majority foreign sales. In contrast, those with mostly domestic sales mildly decrease foreign supplier relationships. American firms also appear to substitute among foreign countries in response to foreign-country-specific economic policy uncertainty – shifting suppliers from countries with higher uncertainty to ones with lower uncertainty. Firms with more bargaining power respond more to all measures of economic policy uncertainty.

Managerial Implications: Corporate managers should take their customers' locations into account when making sourcing decisions; in particular, reducing operational risk due to changing economic policies may involve additional offshoring rather than re-shoring.

Key words: trade war, supply chain restructuring, supplier diversification, trade diversion
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1. Introduction

Practitioners, policymakers, and academics have widely accepted that the restructuring of global supply chains has been taking place across industries and geographies, with firms considering multiple trade-offs, incentives, and constraints (Cohen et al. 2018). In particular, recent developments in international relations have highlighted the impact of economic policy on global value chains. While the traditional supply chain management research captures the key uncertainties in demand and in uncertain supplier yield, there is an emerging need to understand how the uncertainty of trade and other economic policy impacts global supply chains (Cohen and Mallik 1997, Cohen and Lee 2020, Dai et al. 2020).

In this paper, we document the relation between trade policy and other economic policy uncertainty on firms' sourcing using a panel data of American firms and a reduced-form empirical methodology with high dimensional fixed effects. We consider the relationship between sourcing decisions and three specific types of economic policy uncertainty, stemming from American trade policy (U.S. TPU), American non-trade economic policy (U.S. EPU), and foreign-country-specific economic policy uncertainty (foreign EPU) using a continuous measure of policy uncertainty based on articles in leading media newspapers (Baker et al. 2016). Further, we also study whether changes in economic policy uncertainty measures predict firm fundamentals as well as stock returns in the short term. This additional analysis summarizes the role of supply chain decisions for corporate cash flow and risk management.

Crucially, we show that whether American firms offshore or re-shore depends on their customer base. We find that American firms with majority foreign sales tilt the supply chains abroad by increasing foreign suppliers when U.S. TPU increases, while those with majority domestic sales tilt their supply chain slightly domestic by reducing foreign suppliers.

We also study the differential relation between economic policy uncertainty measures and supply chain decisions based on a firm's production flexibility, bargaining power, and importance in the production network. These additional characteristics help to uncover the factors driving supply chain decisions and the extent to which firm-level production disruption concerns can affect international supply chains. We find that firms with less production flexibility, more market share, and higher income appear to react more to all parts of policy uncertainty, with the largest reaction to U.S. TPU. Firms that are more important from a production network centrality perspective also appear to react more sharply to all three versions of policy uncertainty that we consider. This provides evidence that firms with lower production flexibility and higher bargaining power appear to make more supply chain changes when U.S. TPU increases.

Next, we study the response of a firm's sourcing decisions in a specific foreign country to the local foreign policy uncertainty of that country. We find that a single foreign country's EPU does not appear to affect the total foreign relationships of American firms, but there is a shift from that country to other countries. Our analysis suggests firms diversify away from higher-uncertainty zones and, therefore, change the structure of global production networks and supply chain patterns. When a foreign country's EPU increases, firms are also more likely to exit that country. Nevertheless, when U.S. TPU increases, firms appear to increase their relationships abroad largely in countries in which they already have a foreign relationship.

The tilt of the production network through new foreign relationships are robust to numerous robustness checks. First, to address concerns that a company's headquarter and operating address

may not be in the same country, we supplement our analyses with transaction-level shipping container data collected from U.S. Customs and Border Protection with the origin and destination locations. We also address this concern another way by excluding large firms, multinationals, and conglomerates. We find the same results in the shipment data and sub-sample analyses. Second, we use a sub-sample by excluding supply chains in China to show that the results are not driven by just production relationships between American and Chinese firms. We also use another sub-sample before the trade war announcement to show that the results are not driven by the China-U.S. trade war but due to the uncertainty impact in general. Third, we address concerns of reverse causality using a firm-month panel and find that the relationship of U.S. TPU with supply chain variables is robust to using the one-month and two-month lagged measures, suggesting the contemporaneous quarterly analyses capture both the current and lagged monthly responses of supply chain variables. We find the same qualitative and similar quantitative results in all robustness checks.

Our research has implications for shareholders, managers, and policymakers alike. For shareholders, we find that changes in all three economic policy uncertainty measures do not appear related to profitability. However, the change in supply chain networks changes a firm's risk exposures to foreign shocks going forward. A back-of-the-envelope calculation of our results applied to the recent U.S.-China Trade War suggests that the U.S. TPU-related increase in foreign supply chain relationships increased the exposure of firm values to foreign EPU shocks by over US$54 billion. Specifically, US$18 billion comes from direct exposures, and US$36 billion comes from indirect exposures. The larger indirect exposure captures the negative spillover to American firms that are not direct importers or exporters.[1]

For corporate managers, the takeaway of our paper suggests that they should consider customers' locations when deciding on sourcing. This decision is especially critical when trade policy uncertainty increases. In fact, for firms that serve mostly foreign sales, reducing operational risk exposure to economic policy may involve more offshoring rather than re-shoring. A side implication of this finding is that the typical concepts of near-shoring or far-shoring should be considered regarding where a company's sales are rather than its headquarters. The riskiness of a supply chain depends on the end market where the products are sold - either the domestic market or the foreign global market. In addition, suppliers servicing exporters to other countries should be cognizant that uncertainties around trade policy may negatively impact their relationships with customer companies.

[1] These results are based on an event-study design using "spikes" in foreign country EPU as events – defined as the top 3% of foreign economic policy uncertainty. To approximate the impact of additional foreign EPU exposures, we scale the estimated direct and indirect effects by the number of the increased foreign suppliers attributable to changes in U.S. TPU.

For policymakers, considering the level of tariffs and quotas alone is insufficient for form trade policy, as the mere deliberation of changing uncertainty around future trade policy can change supply chain considerations and hence international trade. Policymakers have increasingly been interested in firms' sourcing strategies, with a particular focus on re-shoring, viewed through the lens of "bringing manufacturing back" to their home countries. However, the richness and complexity of global supply chain networks can affect their policy outcomes in unexpected ways. In particular, in a global world where a company can trade both inputs and outputs with foreign counter-parties, uncertainty around trade policy can induce firms to take actions that may actually include additional offshoring rather than re-shoring. Uncertainty around trade policies can lead to ambiguous effects depending on the trading partners of firms in the economy. In a small open economy, where firms in a country have more foreign sales, firms will tend to offshore more aggressively. In a larger economy, whereby firms mostly supply other domestic sales, firms will tend to re-shore.

Our contributions to the literature can be summarized in four aspects. First, we document the propagation of policy uncertainty through the supply chain and provide corroborating firm-level evidence that firms appear to consider these exposures in their supply chain decisions. Our findings address concerns like those raised in Bernard et al. (2012) and Bernard and Moxnes (2018) who suggest cross-firm heterogeneity may drive outcomes in the aggregate statistics and have different implications for government policy. Our findings on the U.S. firms to foreign suppliers corroborate those of Carballo et al. (2018), who focuses on how trade agreements can mitigate adverse policy uncertainty shocks, and Graziano et al. (2018) who studies Brexit. One implication of our findings is that with fixed costs of switching suppliers (Handley and Limao 2015), our results suggest that even after uncertainty is resolved, firms would not change their production networks back, especially if they mostly serve customers overseas.

Second, we add to the literature on empirical supply chain studies from a perspective of business environment uncertainty. Previous studies using supply chain-related datasets include transaction-level datasets from global shipping (Jain et al. 2014, Jain and Wu 2020), vertical supply chains on firm-level productivity (Serpa and Krishnan 2017), and product-level datasets from major automakers (Bray et al. 2019). Some empirical studies explore risks of the bullwhip effect generated from the supply networks (Osadchiy et al. 2020). Other empirical research tests the propagation of disruptions through the supply chains (Hendricks and Singhal 2005a,b, 2009, Carvalho et al. 2016). Compared to the empirical supply chain studies focusing on the realized shocks, we document how policy uncertainty correlates a firm's global sourcing decisions.

Third, we also build on the growing literature study on quantifying the uncertainty and linking it to real economic outcomes. Baker et al. (2016) use their index to show that increases in policy uncertainty are associated with upticks in stock price volatility and reductions in industrial

production and employment. Julio and Yook (2016) show election cycles impact foreign direct investment, and Bloom et al. (2007) find that responsiveness of firms to any given policy stimulus may be much lower in periods of high uncertainty, such as after major shocks like OPEC I and 9/11. Bloom (2014) shows that policy uncertainty shocks foreshadow substantial drops in GDP, driving business cycles.[2] We show that the value loss is more significant for firms indirectly exposed to foreign policy uncertainty than those directly exposed.

Last but not least, our research responds to the statement in Cohen and Lee (2020), stating that "a key research question is to understand and guide how companies should best respond to the uncertainties in the trade regimes that might be forthcoming". We overcome the challenge of collecting global supply chain relationship data and conduct a large-scale empirical study on actual supply chain restructuring decisions under the uncertain climate that can serve as a basis for future research. Our findings study how firms use supply chain decisions to "... deal with the uncertainties of customs duties and tax, government incentives, trade agreements and political climate" by documenting empirical relations between measures of economic policy uncertainty and supplier relationships, both foreign and domestic.

The remainder of the paper proceeds as follows. Section 2 discusses our empirical hypotheses and data sources. Section 3 presents the main empirical findings on a firm's offshoring versus re-shoring decisions as well as foreign sourcing diversification. Section 4 discusses implications for shareholders. Section 5 discusses the application of our results to the recent U.S.-China Trade War and concludes.

2. Framework and Data

2.1. Hypotheses Development

Whether firms re-shore production in response to higher trade policy uncertainty is theoretically ambiguous. When considering establishing more supplier relationships, firms weigh the potential benefits from a more robust supply chain with the additional costs involved in establishing new relationships, any differential costs of production, and the costs of delaying relationship decisions. Along the domestic versus foreign margin, firms weigh a comparative advantage of importing goods, either due to a lower cost base or higher productivity overseas, with the uncertainty around how trade policy can affect the benefits of relying on foreign supply chain relationships.

On the one hand, more uncertainty may cause firms to delay the establishment of new relationships since new relationships require up-front investments. As Cohen and Lee (2020) state, "Actions such as re-shoring involve significant fixed costs. For every action, there is also the potential future

[2] Other research suggests policy uncertainty commands a risk premium (Pastor and Veronesi 2013), forecasts market returns (Brogaard and Detzel 2015), contributes to return volatility (Boutchkova et al. 2012), and is priced in the options market (Kelly et al. 2016).

cost to undo that action. Setting up a new factory or supply chain link requires initiation costs, whereas closing an existing factory or shutting off an existing supply chain link could incur significant exit costs of severance, environmental cleanups, write-downs of assets, and in some cases, financial penalties, such as reverting the tax subsidies provided by the government when that factory was first set up." Relatedly in an empirical cross-country study, Julio and Yook (2012) show that firms reduce capital expenditure around election years. For the U.S., prior studies show a negative and significant relationship between capital expenditures and policy uncertainty (Gulen and Ion 2016) and gubernatorial elections (Alfaro et al. 2017). Additional research also corroborates these findings on capital raising, finding that firms issue less equity through initial public offerings (Çolak et al. 2017) and secondary equity offerings (Jens 2017) during gubernatorial election years. Therefore, in response to high levels of trade policy uncertainty, firms may avoid building new foreign relationships or even terminate existing relationships and consolidate their supply chain.

On the other hand, higher trade policy uncertainty may induce firms to take costly actions to reduce operational risks by building a more robust supply chain before anticipated shocks realize. More uncertainty in economic policies may, in fact, induce firms to increase the total number of supplier relationships. However, diversifying sourcing is effective only for diversifiable risks. Whether, where, and how firms react to increased policy risk depends on whether certain policy shocks are diversifiable. For all American firms, U.S. EPU is non-diversifiable as it frequently pertains to corporate tax policy that all American firms are subject to, while foreign EPU is diversifiable since firms can move from one foreign country to the next. Finally, whether U.S. TPU is diversifiable depends on the geography of a firm's sales base.

For American firms whose sales are mostly domestic, having foreign suppliers exposes their operations to U.S. trade policy shocks since they must import inputs from abroad into the United States. Thus, moving supplier relationships into the United States reduces the exposure of their supply chain relationships to American trade policy and may potentially bypass international trade issues completely. For American firms whose sales are foreign, having foreign suppliers does not necessitate importing inputs into the United States as firms may produce, assemble, and ship goods to customers without entering the United States' borders. Thus, moving supplier relationships abroad can actually reduce the impact of U.S. trade policy shocks as the firm's operations may bypass U.S. borders and potentially avoid U.S. trade policy entirely. Therefore, we have the following hypotheses about the impact of trade policy uncertainty on American supply chains depending on a firm's sale base.

Hypothesis 1: *Compared to firms with majority domestic sales, those with majority foreign sales will tend to offshore rather than re-shore when American trade policy uncertainty increases.*

Hypotheses 1 above states the differential expected relationships between trade policy uncertainty and the on-shoring versus offshoring decision based on a firm's revenue base. On average, whether TPU leads American firms to tilt their production networks domestically depends on the fraction of firms with sales overseas as well as the size of the differential responses depending on the sales base.

However, for American firms, foreign economic policy uncertainty is diversifiable. For example, if China has higher economic policy uncertainty such as anticipated but unpredictable future tax policy, American firms with suppliers in China may view the option to enter Vietnam more attractive and may thus add supplier relationships in Vietnam and terminate some existing suppliers in China. In other words, American firms need not increase their net foreign relative to domestic exposures but simply reduce certain foreign country-specific exposure relative to all other foreign country exposures. Diversifying among foreign countries reduces the exposure to any specific country's policy shocks. Therefore, we have the following prediction between foreign-country-specific EPU and foreign supplier relationships.

Hypothesis 2: *An increase in foreign-country specific economic policy uncertainty would induce American firms to divert sourcing and substitute supply chain relationships away from that foreign country to other foreign countries.*

2.2. Data and Variable Construction

We assemble our sample from four datasets: FactSet Revere for supply chain relationships,[3] Economic Policy Uncertainty (EPU) index assembled and maintained by Baker et al. (2016), Compustat for quarterly firm fundamentals, and Compustat Geographical Revenue Segments data. The EPU data in our sample covers the United States and 19 major foreign countries, and spans 16 years from 2003 to 2018. Our sample comprises American firms which were previously importers or exporters, defined by having at least one relationship with a foreign supplier or customer in the previous quarter. We discuss the data sources and construction of key variables below. Appendix Table A1 shows the full list and definition of all variables used in our study.

2.2.1. Supply Chain Data We get supply chain data from FactSet Revere, which has been used in recent literature (Agca et al. 2017, Schiller 2018, Osadchiy et al. 2020, Wang et al. 2020). The dataset covers 23,000 publicly traded companies from all over the world, with 325,000 unique supply chain relationships. This database dominates alternatives such as Compustat[4] because analysts

[3] In robustness tests, we also use shipment transaction data collected from U.S. Customs and Border Protection.

[4] Compustat Segment dataset relies on firms self-reporting their major sales, in compliance with SFAS 131 standards. However, it is restricted to supply chains disclosed in SEC 10-K annual filings.

consistently and systematically collect supply chain information by monitoring primary public sources such as SEC 10-K annual filings, investor presentations, company websites, press releases, and news media. We examine the entire universe of publicly-traded U.S. companies from April 2003 to December 2018. During this sample, FactSet Revere contains over 25,000 buyer-supplier links per year on average for the publicly listed American firms, far exceeding Compustat's number of approximately 1,000 links per year. Appendix Table A2 shows the number of global supply chain relationships that U.S. firms have in each country in our sample, reported by FactSet Revere supply chain data.

More importantly, FactSet Revere specifies the start date and end date of a relationship. We count the total days of the link existence in one quarter and then normalize by the total calendar days in that quarter, resulting in a relationship-specific measure ranging between 0 and 1, where "0" means no relationship in the quarter and "1" means the relationship existed throughout the entire quarter. If it is between 0 and 1, the relationship existed partially in the quarter but did not last the entire quarter. This variable measures whether a relationship is built and how long the relationship lasts at the same time.

We use an analogous definition as Cohen et al. (2018) for offshoring, but rather than operational locations, we use headquarter locations of suppliers due to data limitations. We use the first two digits of a firms' International Securities Identifiers Number (ISIN) code to identify a firm location. Offshoring is defined as an increase in the number of foreign suppliers, where a foreign supplier is one whose headquarters is not in the United States. Re-shoring is the relocation of production processes domestically. Although we do not directly detect whether an American firm changes the number of its operating plants, when an American firm moves production that was not initially within the United States back domestically, it would need to find additional sourcing from domestic suppliers. Therefore, we use the number of domestic suppliers as a proxy.

2.2.2. Trade and Economic Policy Uncertainty Data All our measures of EPU stem from research by Baker et al. (2016), who originally constructed an economic policy uncertainty index based on authoritative news sources in the United States. Analogous data from the original authors and additional collaborators have been constructed and made available for 20 countries. The measures take into account the policymaker, what and when economic policy actions will be undertaken, and the economic effects of policy actions (or inaction) – including uncertainties related to the economic ramifications of "non-economic" policy matters such as military actions.

The EPU index is constructed as a weighted average of four components related to news, tax code changes, and dispersion in forecasts of monetary and fiscal policies. For the United States,

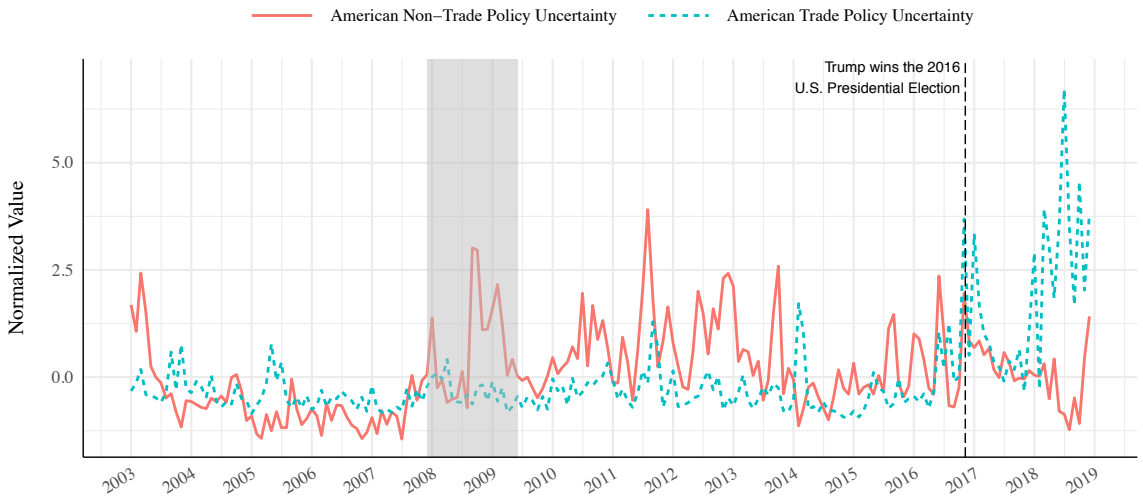
beginning in 1985, the index is identified through an automated search of ten large newspapers.[5] For each newspaper, the number of articles containing "uncertainty" or "uncertain"; "economic" or "economy"; and "congress", "legislation", "white house", "regulation", "Federal Reserve", or "deficit" is counted each month. This count is then scaled by the total number of articles reported in the same newspaper that month, resulting in ten time-series of monthly percentages of news articles related to policy uncertainty. The time-series from each newspaper is normalized to unit standard deviation, and these ten normalized series are then summed within each month. We note that the news articles may contain forward-looking components. For example, August 2020 data is released around mid-September and only uses news articles from August 2020, but the news articles are forward-looking discussions of future policy changes. Therefore, we interpret this timing as the current uncertainty surrounding the future policy.

The EPU index spikes near tight presidential elections, the 9/11 attacks, the 2011 debt ceiling dispute, and other significant disputes over fiscal policy. The same procedure applies to other countries, where the extension to foreign languages and local newspaper outlets are typically done with local corresponding researchers and assistants. The website set up by the original authors provides downloadable monthly information for all 19 foreign countries as well as the names of all news sources and the dictionary of words that the automated news search tracks.

In addition, similar methodologies apply for measures of monetary policy uncertainty, fiscal policy uncertainty, and trade policy uncertainty for the United States. At the time of our data access, the categorical breakdowns were not available for other countries apart from Greece and Japan. Specifically for trade, the TPU index refines the overall EPU by only counting the articles containing the tuple, including terms about the economy, policy, uncertainty, and trade-related terms. The trade-related terms are listed as: "import tariffs", "import duty", "import barrier", "government subsidies", "government subsidy", "WTO", "world trade organization", "trade treaty", "trade agreement", "trade policy", "trade act", "Doha round", "Uruguay round", "GATT", and "dumping". Figure 1 shows the time-series of the American trade policy uncertainty and the non-trade economic policy uncertainty from 2003 to 2018. Non-trade economic policy uncertainty comes from residualizing total U.S. economic policy uncertainty with respect to trade policy uncertainty. President Trump's election in 2016 coincides with a 3-standard deviation increase in trade policy uncertainty, and the onset of the U.S.-China trade war corresponds with an over-6-standard-deviation increase in trade policy uncertainty. These deviations are far greater than the shaded area of the 2008-2009 recession period defined by the National Bureau of Economic Research's (NBER) Business Cycle Dating Committee. Section 5.1 discusses the implications of our results in light of this recent spike in U.S. TPU.

[5] They are USA Today, Miami Herald, Chicago Tribune, Washington Post, Los Angeles Times, Boston Globe, San Francisco Chronicle, Dallas Morning News, New York Times, and Wall Street Journal.

Figure 1 **U.S. Trade and non-Trade Economic Policy Uncertainty (U.S. TPU and U.S. EPU)**



From these measures, we use the total EPU measure for all 20 countries and the trade-related categorical breakdown for the United States (U.S. TPU). We include all countries for which we have supply chain data. Where a country-specific EPU is not available, we impute the global measure of EPU that is a GDP-weighted average national EPU index for 20 countries.

In our analyses, we use a measure of U.S. EPU, U.S. TPU, and construct a measure of weighted foreign EPU for our analyses at the firm-quarter level. Although the EPU and TPU indices are available at the monthly level, we use firm-quarter observations to keep the analyses consistent with the quarterly reporting of firms' fundamentals by taking the simple average over the quarter. Since EPU and TPU indices can exhibit large spikes and quick reversions, our quarterly level EPU and TPU tend to underestimate how high the uncertainty went in that quarter.[6]

Next, to make the EPU index levels comparable across countries, we normalize the indices by subtracting the mean and dividing by the standard deviation to get a z-score of EPU for each country. Besides the measures of U.S. TPU and U.S. EPU, we also construct a firm-quarter level measure of weighted foreign EPU which aggregates a firm's EPU exposure to all non-domestic sources of EPU. We weight the firm i's foreign country EPU by the number of relationships a firm has in the previous quarter with each foreign country using the formula:

$$\text{Foreign EPU}_{i,t} = \frac{\sum_{f=1}^{19} EPU_{f,t} \times \text{Num. Relationships}_{i,f,t-1}}{\sum_{f=1}^{19} \text{Num. Relationships}_{i,f,t-1}}.$$

Table 1 presents summary statistics including mean, median, standard deviation, 25^{th} and 75^{th}

[6] In untabulated results, we find that all our main analyses are also robust to using the min or the max across the quarter as well as the end of quarterly values.

percentile for z-scored EPU and TPU,[7] supply chain links, and fundamentals for U.S. firms on a quarterly basis, using a period from April 2003 to December 2018. Appendix Table A3 shows our sample coverage of the Compustat universe remains stable over time. Appendix Table A4 shows that our final sample has a higher market capitalization compared to those in the Compustat universe. However, other variables appear numerically similar in our sample and the full Compustat sample. Therefore, we believe our sample is representative of large firms in America. We argue this population is of particular interest as larger firms represent a large fraction of both employment and economic output.

Table 1 Summary Statistics

Firm-Quarter Panel (N = 50,725)					
Variable	Mean	SD	P25	Med	P75
Policy Uncertainty:					
U.S. TPU	0.17	1.15	-0.54	-0.25	0.48
U.S. EPU	0.20	0.96	-0.54	0.04	0.66
Foreign EPU	0.15	0.57	0.00	0.00	0.02
Supply Chain:					
Domestic Fraction	80.01	27.06	62.70	100	100
Foreign Links	13.67	179.37	0.00	0.00	2.00
Domestic Links	4.31	9.20	0.00	1.21	4.00
Links/Lagged COGS	0.13	0.57	0.00	0.01	0.04
Mostly Foreign Sales	0.45	0.50	0.00	0.00	1.00
Firm Fundamentals:					
Total Assets	7,117.01	21,912.99	335.81	1,436.97	4,795.12
Revenue	1,523.97	4,519.74	76.22	324.90	1,044.71
COGS	999.42	3,339.19	32.25	168.96	614.76
Net Income	255,70	932.76	4.67	40.60	159.35
Long-term Debt	1,781.47	5,559.21	3.12	256.68	1,262.39
Market Capitalization	9,095.94	33,663.05	315.91	1,468.37	5,287.94
Shareholder Equity	2,758.68	9,515.72	113.74	536.64	1,734.12
ROA	2.29	4.95	1.47	2.93	4.34
LT Investments/Total Assets	2.51	6.83	0.00	0.00	1.59
LT Debt/Total Assets	0.23	0.22	0.02	0.18	0.34
Cash/Total Assets	0.18	0.19	0.04	0.12	0.26
PPENT/Total Assets	0.23	0.22	0.07	0.15	0.33
Input Specificity	0.16	0.37	0.00	0.00	0.00
Market Share	0.03	0.06	0.001	0.006	0.03
Authority Centrality	0.35	0.93	0.00	0.08	0.29

[7] In the appendix, Table A5 displays the correlation of Global EPU, U.S. EPU, and U.S. TPU. Table A6 shows the relation between U.S. TPU and U.S. EPU as well as weighted foreign EPU in our sample. Table A7 shows detailed summary statistics on country-level EPU measures. Table A8 shows the correlation of EPU in 19 countries. Figures A1 shows a principal components analysis decomposition of the covariance matrix of all EPU measures.

2.2.3. Foreign Revenue Segment Data As in Hypothesis 1, we expect firms with differential exposures to foreign markets to exhibit different responses to policy uncertainty. We define whether a firm has majority foreign sales as whether the Compustat Geographical Revenue segment from the previous year is more than 50% of total sales.

For American firms, the United States Generally Accepted Accounting Principles (US GAAP) mandates disclosure of the fraction of foreign sales revenue if it is above 10% of the firm's sales. However, disclosure may be unavailable at the foreign country level or foreign geographical unit (e.g., Europe or Asia) level. Therefore, we classify the majority foreign sales based on any foreign sales fraction. Because by definition, firms that are not required to disclose these foreign segments have less than 10% of foreign sales, we perfectly observe any American firm in our sample with major foreign sales. Therefore, our key explanatory variable – whether a firm has majority foreign sales – has no measurement error.

3. Empirical Analyses

We document reduced-form relations between measures of trade and other economic policy uncertainty and supply chain relationships. We first show U.S. TPU is associated with more foreign supplier relationships, driven by American firms with mostly foreign sales. Next, we conduct robustness tests addressing three potential alternative interpretations of our empirical results, including supplier operational versus headquarter locations, confounding and spurious variables, and reverse causality concerns. We then investigate firm bargaining power as moderating factor, proxied for by production flexibility and production network centrality. Finally, we also show foreign country-specific EPU predicts a substitution between foreign suppliers from high EPU foreign countries to other foreign countries.

3.1. Empirical Specifications

The empirical methodology in this paper studies the relation between macroeconomic variables at the country-year-quarter level on firms, with a firm-level weighting of foreign EPU based on its previous quarter's relationships. Our main empirical specification is

$$SC_{i,t} = \alpha_i + \alpha_{j(i,t),y(t)} + \alpha_{j(i,t),q(t)} + \beta TPU_{US,t} + \gamma EPU_{US,t} + \delta Foreign\ EPU_{i,t} + X'_{i,t-1}\Gamma + \varepsilon_{i,t}, \tag{1}$$

where i indexes a firm, t indexes a year-quarter, $q(t)$ indexes calendar quarter from Q1 through Q4, $y(t)$ indexes the year that t is in, and $j(i,t)$ indexes the industry that firm i is in based on 4-digit NAICS code as of time t. The outcome variable $SC_{i,t}$ is either the inverse hyperbolic sine of the number of foreign or domestic relationships, the fraction of domestic to total relationships,

or firm fundamentals.[8] The coefficients α_i are firm fixed effects, $\alpha_{j(i),y(t)}$ are industry-by-year fixed effects to control for industry-specific annual trends, $\alpha_{j(i),q(t)}$ are industry-calendar quarter fixed effects to control for industry seasonalities, and $X_{i,t-1}$ is a vector of controls consisting of log total assets, market-to-book, return on assets, and long-term book leverage. Since U.S. TPU and U.S. EPU affect all firms at the same time and firm fundamentals may be autocorrelated, we cluster standard errors by year-quarter and firm.

The main explanatory variables of interest are the three measures of policy uncertainty. Appendix Table A6 shows that although U.S. TPU and U.S. EPU are correlated, around 90% of the variation in U.S. EPU is orthogonal to trade policy uncertainty, and 40-60% of the variation remain when including our fixed effects specification and controls. The same is true for U.S. TPU and weighted foreign EPU. Thus, our results are not plagued by multi-collinearity issues.

The coefficients of interest are β the relation between U.S. TPU and outcome variables, γ the relation between non-trade U.S. EPU and outcome variables, and δ the relation between weighted foreign EPU and outcome variables. Follow-up specifications also include interactions of policy uncertainty measures with firm fundamentals, market characteristics, and network centrality to study whether these factors moderate the impact of policy uncertainty on supply chain variables.

In addition to the main specifications at the firm-quarter level, we also study whether firms tilt their foreign suppliers away from a country in response to higher policy uncertainty from that foreign country. Using a firm-foreign country-quarter panel, we study the specification of the form:

$$SC_{i,f,t} = \alpha_{i,f} + \alpha_{j(i,t),y(t)} + \alpha_{j(i,t),q(t)} + \beta TPU_{US,t} + \gamma EPU_{US,t} + \delta Foreign\ EPU_{i,f,t} + X'_{i,t-1}\Gamma + \varepsilon_{i,f,t}, \tag{2}$$

where f indexes a foreign country. The outcome variables $SC_{i,f,t}$ include the inverse hyperbolic sine of the number of suppliers a firm i has in country f, whether the firm is likely to terminate all supplier relationships in country f, and also the share of foreign relationships in a particular country f. The coefficient $\alpha_{i,f}$ stands for firm-foreign country fixed effects. Importantly, including this latter fixed effect isolates variation within firm-foreign country pairs that controls for endogeneity in the decision of a firm to enter a particular country and its risk exposure to that country, as documented in Antràs and Foley (2015). The other variables are defined as in equation (1), and like before, we cluster standard errors by year-quarter and firm to allow for cross-sectional correlations of EPU across countries and autocorrelation of supply chain variables within-firm through time.

[8] The estimated coefficient with the inverse hyperbolic sine transformation of the dependent variable can be interpreted as a percentage change (Bellemare and Wichman 2020). This measure has been commonly used in the statistics and econometrics literature as an alternative to the log transformation as it preserves observations with value zero. In untabulated analyses, we find that none of our empirical results are sensitive to this transformation versus using the "log of one plus X" transformation.

Similar to the firm-quarter panel analysis, the coefficients of interest are β the relation between U.S. TPU and outcome variables, γ the relation between non-trade U.S. EPU and the outcome variables, and δ the relation between foreign EPU and outcome variables. When the outcome variable $y_{i,f,t}$ is the share of a firm's foreign connections relative to all foreign connections, the coefficients of interest capture the effect of foreign EPU on U.S. firms' decisions to tilt their relative exposures from one foreign country to another. Combined with the firm-quarter results that show the overall share of foreign to domestic relationships, we can draw conclusions whether firms appear to be substituting away from all foreign relationships, or tilting away from specific countries when facing three measures of policy uncertainty.

Besides the specifications examining the sample at the firm-quarter level (equation 1) and at the firm-foreign country-quarter level (equation 2), we also test whether the relation between economic policy uncertainty measures vary depending on whether an American firm has mostly domestic or mostly foreign sales. To do so, we run both specifications interacting the policy uncertainty with a dummy indicating whether the firm has mostly foreign sales (i.e., greater than 50% sales are overseas).

3.2. Offshoring vs. Re-Shoring

Table 2 presents the quarterly supplier relationships in response to U.S. TPU, U.S. EPU, and weighted foreign EPU using a firm-quarter panel and the specification from equation (1). Column (1) shows that on average, U.S. TPU is not statistically significantly associated with American firms' domestic fraction of suppliers. However, Column (2) shows a stark difference in statistical relations between firms with majority domestic sales versus those with majority foreign sales.

Firms with majority foreign sales decrease the fraction of domestic suppliers when U.S. TPU rises by increasing foreign links by 7.9% compared to those with mostly domestic firms. Therefore, Hypothesis 1 is supported empirically.

Columns (3) through (8) show that changes in the supplier composition come from the number of foreign supplier relations rather than domestic (Columns (4) versus (5)), and that overall firms do not have a more diversified mix of suppliers relative to inputs, as proxied for by the total number of suppliers - both foreign and domestic - relative to costs of goods sold (Column (7) and (8)). We find the total supplier base relative to costs of goods sold (COGS) for firms are statistically unchanged when U.S. TPU or U.S. EPU change. However, firms increase the number of suppliers relative to COGS when firm-level foreign EPU rises, consistent with firms increasing their overall sourcing diversification.

We argue this relation is stable and robust across a myriad of specifications and time periods, suggesting that the source of a firm's revenues is a crucial determinant of whether firms offshore when U.S. TPU rises. We discuss our robustness tests below.

Table 2 Policy Uncertainty and the Offshoring Decision

Dependent Variable:	Domestic Fraction		f(Foreign Link)		f(Domestic Link)		Num. Supp/COGS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	0.138	0.868***	-0.004	-0.039***	-0.001	-0.003	0.008	0.025
	(0.251)	(0.303)	(0.008)	(0.013)	(0.010)	(0.012)	(0.018)	(0.023)
U.S. TPU×Mostly Foreign Sales		-1.646***		0.079***		0.005		-0.036
		(0.431)		(0.022)		(0.013)		(0.032)
U.S. EPU	0.277*	-0.324**	-0.011	0.023***	-0.008	-0.003	-0.006	-0.011
	(0.150)	(0.160)	(0.007)	(0.008)	(0.008)	(0.009)	(0.006)	(0.012)
U.S. EPU×Mostly Foreign Sales		1.377***		-0.079***		-0.011		0.010
		(0.370)		(0.017)		(0.008)		(0.033)
Foreign EPU	-3.435***	-3.377***	0.095***	0.090***	0.040***	0.043***	0.034**	0.030
	(0.696)	(0.630)	(0.022)	(0.021)	(0.009)	(0.011)	(0.016)	(0.020)
Foreign EPU×Mostly Foreign Sales		-0.072		0.008		-0.007		0.009
		(0.577)		(0.019)		(0.013)		(0.029)
Mostly Foreign Sales		-0.831		0.044		-0.072***		-0.026
		(0.621)		(0.029)		(0.019)		(0.035)
Observations	50,725	50,725	50,725	50,725	50,725	50,725	50,725	50,725
R^2	0.707	0.708	0.826	0.827	0.857	0.857	0.431	0.431

Note: The table shows our main results using the firm-quarter dataset from 2003 to 2018Q1. Columns (1,2) study the fraction of domestic relationships represented as a percentage. Columns (3,4) and (5,6) study the number of foreign and domestic relationships respectively. Columns (7,8) study the number of suppliers per unit of log costs of goods sold. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

3.3. Robustness Tests

In this subsection, we discuss three potential alternative interpretations of our empirical results, namely that our results are plagued by measurement errors in supplier locations due to differences in headquarter versus operational locations, confounding variations or spurious correlations, or reverse causality. Detailed results on all robustness tests are given in Appendix Section C.

3.3.1. Supplier Operational versus Headquarter Location A potential concern with the main sample is that the classification of suppliers into different locations is based on headquarter country location rather than operating locations. Therefore, to address this concern, we supplement our analyses with shipment data, which contain the transaction information based on origin and destination locations. The shipping dataset is assembled from the U.S. Customs and Border Protection agency by data vendor FactSet. Table A11 in Appendix Section C.1 provides details on the summary statistics of the sample we used. Table 3 ranks the top ten sourcing countries by the total number of deals and present country compositions in terms of the total amount of deals, values, and weights. The raw data source of the bill of ladings has been used in the prior literature, such as Coşar et al. (2015) and Jain and Wu (2020).

Using actual international shipment data rather than the supplier headquarter location data,

Table 3 Top Ten Sourcing Countries Compositions

Top 10 Sourcing Countries						
Country	Deals (million)	Deals Fraction (%)	Value (billion)	Value Fraction (%)	Weight (billion)	Weight Fraction (%)
China	8.60	27.88	628.49	13.62	675.39	16.59
India	2.24	7.26	238.94	5.16	332.12	8.16
Mexico	1.50	4.87	169.03	3.67	464.69	11.40
Germany	1.01	3.26	74.04	1.61	243.66	5.98
Singapore	0.85	2.74	58.68	1.27	47.38	1.17
Italy	0.76	2.47	102.42	2.22	86.03	2.12
Spain	0.72	2.34	77.22	1.68	56.02	1.38
Brazil	0.53	1.72	198.21	4.29	69.06	1.70
Japan	0.51	1.65	80.49	1.75	174.55	4.27
Colombia	0.45	1.45	110.21	2.39	146.53	3.58

Note: The table shows the summary statistics of shipping variables across top 10 sourcing countries. The shipping measures of deals, values, and weights are respectively defined as the total number of deals, the total amount of values, and the total amount of goods weights between U.S. firms and each foreign country. The fraction is defined as the fraction of foreign-country shipping measures over total foreign shipping measures.

the significant increase in deals shown in Column (1) of Table 4 show similar findings to our main empirical analyses. Therefore, we believe that the results consistent across both data sets likely capture true correlations in actual supply chain operations rather than any spurious matching issue between firms' headquarter countries.

Altogether, we have data for 1,359 publicly listed firms from January 2014 to December 2019. Due to the short time series nature of this data, we do not use the shipment transactions data as the main specification. As the main explanatory variables used are at the quarterly level, having five years of available data means there would only be 20 quarters (and clusters, as we cluster by calendar quarter) and may not produce empirically reliable estimates. In light of these remaining imperfections of this data, we view results using the FactSet shipping transaction data jointly with our results using the FactSet Revere supplier identity data.

3.3.2. Confounding and Spurious Variation Our main identifying variation comes from the time-series variation of the policy uncertainty measures. Using an empirical specification with industry-by-year fixed effects, we effectively compare how the supply chain decisions of different firms in the same industry and year correlate with aggregate policy uncertainty measures. Although Appendix Table A9 shows the policy uncertainty measures still contain substantial residual variation despite our stringent fixed effects specifications, we consider additional robustness tests which preserve more time-series variation in the data to ensure that our empirical results are not driven by peculiar residual variations in the key explanatory variables. First, we replace industry-by-year fixed effects, which allow arbitrary industry-level shocks in a given year, such as an industry-specific

Table 4 Policy Uncertainty and the Offshoring Decision with Shipping Data

Dependent Variable:	f(Deals)	f(Value)	f(Weight)
	(1)	(2)	(3)
U.S. TPU	0.076	-0.316	-0.009
	(0.146)	(0.326)	(0.184)
U.S. TPU×Mostly Foreign Sales	0.565***	0.468	0.214
	(0.170)	(0.364)	(0.230)
U.S. EPU	-0.003	-0.044	-0.035
	(0.060)	(0.163)	(0.094)
U.S. EPU× Mostly Foreign Sales	-0.141**	0.348**	0.014
	(0.067)	(0.153)	(0.126)
Foreign EPU	-0.023	0.055	0.020
	(0.061)	(0.164)	(0.097)
Foreign EPU×Mostly Foreign Sales	0.022	-0.442**	-0.092
	(0.076)	(0.168)	(0.110)
Mostly Foreign Sales	0.437***	-0.077	-0.077
	(0.117)	(0.200)	(0.184)
Observations	6,282	4,253	6,282
R^2	0.827	0.738	0.789

Note: The table shows results using the firm-quarter dataset of shipping records from 2014 to 2019. Columns (1), (2) and (3) respectively study the number of deals, the amount of values, and the amount of weights. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

policy or demand shock, with industry-specific linear time trends. Second, we replace industry-by-year fixed effects simply with an aggregate linear time trend. The empirical results in Appendix Section C.2 shows similar corroborating evidence for Hypothesis 1.

Next, we turn to potential confounding variables such as some firm-level or industry-level characteristics or specific variable definitions driving the relation between supply chain decisions, U.S. TPU, and the interaction of U.S. TPU with mostly foreign sales exposures. First, we include 16 more robustness tests to ensure that the statistical correlations we document are robust. We group these tests into three sets. The first set of tests in Appendix Section C.3 show our results are not driven by a small set of large firms or conglomerates. We find that excluding large firms and conglomerates with multiple industry classifications do not change our main results. In fact, considering a subset of single-segment firms (which by definition will have majority domestic relationships) in Appendix Section C.4 shows the same results as our conditional results when the majority foreign sales variable takes the value zero. We also test whether different industry sectors separately exhibit such relationships between offshoring and U.S. TPU (Appendix Section C.5). We find that the manufacturing industry exhibits stronger results than the average result, although non-manufacturing industries such as the retail industry also shows similar empirical patterns as

our main results.

The second set of tests in Appendix Section C.6 use the subsamples of different time periods, which show our results are not driven by a specific time period. For example, even prior to President Donald Trump's inauguration (and the subsequent US-China trade war), we obtain similar results using a rolling sample that excludes President Obama's administration. Therefore, our results do not appear driven by a specific federal government administration. Our results are also robust by excluding all US-China relationships (Appendix Section C.7), thus our findings are not only driven by a specific foreign country.

The third set of tests shows that our results obtain even with slightly different variable constructions. Appendix Section C.8 consider an alternative definition of the exposure to U.S. TPU by considering whether a firm has majority foreign customers rather than majority foreign sales. We obtain qualitatively similar results. Our results are also robust to an alternative definition of U.S. TPU based on web archives of newspapers (Appendix Section C.9).

3.3.3. Reverse Causality Lastly, there may be a concern that the quarterly panel regressions we perform using contemporaneous quarterly relationships are subject to reverse causality, whereby changing supply chain variables affects U.S. trade policy uncertainty. In addition, the quarterly analyses may also ignore changes within the quarter. To address both concerns, we instead consider a monthly panel of firm supply chain variables and policy uncertainty measures.

Appendix Section C.10 studies the relation between supply chain relationships and policy uncertainty measures from the same month, with a one-month lag, a two-month lag, and a three-month lag. If the relationship is not due to reverse causality or confounding monthly variables, we expect the same relation across all specifications. Indeed, we find quantitatively and qualitatively similar results using the one-month lagged policy uncertainty measures as well as the two-month lagged policy uncertainty variables.

Overall, all robustness tests show qualitative results similar to those shown in Table 2. Whether firms offshore or re-shore suppliers is dependent on the location of its product market. However, firms with more bargaining power, as proxied for by production flexibility and production network centrality, may also react more strongly to precautionary measures to reduce operational risk. We study this cross-sectional difference below.

3.4. Firm Bargaining Power

In this section, we study whether firm characteristics moderate the relationship between policy uncertainty and sourcing. In particular, we study the impact of production flexibility and a firm's importance in its production network.

In fact, the extent to which domestic or foreign relationships respond is based on whether firms have high negotiation power over their customers and suppliers, and whether American firms have production flexibility in terms of inputs. However, the predictions for both bargaining power and production flexibility are theoretically ambiguous. On the one hand, firms with more bargaining power may be able to withstand trade policy uncertainty since they have a larger buffer, and those with more production flexibility can more easily find trade partners. On the other hand, those with more bargaining power may also more easily search for new supply chain relationships since they may be able to promise a large flow to suppliers or customers. In a similar spirit, those with less production flexibility are more susceptible to trade policy shocks and may, therefore, be more likely to increase foreign suppliers as operational hedges.

Therefore, we expect firms with more bargaining power and less production flexibility to respond more to all policy uncertainty. In this section, we study whether firm characteristics moderate the relationship between policy uncertainty and the main outcome variable, that is the fraction of domestic suppliers or domestic customers. Specifically, we study the impact of production flexibility and a firm's importance in its production network.[9]

3.4.1. Production Flexibility We study how production flexibility affects a firm's supply chain relationships with policy uncertainty using a specification similar to equation (1) but also including interaction terms between flexibility measures X_{t-1} and the U.S. TPU, U.S. EPU, and weighted foreign EPU measures. We consider two sets of proxies. The first set of measures captures how specific is the input of a customer firm is, following Rauch (1999). Firms with more specific input may be more exposed to supply chain disruptions and would be more likely to engage in actions to reduce risk exposures. The second set of measures captures the relative bargaining power of firms: the profit margin measured by the income-asset ratio and the sales market share. Firms with greater profit margins and market shares likely have more bargaining power with suppliers and can more easily change suppliers.

Table 5 shows two findings related to production flexibility. First, we find that U.S. TPU predicts more increases in foreign relationships if their production processes are more rigid from Column (1) through (3). American firms with more specific inputs, more sales market share, and greater profit margins exhibit larger responses to U.S. TPU. This result especially holds for American firms with

[9] Whether a company can strategically pick its suppliers or customers depends on the relative bargaining power of customer firms versus supplier firms. In practice, we believe customer firms typically likely have higher bargaining power than supplier firms. Therefore, we focus our analyses on American firms' supplier relationships. To the extent that certain firms may also choose their customer base, we expect to find similar results when studying customer relationships. In untabulated analyses, we repeat the main empirical analyses studying American supplier firms and foreign customers. We find qualitatively similar but quantitatively smaller and statistically less significant empirical results, consistent with firms more likely to strategically choosing their suppliers and less likely to strategically choosing their customers.

majority foreign sales, as Columns (4) through (6) all show negative effects from interactions of U.S. TPU and input specificity, sales market share, and profit margin. Besides, this result holds even for American firms with majority domestic sales, as Column (8) shows a negative coefficient on the interaction of U.S. TPU and above-median market share statistically significant at the 5% level. Therefore, the production flexibility and bargaining components appear to increase a firm's sensitivity to trade and economic policy uncertainty.

Table 5 Bargaining Power and Offshoring

Dependent Variable:	Domestic Supplier Fraction								
Flexibility Measure =		Input Specificity			Market Share			return on assetss	
		Mostly Foreign	Mostly Domestic		Mostly Foreign	Mostly Domestic		Mostly Foreign	Mostly Domestic
Sample =	Full	Sales	Sales	Full	Sales	Sales	Full	Sales	Sales
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
U.S. TPU	-0.029	-0.107	-0.013	1.093***	1.248***	0.385	0.076	0.120	0.065
	(0.137)	(0.335)	(0.178)	(0.267)	(0.193)	(0.263)	(0.159)	(0.364)	(0.194)
U.S. TPU×High Flexibility	-1.689***	-1.577**	-0.924	-2.702***	-3.447***	-0.979**	-0.676**	-1.144***	-0.315
	(0.633)	(0.732)	(0.764)	(0.541)	(0.741)	(0.430)	(0.271)	(0.436)	(0.268)
U.S. EPU	0.160	0.273	0.059	-1.305***	-1.375***	-0.607***	-0.494***	-0.499*	-0.357*
	(0.154)	(0.250)	(0.117)	(0.262)	(0.362)	(0.230)	(0.184)	(0.280)	(0.199)
U.S. EPU×High Flexibility	-0.397	-0.879	0.103	2.788***	2.914***	1.380***	1.054***	1.038*	0.770**
	(0.539)	(0.683)	(0.613)	(0.519)	(0.710)	(0.411)	(0.318)	(0.433)	(0.367)
Foreign EPU	-0.142	0.151	-0.267	0.555	0.829	0.047	0.277	0.434	0.134
	(0.324)	(0.401)	(0.300)	(0.367)	(0.557)	(0.414)	(0.353)	(0.467)	(0.370)
Foreign EPU×High Flexibility	0.553	0.420	1.004	-1.025**	-0.890	-0.407	-0.621	-0.322	-0.569
	(0.511)	(0.751)	(0.727)	(0.470)	(0.746)	(0.471)	(0.378)	(0.592)	(0.434)
High Flexibility				0.636	0.022	1.265	0.138	-0.217	0.471
				(1.240)	(1.790)	(1.574)	(0.436)	(0.609)	(0.470)
Observations	50,725	22,260	28,465	50,725	22,260	28,465	50,725	22,260	28,465
R^2	0.674	0.722	0.694	0.678	0.725	0.695	0.675	0.722	0.694

Note: The table shows regressions using domestic supplier fraction as dependent variables and flexibility measures as moderators. Columns (1,2,3), (4,5,6) and (7,8,9) respectively study the flexibility measure of input specificity, market share, and return on assets. Columns (1,4,7), (2,5,8) and (3,6,9) respectively study the full sample, firms with mostly foreign sales, and firms with mostly domestic sales. Mostly foreign sales is if fraction of foreign sales is greater than 50% and mostly domestic is if fraction of foreign sales is less than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

Second, comparing Columns (4) to (6) with Columns (7) to (9) also shows firms with majority foreign sales tend to be more responsive to both U.S. TPU and U.S. EPU overall. However, consistent with the interpretation that U.S. EPU is less diversifiable than U.S. TPU, American firms with an above-median market share increase the domestic supplier fraction regardless of whether the majority of their sales are domestic or foreign.

3.4.2. Production Network Centrality Next, we test whether firm-level production network characteristics affect the relationship between policy uncertainty measurements and supply chain variables.

The main measure of network centrality that we use is the authority centrality, based on Kleinberg centrality measures (Easley et al. 2010). This measure can be interpreted as the importance

of a customer relative to all customers in the global production network. Authorities and hubs are natural generalizations of eigenvector centrality. We consider the authority score because it highlights the importance of each American firm as a customer. A more important customer corresponds to a customer with more bargaining power compared to the supplier. We calculate the authority centrality for each firm every quarter based on the existing supply chain relationships there were present over that quarter. Thus, as the overall global supply chain network changes through time, a firm's centrality in the network also changes.

Table 6 shows firms with a higher authority centrality score in the production network to respond more to U.S. TPU. In other words, more important customer firms are more sensitive to U.S. TPU, as they tend to have more bargaining power over their suppliers. Consistent with the production flexibility section above, we find non-trade U.S. EPU predicts an increase in domestic supplier shares. Our robustness check using other alternative centrality measures in Appendix Section C.11 suggest similar results that overall, more important firms in the production network are more sensitive to trade and economic policy uncertainty.

Therefore, as with the previous subsection, we find that more customer bargaining power – either through higher production flexibility or being a more important customer in the supply network – corresponds with a higher sensitivity of supply chain offshoring versus re-shoring decisions with respect to U.S. TPU.

3.5. Foreign Sourcing Diversification

Next, we test Hypothesis 2, whether firms diversify across their portfolio of foreign suppliers. For this analysis, we study the intensive margin of the number of relationships that a firm has in a particular country using a firm-foreign country-quarter panel and consider the specification in equation (2).

Table 7 shows that within a firm-foreign country pair, on average, an increase in U.S. TPU tends to increase the number of foreign supplier relationships (Column (1)) and decrease the possibility of exiting that foreign country completely (Column (3)). Columns (2) and (4) show the average results are driven by firms with majority foreign sales. Column (5) shows that on average, U.S. TPU predicts an increase within firm-foreign country pair, representing an intensive margin adjustment. These results are consistent with firms diversifying their foreign supplier sources across different foreign countries.

A higher foreign EPU predicts a greater decrease of foreign suppliers in the affected country (Columns (1) and (2)) and a greater increase in the probability of a complete exit (Columns (3) and (4)) from that country among American firms with majority foreign sales relative to those with majority domestic sales. This effect may arise as firms with majority foreign sales are more familiar with operating among foreign countries compared to firms with majority domestic sales.

Table 6 Offshoring and Production Network Centrality

Dependent Variable:	Domestic Supplier Fraction		
Sample	Full Sample	Mostly Foreign Sales	Mostly Domestic Sales
	(1)	(2)	(3)
U.S. TPU	0.187	0.299	-0.101
	(0.209)	(0.288)	(0.276)
U.S. TPU×High Authority	-0.844***	-1.355**	0.029
	(0.387)	(0.590)	(0.376)
U.S. EPU	-0.519***	-0.867***	0.048
	(0.190)	(0.284)	(0.230)
U.S. EPU×High Authority	1.186***	1.602***	0.062
	(0.393)	(0.611)	(0.392)
Foreign EPU	0.484	0.794*	-0.058
	(0.359)	(0.480)	(0.394)
Foreign EPU×High Authority	-1.051**	-0.862	-0.312
	(0.465)	(0.580)	(0.491)
High Authority	-0.243	-0.618	-0.349
	(0.703)	(1.194)	(0.724)
Observations	42,274	18,092	24,182
R^2	0.736	0.752	0.719

Note: The table shows regressions using domestic supplier fraction as dependent variables and production network authority centrality as moderators. Columns (1), (2), and (3) respectively study the full sample, firms with mostly foreign sales, and firms with mostly domestic sales. Mostly foreign sales is if fraction of foreign sales is greater than 50% and mostly domestic is if fraction of foreign sales is less than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

These findings are consistent with firms strategically shifting their supply chains globally in response to different forms and sources of policy uncertainty. U.S. TPU is positively related to more relationships abroad in foreign countries where firms already have a presence, while foreign-country-specific EPU appears to decrease their presence. These results are consistent with the fixed costs of entering a new country to form a relationship, which may include learning the legal and institutional setting for that country. Combining this fact with the previous firm-level null-result on the impact of weighted foreign EPU on domestic relationship shares, we establish the main foreign supplier result – an increase in a foreign country's EPU leads American firms to shift their supplier base to other foreign countries, instead of returning back to the U.S. Therefore, Hypothesis 2 is supported empirically.

Finally, we conduct a similar analysis on foreign sourcing diversification using the shipping transaction data. The results shown in Table 8 are consistent with foreign sourcing diversification. Column (1) and (5) show a specific foreign country's EPU will significantly reduce the deals and goods weight in that country, while other columns also show the same direction but with weaker

Table 7 Foreign Supplier Diversification

Dependent Variable:	f(Foreign Suppliers) × 100		1(Exit Country) × 100		$\frac{\text{Foreign Suppliers}}{\text{Total Foreign Suppliers}} \times 100$	
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU	1.000***	-0.856**	-0.489	0.264	0.066**	0.122***
	(0.369)	(0.386)	(0.367)	(0.353)	(0.030)	(0.038)
U.S. TPU×Mostly Foreign Sales		3.797***		-1.555***		-0.114***
		(0.571)		(0.366)		(0.036)
U.S. EPU	0.200	1.149***	-0.357	-0.658**	0.028	-0.032
	(0.248)	(0.356)	(0.257)	(0.317)	(0.029)	(0.038)
U.S. EPU×Mostly Foreign Sales		-2.084***		0.705		0.123***
		(0.654)		(0.427)		(0.044)
Foreign EPU	-1.175**	-0.665	1.082**	0.554	-0.159**	-0.103
	(0.525)	(0.492)	(0.419)	(0.425)	(0.070)	(0.088)
Foreign EPU×Mostly Foreign Sales		-1.000		1.023**		-0.106
		(0.612)		(0.486)		(0.098)
Mostly Foreign Sales		3.792***		-3.142***		0.046
		(1.051)		(0.738)		(0.066)
Observations	150,730	150,730	150,730	150,730	150,730	150,730
R^2	0.608	0.609	0.518	0.518	0.699	0.699

Note: The table shows our main results using the firm-foreign country-quarter dataset from 2003 to 2018Q1. Columns (1,2) study the number of foreign relationships. Columns (3,4) study the probability of exiting a foreign country entirely. Columns (5,6) study the fraction of foreign-country relationships over total foreign relationships represented as a percentage. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU is the quarterly EPU for a foreign country. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm-by-foreign country, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

statistical significance due to a limited time-series of only 20-quarters.

4. Implications for Shareholders

In this section, we study the average implications of these changes in supply chains for shareholders. Specifically, we study the relation between measures of policy uncertainty and firm fundamentals as well as stock returns. Firm fundamentals would capture changes in firms' operations and short-term cash flows, while stock returns capture the impact of those effects, if any, as well as changes in risk exposures. It is worth noting that stock returns may be affected even without any immediate change in a firm's operations as they also respond to the risk exposures related to investors' discount rates on the future cash flows of the firm (Jain and Wu 2020).

4.1. Firm Profitability

We use the empirical specification from equation (1) to study the relation between policy uncertainty measures and firms' fundamentals. Table 9 studies whether U.S. TPU, U.S. EPU, and Foreign EPU measures appear systematically correlated with operating metrics, including return on assets, turnover to assets, cost-of-goods sold to assets, and inventory relative to assets. On average, Columns (1) and (3) show no statistically significant relation between U.S. TPU and return

Table 8 Foreign Supplier Diversification with Factset Shipping Data

Dependent Variable:	f(Deals)	Deals Fraction	f(Value)	Value Fraction	f(Weight)	Weight Fraction
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU	0.153*	0.676	-0.054	0.415	-0.005	0.459
	(0.079)	(0.483)	(0.169)	(1.302)	(0.084)	(0.578)
U.S. TPU×Mostly Foreign Sales	0.062	-0.562	0.368**	-0.268	0.097	-0.434
	(0.142)	(1.101)	(0.165)	(2.345)	(0.183)	(1.231)
U.S. EPU	-0.021	0.381	0.232*	-0.154	0.097	0.745
	(0.065)	(0.408)	(0.117)	(0.915)	(0.062)	(0.484)
U.S. EPU×Mostly Foreign Sales	0.092	-0.650	-0.248	-2.411	0.133	-0.029
	(0.123)	(1.783)	(0.241)	(3.342)	(0.169)	(2.512)
Foreign EPU	-0.090***	-0.445	-0.084	-0.108	-0.114***	-0.397
	(0.026)	(0.402)	(0.057)	(0.656)	(0.033)	(0.484)
Foreign EPU×Mostly Foreign Sales	-0.070	0.547	-0.010	1.996	-0.093	1.085
	(0.099)	(1.873)	(0.183)	(3.064)	(0.164)	(1.785)
Mostly Foreign Sales	-0.205	-0.328	-0.296	3.672	-0.406**	-0.559
	(0.135)	(3.062)	(0.330)	(5.686)	(0.169)	(3.545)
Observations	13,401	13,401	7,661	7,661	13,401	13,401
R^2	0.758	0.695	0.684	0.710	0.736	0.668

Note: The table shows results using the firm-foreign country-quarter dataset of shipping records from 2014 to 2019. Columns (1-6) respectively study the number of foreign-country deals, the fraction of foreign-country deals over total foreign deals represented as a percentage, the amount of foreign-country values, the fraction of foreign-country values over total foreign values represented as a percentage, and the amount of foreign-country weights, the fraction of foreign-country weights over total foreign weights represented as a percentage. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU is the quarterly EPU for a foreign country. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm-by-foreign country, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarterp<0.01.

on assets or revenue to assets. However, we find that on average a higher foreign EPU, such as uncertainty in fiscal policy or labor laws in foreign countries, corresponds to higher revenue to assets but also an offsetting increase in cost-of-goods sold. Compared to majority-domestic-sales firms, majority-foreign-sales firms see a decrease in return on assets when foreign EPU rises, driven by a decrease in revenues and a less-than-offsetting cost-of-goods sold relative to assets. When foreign EPU rises, we find that compared to firms with majority domestic sales, those with majority foreign sales increase inventory relative to sales. These results are consistent with how American firms with majority foreign sales are more exposed to foreign policy.[10]

[10] An alternative representation of these results is to consider a two-stage approach whereby the policy measures affect the number of foreign suppliers, then the number of foreign suppliers can affect firm outcomes. Using such an econometric framework permits the interpretation of how supply chains can affect firm outcomes. We implement this framework and find a 10% increase in foreign suppliers attributable to policy uncertainty measures increases both sales and cost-of-goods sold relative to assets, as well as long term investment, which includes cross-holdings. Although the econometric specification is the same to that of an instrumental variables approach, we do not interpret the coefficients as a causal impact as we believe the exclusion restriction of the trade policy uncertainty is likely violated. As a result, we do not interpret these results as a causal relation that changes in the US TPU causes changes in firm fundamentals only through supply chain relationships, but interpret this exercise as an alternative representation of our findings in a more economically interpret-able manner. A more rigorous approach can set up a precise model of

Table 9 Impact of TPU and EPU on Quarterly Firm Profitability

Dependent Variable:	ROA		Revenue/Assets		COGS/Assets		Inventory/Sales	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	0.004	0.007	-0.027	-0.024	-0.074*	-0.078	-0.170	-0.214
	(0.038)	(0.042)	(0.079)	(0.101)	(0.037)	(0.062)	(0.262)	(0.373)
U.S. TPU×Mostly Foreign Sales		-0.009		-0.016		0.006		0.294
		(0.028)		(0.123)		(0.100)		(0.437)
U.S. EPU	-0.019	-0.009	-0.050	-0.027	0.019	0.040	0.302	0.077
	(0.033)	(0.038)	(0.063)	(0.088)	(0.036)	(0.062)	(0.226)	(0.260)
U.S. EPU×Mostly Foreign Sales		-0.023		-0.055		-0.048		-0.997***
		(0.025)		(0.108)		(0.088)		(0.382)
Foreign EPU	-0.036	0.029	0.186**	0.440***	0.185***	0.319***	0.024	-0.093
	(0.027)	(0.048)	(0.078)	(0.128)	(0.062)	(0.092)	(0.278)	(0.397)
Foreign EPU×Mostly Foreign Sales		-0.140*		-0.554***		-0.295**		1.394*
		(0.076)		(0.196)		(0.119)		(0.558)
Mostly Foreign Sales		0.014		0.524***		0.474***		0.078
		(0.036)		(0.147)		(0.130)		(0.519)
Observations	50,725	50,725	50,725	50,725	50,725	50,725	50,725	50,725
R^2	0.767	0.767	0.912	0.912	0.927	0.927	0.818	0.818

Note: The table shows regressions using firm fundamentals as dependent variables. Panel A studies fundamentals of operating metrics. Columns (1,2), (3,4), (5,6), and (7,8) respectively study the return on assets, revenue over assets, costs of goods sold over assets, and inventory over sales. Panel B studies fundamentals of corporate investments. Columns (1,2), (3,4), (5,6), and (7,8) respectively study the log assets, property plant and equipment net over assets, long-term investment over assets, and R&D expenses over assets . Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-calendar quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

One alternative explanation is that firms may actually be moving more production domestically when U.S. TPU rises and simply offshore some suppliers to offset the higher labor costs. This conjecture is unlikely for three reasons. First, Column (5) of Table 9 shows a slight decrease in costs of goods sold relative to total assets when U.S. TPU rises. Column (6) also does not show a differentially different effect between firms with majority foreign or domestic sales, where we would have expected firms selling products domestically to be more willing to increase production at home. Second, Appendix Section C.12 studies whether firms appear to have more employment when U.S. TPU rises and finds no statistically reliable correlation. Third, our results are robust to non-manufacturing firms (Appendix Section C.5). Nevertheless, we note that these analyses cannot speak to the employment effects among existing American suppliers. Although we do not observe increases in the extensive margin of domestic relationships, firms may increase along the intensive margin, submitting larger supply orders from existing domestic relationships and increasing domestic employment indirectly. We leave such explorations to future research.

supply chain formation with well-identified counterfactual choices to be calibrated to observed policy uncertainty and sourcing decisions. We believe this approach is beyond the scope of the current paper and leave it for future research.

4.2. Stock Returns Foreign Risk Exposure

We then use an event study methodology to study whether foreign uncertainty shocks have implications for stock returns through the U.S. domestic production networks. We define spikes in foreign EPU events as any country-month in the top 3%, 5%, or 10% of EPU for each of the 19 foreign countries from 2003 to 2018 and study the cumulative abnormal return (CAR) over two months in reaction to foreign EPU shocks for each tier of U.S. firms. Since there are 4,381 country-month values of EPU in total, the 3%, 5%, and 10% correspond to 131, 219 and, 438 events respectively.[11] We define CAR relative to a Fama-French 3-factor model estimated across 60 months prior to the event, and the event horizon includes the month of the foreign EPU spike and one additional subsequent month.

We define the tier level of a U.S. firm based on the shortest network distance to the foreign country that experiences an EPU shock. A U.S. firm that directly connects to the suppliers or customers in that foreign country during an event month is tier 1. Higher-tier firms are defined by the distance to foreign countries in a supply chain. Tier 2 firms have no direct links with foreign counterparts but have direct domestic links with tier 1 firms; tier 3 firms have no direct links with foreign counterparts or with tier 1 firms but have direct domestic links with tier 2 firms.

Table 10 shows a significantly negative impact on U.S. domestic firms in terms of two-month CAR. Tier 2 firms, which are not directly exposed to foreign shocks, also suffer through its link with other foreign-exposed American firms. This indirect exposure represents a negative spillover even to firms that did not move their supply chains overseas. The right panel of Table 10 show that tier 2 firms have a mean and median asset value less than 10% of those in tier 1 and on average experience around twice the fall in stock market capitalization. We do not find a statistically significant further spillover to tier 3 firms, but the point estimates remain negative and of approximately the same magnitude as for firms in tiers 1 and 2.

Our findings suggest foreign economic policy uncertainty has large implications for shareholder wealth. For shareholders, this has the effect of putting more market value at both a direct and indirect risk of foreign policy uncertainty shocks. Because a firm only makes supply chain decisions based on their own direct exposures, the indirect exposures may represent a potential negative spillover to the rest of the firm's supply chains that deserves attention.

5. Discussion and Conclusion

5.1. The U.S.-China Trade War

We use the case of President Donald Trump's election as an application to illustrate the impact of uncertainty on American production networks. A key pillar of the 2016 Donald Trump presidential

[11] Table A10 shows the news corresponding to a randomly selected sample of such country-specific EPU spike events. At a glance, the news appears to be uncertainty shocks to trade and economy rather than simply expected future policies (that is, the news appears to capture the second moment rather than the first moment).

Table 10 Transmission of Foreign EPU Through U.S. Supply Chain

EPU Spike:	3%	5%	10%	Firm Fundamental			
	(1)	(2)	(3)		Mean	Medium	S.D.
Directly Foreign-	-0.74%***	-0.75%***	-0.78%***	Assets (mn)	51,300	6,030	194,000
Exposed Tier 1	(t = -3.09)	(t = -3.14)	(t = -3.97)	Debt / Assets	0.26	0.23	0.21
	(N = 5,088)	(N = 9,977)	(N = 18,998)	Income / Assets	0.03	0.03	0.04
				Revenue Growth	0.06	0.02	1.09
Indirectly Foreign-	-1.51%***	-1.33%***	-1.17%***	Assets (mn)	3,250	490	15,500
Exposed Tier 2	(t = -2.64)	(t = -2.98)	(t = -3.42)	Debt / Assets	0.24	0.19	0.24
	(N=1,787)	(N=3,547)	(N=6,334)	Income / Assets	0.029	0.020	0.222
				Revenue Growth	0.50	0.01	10.92
Indirectly Foreign-	-0.53%	-1.11%	-1.10%	Assets (mn)	6,660	1,880	9,910
Exposed Tier 3	(t = -0.39)	(t = -0.21)	(t = -0.43)	Debt / Assets	0.22	0.16	0.23
	(N=225)	(N=420)	(N=669)	Income / Assets	0.01	0.01	0.04
				Revenue Growth	0.03	0.01	0.29

Note: The table shows the cumulative abnormal return (CAR) over two months for each tier of U.S. firms in response to spikes in foreign EPU, along with the firm fundamental descriptions on the right part of the table. The tier level is defined for a U.S. firm based on its domestic production network distance to the foreign country that experiences an EPU shock. Columns (1), (2) and (3) respectively use the top 3%, 5% and 10% of spikes of monthly EPU as uncertainty shocks in each of the 19 foreign countries from 2003 to 2018. Examples of EPU spikes are provided in A10.

campaign was the promise to move supply chains of American companies from overseas back to America. Between 2016 and 2018, the president sent a myriad of messages on whether trade deals would be made, switching between protectionist and globalist statements, resulting in great trade policy uncertainty. Over the course of 2018, the Trump administration imposed import tariffs on approximately $283 billion of U.S. imports, with rates ranging between 10% and 50%. In response, China, a major trading partner, retaliated with tariffs averaging 16% on approximately $121 billion of U.S. exports, leading the United States into its first episode of large-scale competitive tariff protection since the Great Depression of the 1930s.

On August 23, 2019, President Donald Trump tweeted "Our great American companies are hereby ordered to immediately start looking for an alternative to China, including bringing your companies HOME and making your products in the USA." However, despite the trade war and President Trump's desire to induce American firms to move production processes back into the United States, a recent survey by two American Chambers of Commerce in China finds that only 6% said they were considering moving the business back to the United States.[12] Anecdotally, firms have announced that they will instead shift their supply chains to other countries. For example, Apple is exploring to move 15% to 30% of its production capacity from China, but that would not create jobs in the U.S. Instead, it plans to shift its supplier base to Southeast Asia and is set to begin trial manufacturing of its AirPods in Vietnam.[13]

[12] https://edition.cnn.com/2018/11/16/business/trade-war-us-tariffs/index.html

[13] https://www.reuters.com/article/us-apple-china-restructuring/apple-explores-moving-15-30-of-production-capacity-from-china-nikkei-idUSKCN1TK0XN

Figure 2 **U.S. Supplier Growth Rate Distribution pre- / post- Trump Election in 2016**

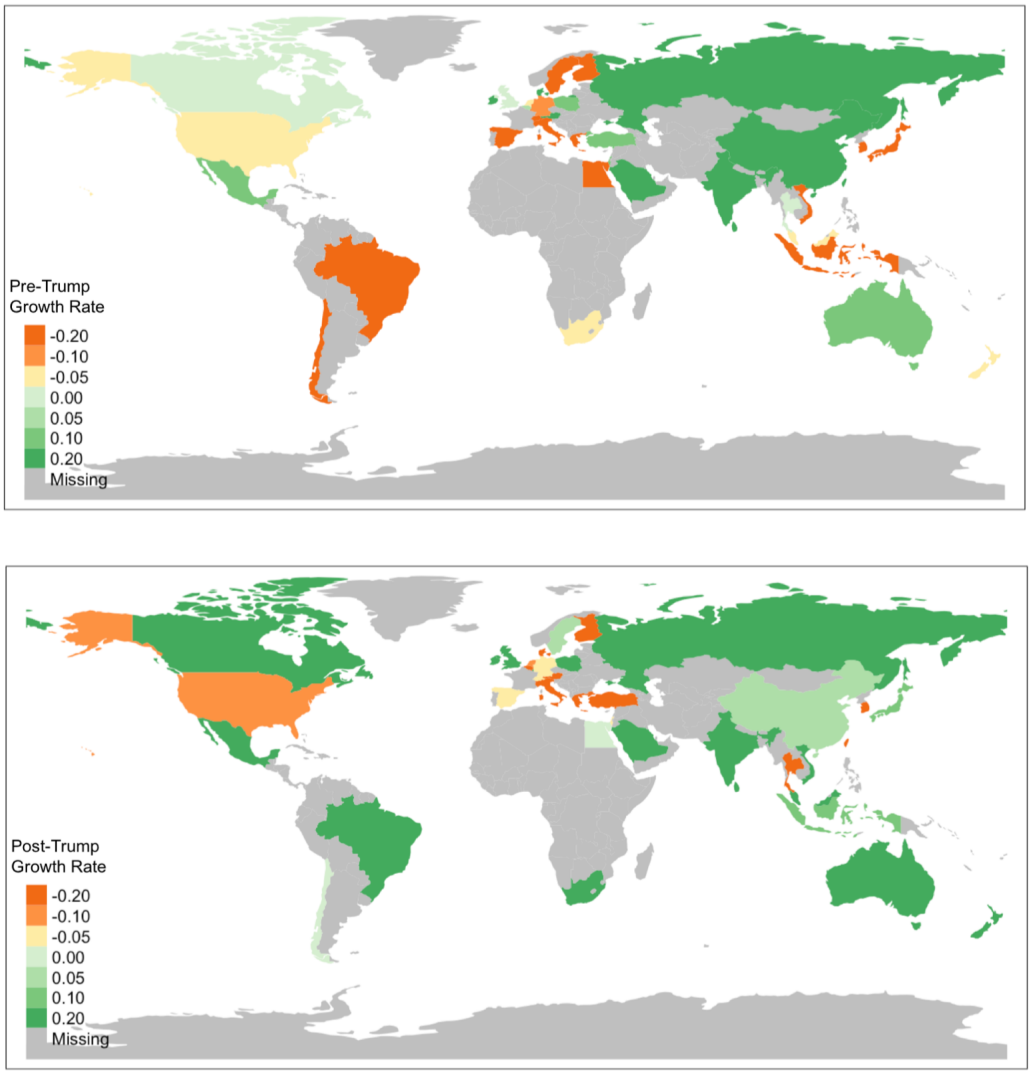


Figure 2 shows two maps of global supply chain relationships based on the data used in this study – one before the Trump election in 2016 and one after that election. Specifically, the top figure is the growth rate for U.S. firms' suppliers in countries around the world between 2014 and 2015, while the bottom figure is the growth rate between 2017 and 2018. Relative to before President Trump's election, we find a lower growth in U.S. firms' supplier relationships with China, and larger increases in supplier relationships in Indonesia, Vietnam, South Africa, and Central America after the presidential election. We also find that supplier relationships in Europe broadly decrease both before and after the 2016 election. The decline in supplier relationships within the United States appears to accelerate after President Trump's election, counter to what President Trump had hoped. Figure 2 shows American companies are moving from domestic to overseas in the choice of their suppliers, while at the same time there is also a phenomenon of supplier

relationship transfer from certain foreign countries to other foreign countries, resulting in global supplier diversification[14]. The supply chain contract observations corroborate our main findings and are also consistent with the survey results in Cohen et al. (2018).

For a back-of-the-envelope calculation of the impact of President Trump's election, the rise in U.S. TPU, and changes in American companies' sourcing, we combine estimates from the estimated increase in the logged foreign suppliers around President Donald Trump's election, estimates of the CAR effects due to foreign EPU spikes in Table 10, and the mean market capitalization of firms in our sample in Table 1.[15,16] Aggregating firm-level estimates, we find the Trump administration increased direct foreign EPU exposures by US$54 billion, of which US$18 billion comes from direct exposures and US$36 billion comes from indirect exposures.

5.2. Conclusion

Facing economic and policy uncertainty, American companies appear to adjust the relationship of global supply chains rather than wait for the uncertainty to turn into actual events. The types of risks embedded in a firm's supply chain and how they manage those risks depend on whether the risks are diversifiable. For American firms, our results are consistent with non-diversifiable U.S. non-trade EPU and diversifiable foreign EPU. Whether U.S. trade policy risks are diversifiable depends on the firm's customer geography. Those with majority foreign sales decrease their domestic supplier share while those with majority domestic sales increase their domestic supplier share. Further, firms with more bargaining power and lower production flexibility appear to take more supply chain action.

In the recent example of the U.S.-China trade war, we find supply chain restructuring began from Trump's presidential campaign starting in June 2015, long before March 22, 2018, when President Trump signed a memorandum to escalate the first tariff on China. We find that American firms have relocated their supply chains by increasing foreign suppliers and decreasing domestic suppliers. On

[14] Here are some detailed growth rates in terms of U.S. firms' suppliers (top: 2014-2015, bottom: 2017-2018): Vietnam (top: -22.81%, bottom: 26.16%), Indonesia (top: -17/52%, bottom: 15.21%), Malaysia (top: -4.99%, bottom: 21.43%), Japan (top (-12.99%, Bottom: 10.73%), Mexico (top: 10.37%, bottom: 20.89%), China (top: 28.31%, bottom: 7.92%), United States (top: -4.85%, bottom: -10.28%)

[15] Nevertheless, the election of President Donald Trump – whose trade rhetoric was almost always protectionist – introduced anticipation of both higher tariffs as well as uncertainty about American trade policy. Thus, studying Donald Trump's election alone conflates the effect of anticipated tariffs on the impact of policy uncertainty. From Tables 1 and 10, if a domestic publicly-listed firm with a mean market capitalization of around $9 billion adds one foreign supplier, it is exposed to an additional foreign shock worth -0.74% in market capitalization, or around US$67 million. In addition, the indirect exposures of the firm's similar-sized suppliers are -1.5%, or US$133 million. Thus, the additional market capitalization exposure to foreign EPU shocks for a firm of the average size is US$200 million, with US$67 million in direct exposures and US$133 million in indirect exposures.

[16] In Appendix Table A25 Column (1), we find after President Trump's election, the number of foreign supplier relationships increased by 34%, which obtains if approximately one in three publicly-listed firms added one more foreign supplier each. Across our sample with an average of 800 firms a quarter, this corresponds to corresponding to about 270 new foreign supplier links.

average, we find that firms are *not coming home*, counter to President Donald Trump's stated goal of moving the production of American firms back to America. Instead, the increased offshoring associated with the higher U.S. TPU increased direct exposures of firm values to foreign economic policy uncertainty shocks by around US$18 billion and indirect exposures by around US$36 billion.

Our framework speaks to a broad range of settings where government economic policy affects the severity of supply chain disruptions, including the recent COVID-19 situation. First Identified in China, supply chain disruptions due to COVID-19 initially appeared diversifiable. However, as the disease rapidly spread and evolved into a global pandemic, supply chain disruptions became less diversifiable. Nonetheless, firms may have experienced differential supply chain disruptions based on differential government responses to the virus. Prior to COVID-19, supply chain management trended towards countries with lower production costs. Such trends may have resulted in supply chains more exposed to disruption as governments in developing countries may be less able to effectively combat the virus. Through the lens of our results, this higher foreign economic policy uncertainty would induce firms to reduce their supplier relationships in those severely affected countries.

Finally, policymakers have floated the idea of a more protectionist trade policy in response to this virus that was first discovered in China. The longer-term effects of COVID-19 may go beyond the supply chain disruptions to temporary plant closures, but may also lead to future trade policy changes. Who gains from these episodes such as the trade war and other measures of economic protectionism? While this paper takes the first step to document how uncertainty in economic policy can affect supply chain decisions through the lens of cost versus risk-management, we leave many exciting topics for future research.

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Appendix A: Sample Characteristics

Table A1 shows the list of all variable names and definitions used in our study, both for the analysis in the main paper and the analysis in the appendix.

Table A1 List of Variable Names and Definitions

Uncertainty Indices:	
U.S. TPU_t	US Trade Policy Uncertainty at time t
U.S. EPU_t	US Non-Trade Economic Policy Uncertainty at time t
Foreign $EPU_{i,t}$	Foreign EPU weighted by firm i's number of relationships with each foreign country at time t
Foreign $EPU_{f,t}$	Economic Policy Uncertainty for foreign country f at time t
Supply Chain Variables:	
Domestic $\text{Fraction}_{i,t}$	Fraction of links in domestic among all links for firm i at time t
$\text{Mostly Domestic}_{i,t}$	A dummy variable for whether domestic fraction is larger than 0.5 for firm i at time t
$\text{Mostly Foreign Sales}_{i,t-1}$	A dummy variable for whether foreign sales fraction is larger than 0.5 for firm i at time t-1
Mostly Foreign $\text{Cust}_{i,t-1}$	A dummy variable for whether foreign customer fraction is larger than 0.5 for firm i at time t-1
f (Foreign $\text{Link}_{i,t}$)	Inverse hyperbolic sine transformation of number of foreign links for firm i at time t
f (Domestic $\text{Link}_{i,t}$)	Inverse hyperbolic sine transformation of number of domestic links for firm i at time t
Num. $\text{Supp/COGS}_{i,t}$	Number of suppliers divided by cost of goods sold for firm i at time t
f (Foreign $\text{Suppliers}_{i,f,t}$)	Inverse hyperbolic sine transformation of number of foreign suppliers for firm i with country f at time t
$1(\text{Exit Country}_{i,f,t}) \times 100$	A dummy for whether the firm i terminates all links in country f at time t
$\frac{\text{Foreign Links}}{\text{Total Foreign Links}}_{i,f,t}$	Fraction of links for firm i in country f among all foreign countries at time t
f ($\text{Deals}_{i,t}$)	Inverse hyperbolic sine transformation of number of foreign shipping deals for firm i at time t
f ($\text{Value}_{i,t}$)	Inverse hyperbolic sine transformation of amount of foreign shipping values for firm i at time t
f ($\text{Weight}_{i,t}$)	Inverse hyperbolic sine transformation of amount of foreign shipping weights for firm i at time t
f ($\text{Deals}_{i,f,t}$)	Inverse hyperbolic sine transformation of number of foreign shipping deals for firm i with country f at time t
$\text{Deals Fraction}_{i,f,t}$	Fraction of foreign shipping deals in country f among all foreign shipping deals for firm i at time t
f ($\text{Value}_{i,f,t}$)	Inverse hyperbolic sine transformation of amount of foreign shipping values for firm i with country f at time t
$\text{Value Fraction}_{i,f,t}$	Fraction of foreign shipping values in country f among all foreign shipping values for firm i at time t
f ($\text{Weight}_{i,f,t}$)	Inverse hyperbolic sine transformation of amount of foreign shipping weights for firm i with country f at time t
$\text{Weight Fraction}_{i,f,t}$	Fraction of foreign shipping weights in country f among all foreign shipping weights for firm i at time t
Firm Fundamental Variables:	
$\text{Input Specificity}_{i,t-1}$	Whether the industry that firm i is in has differentiated goods based on Rauch (1999) at time t-1
$\text{Market Share}_{i,t-1}$	Sales share within the same industry by four code of SIC for firm i at time t-1
$\text{Return-on-Assets(ROA)}_{i,t}$	Operating income before depreciation divided by total assets for firm i at time t
$\text{Authority Centrality}_{i,t-1}$	A centrality measure on the importance of firm i relative to all firms in the global network at time t-1
$\text{Pagerank Centrality}_{i,t-1}$	A centrality measure on the importance of linkages for firm i in the network at time t-1
$\text{Between Centrality}_{i,t-1}$	A centrality measure on the importance of firm i for flows throughout the network at time t-1
$\text{Revenue /Assets}_{i,t}$	Sales revenue scaled by total assets for firm i at time t
$\text{COGS / Assets}_{i,t}$	Costs of goods sold scaled by total assets for firm i at time t
$\text{Inventory/Sales}_{i,t}$	Inventory hold scaled by total sales for firm i at time t
$\log(\text{Asset})_{i,t}$	The natural logarithm of total asset for firm i at time t
$\text{PPENT / Assets}_{i,t}$	Property, Plant, and Equipment scaled by total assets for firm i at time t
$\text{LT. Investment / Assets}_{i,t}$	Long-Term investment scaled by total assets for firm i at time t
$\text{R\&D Exp / Assets}_{i,t}$	Research and Development expenses scaled by total assets for firm i at time t
f ($\text{Employees}_{i,t}$)	Inverse hyperbolic sine transformation of number of employees for firm i at time t
f ($\text{Employees/Assets}_{i,t}$)	Inverse hyperbolic sine transformation of number of employees scaled by total assets for firm i at time t

The remainder of this section discusses the sample representativeness across different countries. Table A2 shows the number of global supply chain relationships that U.S. firms have in each country in our sample, reported by FactSet Revere supply chain data. Table A3 shows that our sample coverage remains fairly stable over time and does not appear to exhibit any distinct patterns in terms of representativeness compared to all firms in Compustat, and finally, Table A4 shows that our final sample, comprising American firms that had at least one foreign relationship in the previous quarter, has a higher market capitalization compared

Table A2 Number of Global Supply Chain Relationships in Each Country

Panel A: Number of Suppliers in:											Panel B: Number of Customers in:									
Year	US	JP	CA	CN	IN	FR	DE	AU	SE	SG	Year	US	JP	CA	CN	IN	FR	DE	AU	SE
2005	8,148	378	263	9	19	117	147	13	25	33	2005	8,148	777	242	40	17	238	450	39	103
2006	7,646	318	215	8	9	80	175	22	23	26	2006	7,646	765	263	38	17	220	442	34	110
2007	7,764	301	211	12	13	103	145	23	22	13	2007	7,764	716	262	46	27	219	447	36	103
2008	8,094	340	216	18	16	121	161	30	22	24	2008	8,094	752	275	82	34	262	473	35	106
2009	7,505	318	185	22	20	112	153	27	22	12	2009	7,505	704	278	102	38	223	439	33	101
2010	7,934	341	220	42	25	115	162	30	25	17	2010	7,934	755	270	156	47	248	445	45	100
2011	9,512	389	265	62	41	329	307	43	101	44	2011	9,512	842	321	204	75	397	576	65	132
2012	11,059	424	317	77	42	393	479	50	144	63	2012	11,059	970	386	260	135	509	665	111	178
2013	12,437	629	474	97	72	366	522	85	134	117	2013	12,437	1,152	476	290	186	490	689	147	149
2014	14,365	785	672	242	220	502	564	241	221	256	2014	14,365	1,473	631	388	255	610	742	269	187
2015	16,807	833	845	509	535	603	593	362	252	260	2015	16,807	1,728	734	470	350	708	815	358	218
2016	18,827	1,120	1,076	668	701	855	705	491	353	334	2016	18,827	2,009	891	667	429	821	922	407	248
2017	21,980	1,330	1,247	1,001	922	1,000	774	534	436	344	2017	21,980	2,477	1097	842	543	1,033	1,062	477	328
2018	22,567	1,494	1,480	1,267	1,203	1,083	799	786	482	340	2018	22,567	2,671	1242	948	696	1,128	1,167	656	395

Note: This table presents the top 10 countries with the most global supply chain relationships with firms in US. The first column shows the time series in year. The second column shows the number of domestic suppliers (for panel A) or customers (for panel B) within US. The other column shows the number of suppliers (for panel A) or customers (for panel B) in each foreign country. Countries are labeled with their 2-digit ISO country code, where "US" is the United States, "JP" is Japan, "CA" is Canada, "CN" is China, "IN" is India, "FR" is France, "DE" is Germany, "AU" is Australia, "SE" is Sweden, "SG" is Singapore.

Table A3 Number of Firms Covered in Main Sample

Number of Firms			
Year	In Our Sample	In Factset but Not in Our Sample	In Compustat but Not in Factset
2004	2,084	1,721	1,436
2005	2,139	1,666	1,175
2006	2,215	1,590	1,210
2007	2,323	1,482	1,197
2008	2,373	1,432	1,550
2009	2,374	1,431	1,613
2010	2,414	1,391	1,481
2011	2,473	1,332	1,349
2012	2,521	1,284	1,086
2013	2,559	1,246	1,003
2014	2,659	1,146	1,091
2015	2,666	1,139	1,073
2016	2,576	1,229	1,023
2017	2,484	1,321	1,045
2018	2,427	1,378	999

to the Compustat universe. However, other variables appear numerically similar in our sample and the full Compustat sample.

Table A4 Summary Statistics for Firms Covered in Compustat

Panel A: US Firms in Compustat (N = 143,200)						Panel B: Firms in Compustat but Not in Our Sample (N = 43,340)					
Firm Fundamental Variable	Mean	SD	P25	Med	P75	Firm Fundamental Variable	Mean	SD	P25	Med	P75
Revenue	736	3,446	10	69	351	Revenue	529	3,118	5.60	57	298
COGS	491	2,540	5	35	204	COGS	304	2,105	1.42	24	179
Net Income	11,418	51,728	1.43	747	5,304	Net Income	7,845	49,845	0.45	567	4,816
Market Capitalization	4,123	21,149	45	324	1,783	Market Capitalization	2,110	19,746	17	248	1125
Shareholder Equity	1,402	6,288	20	154	707	Shareholder Equity	876	5,784	10	89	548
Long-term Debt	921	3,818	0	17	412	Long-term Debt	641	3,456	0	4	311
Return-on-Total Assets	1.10	23.98	0.03	1.39	2.02	Return-on-Total Assets	0.57	20.75	0.00	0.45	0.98
Acct Payables/COGS	278	2,488	31	53	94	Acct Payables/COGS	301	2,541	10	21	74
LT Investments/Total Assets	2.47	8	0	0	1.02	LT Investments/Total Assets	2.15	7.91	0	0	0.89
Total Assets Tangibility	28.23	27.23	6.54	17.52	43.90	Total Assets Tangibility	31.26	30.14	7.85	20.15	54.44
Cash/Total Assets	0.18	0.19	0.03	0.10	0.25	Cash/Total Assets	0.19	0.24	0.03	0.10	0.28
Current Ratio	7.51	11.58	2.95	4.95	8.32	Current Ratio	8.15	15.26	2.87	4.65	8.88
Overhead Intensity	0.92	40.38	0.14	0.30	0.51	Overhead Intensity	0.95	38.45	0.14	0.30	0.53
Input Specificity	0.21	0.54	0.00	0.01	0.01	Input Specificity	0.28	0.67	0.00	0.01	0.01
Herfindahl-Hirschman Index	0.031	0.051	0.000	0.002	0.006	Herfindahl-Hirschman Index	0.029	0.067	0.000	0.001	0.005

Note: The table shows the summary statistics of firms in Compustat versus the firms in Compustat but not in our sample, using a period from 2005 to 2018.

Appendix B: Coverage and Variation of U.S. TPU, U.S. TPU, and Foreign EPU

There may be concerns about the information contained in EPU; specifically, whether foreign EPU is highly correlated with EPU in the United States, and whether a specification including total U.S. EPU and U.S. TPU may suffer from collinearity issues. Table A5 shows all the correlations are statistically significant. The correlation between the U.S. EPU and Global EPU is fairly high at 0.76, but the correlation between U.S. EPU and U.S. TPU is 0.31, much lower and suggesting the collinearity issue is less of a concern when teasing apart the relation between American non-trade economic policy uncertainty and American trade policy uncertainty.

B.1. What Drives EPU Globally?

Table A5 Correlation of Global EPU, U.S. EPU, and U.S. Trade Policy

Panel A: Sample from January 1997 to December 2018			
	Global EPU	U.S. EPU	U.S. TPU
Global EPU	1	0.76	0.48
U.S. EPU		1	0.31
U.S. TPU			1
Panel B: Sample from January 2005 to December 2018			
	Global EPU	U.S. EPU	U.S. TPU
Global EPU	1	0.74	0.58
U.S. EPU		1	0.37
U.S. TPU			1

Note: This table documents the correlation between U.S. TPU, U.S. EPU, and weighted foreign EPU using the monthly sample. Panel A shows the correlations across the longest sample possible and Panel B uses the sample in our paper.

However, our main sample is a firm-by-quarter sample, which averages the economic policy uncertainty measures within a quarter, and each firm in the same quarter faces the same value. Therefore, the correlations shown using only the time-series may change. To be the most transparent with the remaining variation in the data, Table A6 shows the regression of U.S. EPU and weighted foreign EPU for each of our main firm-by-quarter panels on U.S. TPU. We consider different levels of fixed effects, first comparing the unconditional relationships, then the relationship within a firm, and then the relationship within-firm across time controlling for annual industry trends and industry seasonality. We find that U.S. TPU only partially explains U.S. total EPU and weighted foreign EPU. The relative R^2s are fairly low and likely come from industry-year fixed effects. We see that only using firm fixed effects in Columns (2) and (5) for both panels shows a low level of R^2.

Table A6 U.S. Trade Policy and Global EPU

Dependent variable:	U.S. EPU_t			Weighted Foreign $EPU_{i,t}$		
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU_t	0.005	0.039	0.468***	0.082***	0.086***	0.154***
	(0.079)	(0.083)	(0.120)	(0.024)	(0.024)	(0.047)
Constant	0.202			0.139***		
	(0.154)			(0.033)		
FE: Firm		Y	Y		Y	Y
FE: Industry-Yr & Industry-Qtr			Y			Y
Observations	50,956	50,956	50,956	50,956	50,956	50,956
R^2	≤0.001	0.054	0.711	0.027	0.102	0.247

Note: This table documents the relation between U.S. TPU, U.S. EPU, and weighted foreign EPU for our main sample. Quarterly U.S. TPU is calculated from monthly U.S. TPU by taking the simple mean, and similarly for quarterly U.S. EPU. The weighted foreign EPU for each firm is calculated for each firm in a quarter weighted by its lagged number of foreign supplier relationships in that foreign country multiplied by its EPU value. In each country, the TPU and EPU values are z-scored over the sample for cross-country comparability. All regressions include firm, 4-digit NAICS-by-year, and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and quarter and shown in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, and ***denotes $p < 0.01$.

Rather than using our main firm-year-quarter sample, we also consider the monthly EPU values. Table A7 shows the monthly summary statistics of the economic policy uncertainty measures globally. All countries exhibit excess kurtosis and are positively skewed. In addition, we show coefficients on the loading of the country-specific total EPU measure on U.S. TPU. The EPU measures for Brazil, Canada, China, France, Germany, Ireland, Italy, Russia, Singapore, Spain, Sweden, and the United States load statistically significantly. However, consistent with before, U.S. TPU does not account for a large fraction of the variation in total country-specific total EPU. Therefore, the specifications used in the main sample likely do not suffer from multicollinearity concerns.

In addition, Table A8 shows the correlation of EPU in 19 countries. The correlation of EPU between different countries is relatively mild and there is cross-sectional variation among countries. To understand the variation in EPU measures across countries, we perform a principal component analysis. Figure A1 shows that the first principal component accounts for around 60% of the total variation. However, the first three principal components account jointly for only a little over 75% of the variation. To account for 90% of the variation requires seven principal components, suggesting that there are potentially several distinct sub-clusters of countries and idiosyncratic shocks to country-specific EPU.

B.2. Residual Variation of U.S. TPU & EPU used in our analyses

Our main analyses include both industry-by-quarter and industry-by-year fixed effects, accounting for industry-specific seasonalities as well as industry trends over time. A potential concern is that these fixed effects absorb a lot of variation that may distort the estimates in our main analyses. In this subsection, we discuss the amount of residual variation used in our empirical analyses in greater detail.

We present a variance decomposition of our existing empirical specification to highlight the amount of variation remaining in the exact panel data used for our estimates, echoing the analyses in Appendix A in our paper. Below, we produce a summary statistics Table A9 showing the different within-group variations based

Table A7 Summary Statistics of z-scored Economic Policy Uncertainty Index

Country	P25	Med	P75	Skewness	Kurtosis	$\hat{\beta}$		R^2
Australia	-0.68	-0.24	0.38	1.39	4.90	0.07		0.01
Brazil	-0.66	-0.25	0.31	1.90	8.05	0.30	*	0.09
Canada	-0.89	-0.21	0.62	0.83	3.22	0.52	***	0.27
Chile	-0.73	-0.19	0.47	1.26	5.02	0.07		0.00
China	-0.51	-0.33	0.07	3.37	16.96	0.47	**	0.22
France	-0.81	-0.08	0.62	0.84	3.99	0.48	***	0.23
Germany	-0.75	-0.17	0.59	1.25	5.85	0.43	***	0.18
Greece	-0.71	-0.26	0.46	1.16	4.10	0.08		0.01
India	-0.75	-0.28	0.56	1.26	4.51	-0.07		0.00
Ireland	-0.79	-0.02	0.68	0.26	2.52	0.25	**	0.06
Italy	-0.75	-0.13	0.6	0.68	3.49	0.37	**	0.14
Japan	-0.73	-0.13	0.51	1.26	5.45	0.11		0.01
Mexico	-0.54	-0.2	0.27	3.59	20.72	0.11		0.01
Russia	-0.72	-0.26	0.50	1.02	3.52	0.24	*	0.06
Singapore	-0.74	-0.24	0.51	1.27	4.85	0.46	**	0.21
South Korea	-0.68	-0.16	0.46	1.46	3.45	0.35		0.12
Spain	-0.65	-0.13	0.41	1.98	9.55	0.37	**	0.14
Sweden	-0.84	0.00	0.69	0.31	2.88	0.30	***	0.09
United Kingdom	-0.73	-0.07	0.39	2.29	12.59	0.09		0.01
United States	-0.72	-0.29	0.47	1.18	3.74	0.38	***	0.15

Note: This table summarizes Economic Policy Uncertainty indices for 19 concerned countries in our study using a monthly sample from January 2003 and December 2018. The first column has country names. The other columns show statistics including mean, standard deviation, 25 percentile, median, 75 percentile, skewness, kurtosis, the loading on U.S. trade policy, and the related R^2 from the regression. All EPUs are normalized to have zero mean and unit standard deviation for comparability. * denotes $p < 0.1$, ** denotes $p < 0.05$, and ***denotes $p < 0.01$.

Figure A1 PCA of EPU Measures

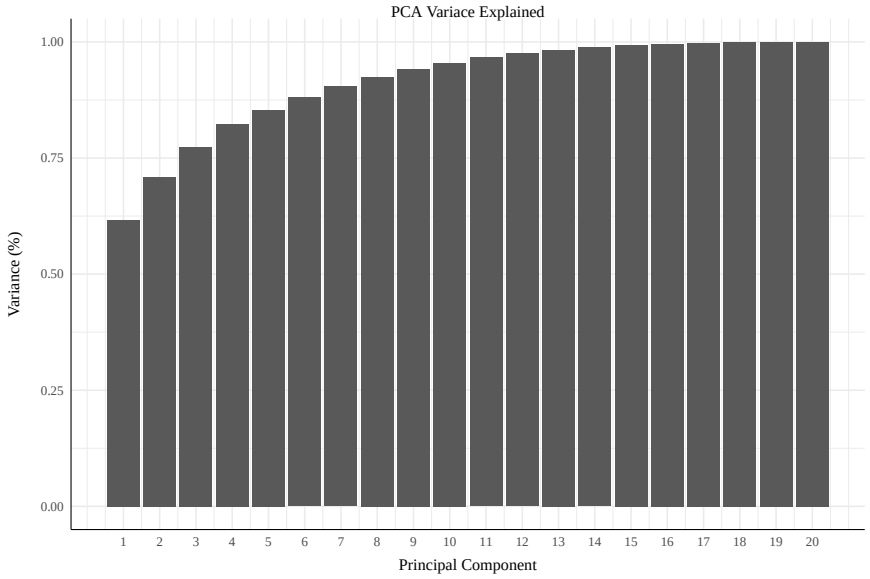


Table A8 Correlations of Economic Policy Uncertainty in 19 Countries

Correlation Matrix																			
	US	AU	BR	CA	CL	CN	DE	ES	FR	GR	IE	IN	IT	JP	MX	RU	SE	SG	UK
US	1.00	0.67	0.04	0.47	0.17	0.08	0.49	0.44	0.39	0.29	0.30	0.55	0.43	0.57	0.43	0.01	0.36	0.50	0.34
AU	0.72	1.00	0.12	0.50	0.39	0.03	0.60	0.53	0.50	0.43	0.37	0.68	0.50	0.79	0.24	0.15	0.52	0.61	0.56
BR	0.09	0.16	1.00	0.41	0.43	0.28	0.43	0.22	0.54	0.47	0.32	-0.01	0.03	0.27	-0.07	0.43	0.33	0.57	0.48
CA	0.53	0.60	0.47	1.00	0.44	0.55	0.70	0.40	0.71	0.51	0.49	0.35	0.45	0.48	-0.02	0.46	0.66	0.81	0.57
CL	0.20	0.42	0.51	0.57	1.00	0.11	0.53	0.46	0.49	0.64	0.32	0.21	0.31	0.37	0.08	0.42	0.64	0.52	0.45
CN	0.36	0.26	0.24	0.55	0.23	1.00	0.33	0.08	0.38	0.11	0.29	-0.03	0.04	0.09	-0.04	0.30	0.26	0.54	0.27
DE	0.51	0.60	0.45	0.76	0.59	0.44	1.00	0.58	0.75	0.54	0.47	0.39	0.51	0.61	0.05	0.44	0.62	0.82	0.72
ES	0.49	0.57	0.29	0.56	0.51	0.32	0.64	1.00	0.51	0.55	0.27	0.26	0.42	0.48	0.44	0.22	0.46	0.52	0.49
FR	0.47	0.58	0.45	0.81	0.57	0.46	0.77	0.66	1.00	0.61	0.53	0.36	0.52	0.52	-0.04	0.45	0.58	0.81	0.66
GR	0.31	0.46	0.47	0.63	0.60	0.26	0.59	0.58	0.65	1.00	0.36	0.23	0.35	0.38	0.20	0.40	0.51	0.59	0.51
IE	0.39	0.47	0.28	0.56	0.35	0.44	0.48	0.36	0.54	0.41	1.00	0.24	0.31	0.38	-0.08	0.27	0.35	0.54	0.58
IN	0.62	0.73	0.04	0.40	0.22	0.18	0.39	0.35	0.40	0.24	0.31	1.00	0.50	0.59	-0.02	0.18	0.36	0.39	0.21
IT	0.45	0.51	0.10	0.49	0.35	0.19	0.48	0.52	0.60	0.45	0.32	0.44	1.00	0.49	0.06	0.23	0.38	0.44	0.30
JP	0.62	0.73	0.26	0.56	0.37	0.33	0.58	0.56	0.56	0.42	0.43	0.60	0.52	1.00	0.09	0.17	0.52	0.65	0.64
MX	0.35	0.08	-0.11	-0.12	-0.10	0.03	-0.05	0.12	-0.14	-0.04	-0.16	-0.03	0.02	0.07	1.00	-0.21	-0.04	0.10	0.01
RU	0.07	0.22	0.42	0.49	0.43	0.22	0.43	0.31	0.46	0.42	0.28	0.25	0.24	0.23	-0.31	1.00	0.42	0.45	0.32
SE	0.34	0.49	0.41	0.69	0.68	0.31	0.62	0.54	0.63	0.51	0.36	0.36	0.39	0.49	-0.18	0.44	1.00	0.63	0.51
SG	0.63	0.70	0.49	0.87	0.61	0.58	0.83	0.65	0.82	0.64	0.57	0.47	0.49	0.71	0.02	0.42	0.67	1.00	0.74
UK	0.52	0.65	0.44	0.72	0.50	0.46	0.69	0.59	0.68	0.56	0.62	0.36	0.33	0.66	-0.03	0.35	0.57	0.81	1.00

Note: This table presents correlations of Economic Policy Uncertainty between each pair of countries in our concern. The upper-triangular matrix shows Pearson correlations, the lower-triangular matrix shows Spearman correlations. Countries are labeled with their 2-digit ISO country code, where "US" is the United States, "AU" is Australia, "BR" is Brazil, "CA" is Canada, "CN" is China, "DE" is Germany, "DN" is Denmark, "FR" is France, "GR" is Greece, "IE" is Ireland, "IN" is India, "IT" is Italy, "JP" is Japan, "MX" is Mexico, "RU" is Russia, "SE" is Sweden, "SG" is Singapore, and "UK" is the United Kingdom.

on the empirical setting we use. Our measures of trade and economic policy uncertainty are z-scored to have zero mean and unit standard deviation in the time series. However, when merged into a firm-year-quarter panel, the variance need not be equal to unity any longer due to an imbalanced firm panel. Therefore, as the benchmark, we show the residual standard error relative to a constant as well, whereby all columns in the table below start at 100% remaining variation, which decreases as the specification includes more fixed effects and controls. Panel A shows the variance decomposition for U.S. TPU, Panel B shows the decomposition for U.S. EPU, and Panel C shows the decomposition for firm-level weighted foreign EPU. In all three panels, Column (1) is a baseline specification with only a constant, Column (2) shows the specification with firm-quarter controls used in the main specification, Column (3) shows the specification with firm controls as well as industry-by-calendar year and industry-by-calendar quarter which absorbs industry-specific trends/factors and industry seasonalities, Column (4) shows the specification with firm controls and firm fixed effects, and finally Column (5) is the empirical specification used in the main analyses of the paper that includes firm controls as well as firm, industry-by-calendar year, and industry-by-calendar quarter fixed effects.

Column (3) shows that over 95% of the variation in the main policy uncertainty measures still remain after including industry-by-year and industry-by-quarter fixed effects. Therefore, we believe our main analyses using this set of fixed effects have more of an effect on controlling for outcome variables rather than distorting the variation in the main explanatory variables.

Across the three panels in Column (5), we find that U.S. TPU has 45% residual variation with those tight fixed effects, U.S. EPU has 63% residual variation, and weighted foreign EPU still has 91% residual

Table A9 Variation of U.S. TPU and EPU Measures In Our Firm-Quarter Panel

	Observations = 50,725 Firm-Quarters				
	(1)	(2)	(3)	(4)	(5)
Fixed Effect Specification	Constant-Only	Constant-Only	Industry-Quarter & Industry-Year FEs	Firm FEs	Firm, Industry-Year, & Industry-Quarter FEs
Firm Controls	No	Yes	Yes	Yes	Yes
	Panel A: Dependent Variable is U.S. TPU (Mean = 0.070)				
R^2	0.000	0.012	0.131	0.812	0.813
Res. Std. Error	0.891	0.886	0.846	0.397	0.404
(%) of Var. Remaining	100%	99%	95%	45%	45%
	Panel B: Dependent Variable is U.S. EPU (Mean = 0.232)				
R^2	0.000	0.014	0.086	0.638	0.641
Residual Std. Error	0.981	0.975	0.955	0.607	0.617
(%) of Var. Remaining	100%	99%	97%	62%	63%
	Panel C: Dependent Variable is Weighted Foreign EPU (Mean = 0.099)				
R^2	0.000	0.002	0.129	0.156	0.250
Residual Std. Error	0.456	0.456	0.433	0.431	0.414
(%) of Var. Remaining	100%	100%	95%	95%	91%

Note: The table shows the variance decomposition of the main explanatory variables used in the analyses in the firm-year quarter panel when we include different sets of controls and fixed effects. Column (1) does not include fixed effects or firm controls. Column (2) includes firm controls only. Column (3) includes 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects, and firm controls. Column (4) includes firm fixed effects and firm controls. Column (5) includes firm, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects, and firm controls. The main specification used in the paper is Column (5).

variation. Given the amount of variation remaining in these variables, we do not believe the variation used to estimate the main analyses in the paper is spurious due to the tight fixed effects used.

Finally, in untabulated analyses, we also find similar quantitative results when replacing industry-by-year fixed effects with industry-specific linear time trends as controls.

B.3. Foreign Country EPU Spike Events

For the spikes in foreign EPU, we select the top 3% of spikes of monthly EPU as uncertainty shocks in each of the 19 foreign countries from 2003 to 2018. Table A10 shows the news corresponding to a randomly selected sample of such country-specific EPU spike events, which are unexpected and sudden in nature. This exercise justifies that the foreign EPU spikes are shocks to trade and the economy.

Table A10 Selected Sample of Country-specific EPU Spike Events

Country	Year	Date	Details
U.S.	2005	Sept	Worldwide protests occur against the Iraq War with over 150,000 protesters in Washington, D.C.
U.S.	2007	Sept	President Bush announces a plan to station 21,500 additional troops in Iraq.
U.S.	2007	Aug	The Dow Jones Industrial Average loses 387.18 points, its largest single-day drop since on 2007.
U.S.	2008	Sept	Wall Street investment bank Lehman Brothers files for Chapter 11 bankruptcy protection.
U.S.	2013	Oct	Congress ultimately reaches a stalemate on the debt-ceiling crisis regarding the Affordable Care Act.
U.S.	2016	June	Hillary Clinton and Donald Trump emerge as the presumptive nominees for the Democratic and Republican.
U.S.	2016	Nov	Donald Trump is elected as the 45th President of the United States.
U.S.	2018	Dec	The Dow Jones has its worst week since 2008. A partial shutdown of the government begins after Congress fails to agree a budget.
Australia	2010	May	The Rudd Government announces it will tax the profits of the mining industry to fund a superannuation rise and a company tax cut.
Australia	2016	Nov	Bushfires flare up across NSW and residents evacuate in Sydney, the Hunter Valley and the Central Coast.
Brazil	2007	Aug	The iBovespa falls by 3,500 points, the biggest one-day drop since the September 11, 2001 attacks.
Brazil	2010	Nov	Rio's drug trafficking factions initiated a series of attacks in response to the government placing permanent police into Rio's slums.
Canada	2008	Oct	Letters were sent to media in British Columbia warning oil and gas companies. Then three bombs are detonated in gas pipelines.
Canada	2013	Oct	Nova Scotia elects a majority Liberal government. The Progressive Conservatives take second place to form the official opposition.
China	2006	July	A major earthquake hits Yunnan killing at least 18-19 people and injuring at least 60 more.
China	2009	June	ROC President Ma Ying-jeou expresses bid for KMT leader. This would allow Ma to be able to meet with PROC President Hu Jintao.
India	2004	May	Indian National Congress wins a surprise victory in Parliament. Dr. Manmohan Singh sworn in as the new prime minister of India.
India	2016	June	Lashkar-e-Taiba militants attack near Frestabal area of Pampore on Srinagar-Jammu National Highway in Jammu and Kashmir.
Japan	2008	Oct	Japan won their tenth nonpermanent seat for 2009 and 2010 sessions on the United Nations Security Council.
Japan	2011	Aug	Naoto Kan announces his resignation as Prime Minister of Japan.
U.K.	2005	Apr	The Prime Minister, Tony Blair asks the Queen for a dissolution of Parliament for a general election on 5 May.
U.K.	2016	June	The United Kingdom votes to leave the European Union. London's stock market plunges more than 8%.

Note: This table presents a sample of country-specific EPU spike events. There are 8 examples the United States and two examples each for Australia, Brazil, Canada, China, India, Japan, and the United Kingdom.

Appendix C: Robustness Tests

This section shows our robustness tests using FactSet Shipping data, as well as sub-sample analyses excluding large firms, conglomerates, excluding supplier links in China, as well as different time periods. In addition, we also repeat our analyses on supply chain decisions using monthly data. We also consider an alternative measure of trade policy uncertainty and an alternative measure of foreign exposure using the number of foreign customers relative to domestic customers rather than revenues.

Finally, we also include additional analyses using other network centrality measures and also consider whether policy uncertainty measures correlate with employment.

C.1. FactSet Shipping

To more directly test whether supplier relations are driven just by headquarter locations or by actual operating locations, we incorporate shipment data, which actually captures the transactions between firms from January 2014 through December 2019. The raw data source of Bill of Ladings (BoLs) has been used in the prior literature, such as Coşar et al. (2015) and Jain and Wu (2020). The benefit for using the transaction data is that we have more details on the transactions, such as the number of shipments, the value, and the weights. Although the latter two variables are not always available for every shipment and may be strategically redacted, the data still contain additional valuable variation. However, the transactional data also have certain limitations. For example, the data availability for the number of shipments is restricted due to national security considerations, which prevents us from observing about 3% of the shipping records. The dataset is assembled from the Customs and Border Protection agency.

However, firms may also opt to redact some of their information such as the value and shipment of the data. In our analyses, we do not explicitly consider the strategic redaction or disclosures of shipment details, and mainly rely on the number of deals (which cannot be redacted) instead of the reported value (which can be redacted) as the main measure of shipments, similar to the treatment in latest supply chain research such as Carvalho et al. (2016). However, since the measurement error due to the strategic redaction of values and physical shipment weights is not obviously correlated with explanatory variables of interest – the trade and economic policy uncertainty – we believe the bias in our measures is not systematically introducing a bias in our analyses that could have generated all of our previous results. In light of the remaining imperfections of this data, we view results using the transaction data jointly with our results using the supplier identity data. We believe that internally consistent results across both data sets likely capture true correlations in the data rather than specific data biases.

The dataset covers shipping records for 16,416 entities, 3,612 of them are identified with CUSIPs by FactSet. After merged with Compustat, we are left with 1,281 firms. To increase sample size, we do directly match using names from shipping records and names from Compustat with the fuzzy-wuzzy package in Python. We manually check all potential matches with a similarity score above 50 (exact match is 100) and confirm an additional 78 matches. Altogether, we have data for 1,359 firms from January 2014 to December 2019. We note that a key consideration for using this data is that we currently only merge the business entity that receives the shipment. This measurement means the receiving firm must be a publicly-listed firm, rather than a subsidiary. Therefore, the data miss shipments that originate internationally to subsidiaries of

American publicly listed firms. If subsidiaries are less likely to source output from overseas as they tend to be smaller than parent firms, and parent firms may negotiate better pricing and shipment volumes compared to subsidiaries, then this sample selection causes a downward bias in our estimates as we would miss the changes in international shipments to subsidiaries.

The tables below show some basic summary statistics of this sub-sample. Table A11 shows the amount of deals, value, and weights with foreign countries for each US firm in each year and show the time-series changes in summation, 25th percentile, mean, median, and 75th percentile. We do not use this empirical analysis as the main specification due to the short time-series nature of this data. As the main explanatory variables used are at the quarterly level, having five years of data means there would only be 20 quarters (and clusters, as we cluster by calendar quarter) and may not produce empirically reliable estimates.

Table A11 Time Series Changes in Shipping Data

Deals (Million)					
Year	Total	P25	Mean	Median	P75
2014	32.03	0	0.38	0.25	2.68
2015	33.38	0	0.40	0.26	2.39
2016	26.89	0	0.32	0.26	2.39
2017	26.04	0	0.31	0.27	2.32
2018	30.85	0	0.33	0.22	2.03
2019	29.08	0	0.30	0.22	2.58
Value (Million)					
Year	Total	P25	Mean	Median	P75
2014	5,920,341	0	5.59	6.21	271
2015	5,810,093	0	5.25	6.23	242
2016	5,880,625	0	5.20	6.82	217
2017	4,720,432	0	5.63	7.90	240
2018	4,610,120	0	5.92	6.07	160
2019	3,180,029	0	4.31	5.19	166
Weights (Million)					
Year	Total	P25	Mean	Median	P75
2014	5,890,238	0.37	8.17	6.03	141.51
2015	4,340,293	0.35	7.02	6.51	142.02
2016	4,260,287	0.39	5.13	6.08	149.95
2017	4,920,240	0.35	5.89	6.59	124.47
2018	4,070,392	0.38	5.21	4.27	104.91
2019	3,880,399	0.26	5.41	5.83	93.21

C.2. Alternative Specification to Preserve Time-Series Variation

As shown above, despite the fairly stringent fixed effects used to account for firm-specific unobservable heterogeneity, industry-by-year shocks, and industry seasonalities, there remains considerable time-series

variation in our main empirical analyses. Nonetheless, we also consider alternative specifications in this subsection that preserve more time-series variation than the tight fixed effects used in the main paper.

We consider replacing industry-by-year fixed effects with industry-specific linear time trends or simply aggregate time trends. Table A12 shows the summary tables for both of these robustness considerations, where Panel A shows the fraction of domestic suppliers in percentage terms and Panel B shows the inverse-hyperbolic-sine transformation of the number of foreign suppliers.

Table A12 Robustness Tests for On-Shoring vs. Off-Shoring Decisions with Time Trends

Panel A: Coefficient (LHS = Fraction Domestic Suppliers)						
Empirical Specification	U.S. TPU	U.S. TPU× Mostly Foreign	U.S. EPU	U.S. EPU× Mostly Foreign	Foreign EPU	Foreign EPU× Mostly Foreign
Baseline	0.868***	-1.646***	-0.324**	1.377***	-3.377***	-0.072
	(0.303)	(0.431)	(0.160)	(0.370)	(0.630)	(0.577)
Replace Industry-Year	-0.046	-1.965***	0.158	1.340***	-3.665***	0.052
with Industry-Specific Linear Time Trend	(0.306)	(0.420)	(0.278)	(0.377)	(0.659)	(0.641)
Replace Industry-Year	0.063	-2.138***	0.082	1.466***	-3.795***	0.162
with Linear Time Trend	(0.309)	(0.424)	(0.282)	(0.392)	(0.658)	(0.648)
Panel B: Coefficient (LHS = f(Number of Foreign Suppliers))						
Empirical Specification	U.S. TPU	U.S. TPU× Mostly Foreign	U.S. EPU	U.S. EPU× Mostly Foreign	Foreign EPU	Foreign EPU× Mostly Foreign
Baseline	-0.039***	0.079***	0.023***	-0.079***	0.090***	0.008
	(0.013)	(0.022)	(0.008)	(0.017)	(0.021)	(0.019)
Replace Industry-Year	0.013	0.096***	0.002	-0.076***	0.104***	0.003
with Industry-Specific Linear Time Trend	(0.014)	(0.021)	(0.015)	(0.018)	(0.021)	(0.021)
Replace Industry-Year	0.016	0.085***	0.001	-0.069***	0.112***	-0.009
with Linear Time Trend	(0.015)	(0.020)	(0.015)	(0.017)	(0.021)	(0.021)

Note: The table shows our robustness tests for the firm-quarter regressions across subsamples. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

Overall, we find the same results as our main empirical analyses: compared to firms with majority domestic sales, those with majority foreign sales decrease the fraction of domestic suppliers when U.S. TPU rises. A one-standard-deviation increase in U.S. TPU decreases the fraction of domestic suppliers by 2.14 percentage points, close to the original baseline result of 1.65 percentage points. Panel B shows at least part of that response comes from the number of foreign suppliers (as opposed to the number of domestic suppliers).

C.3. Excluding Large Firms and Conglomerates

In this section, we consider a subset of firms that are not large multi-nationals. However, we do not have a detailed list of all the operational locations of international suppliers over the majority of our sample period. The International Financial Reporting Standard (IFRS) equivalent of SFAS No. 131 under the United States Generally Accepted Accounting Principles (US GAAP) which requires publicly listed firms in the United States to report geographical and operational-group-level sales came into effect for fiscal years starting on or after January 1, 2010 (IFRS No. 8). Before this accounting rule, the International Accounting Standard (IAS) No. 14 titled "Segment Reporting" was less stringent and not comparable to the US GAAP requirement. Therefore, including such data would decrease our sample by over half. In addition, and more relevant for

our empirical approach, although firms must adopt the reporting standard in 2009, the reporting quality is not standardized, and some firms may report such information in footnotes while others have tables in their main annual results. Such data are not normalized and acquiring data sources (such as FactSet Hierarchy data with Revenue) is costly. Furthermore, the FactSet Hierarchy data with revenue segments only starts in 2014, limiting the availability even more beyond what would be required to ensure the robustness of our results. Therefore, we focus on subsets of the American firms in our main sample, allowing for international suppliers and customers as defined in the original paper. The assumption underlying this empirical analysis is that the matching between customers and suppliers show assertive matching in terms of size and capacity, like how large customers match with larger suppliers.

First, in the first row of both panels of Table A13, we consider removing firms in the top 25% of total assets and also those below 10 billion USD in total assets in the two tables below. This subset contains 1,495 unique firms from 2005 to 2018 with the average revenue of 326 million USD relative to the average of 1.3 billion USD for the full sample. A one-standard-deviation increase in U.S. TPU increases the fraction of domestic suppliers by 0.74 percentage points for firms with mostly domestic customers. Compared to firms with mostly domestic customers, firms with mostly foreign customers decrease the share of domestic suppliers by 1.65 percentage points. The changes in supply chain composition come from changes in the number of foreign suppliers rather than changes in the number of domestic suppliers.

We find similar results when considering a subset of firms with total assets below 10 billion USD in the third row of both panels of Table A13. This subset contains 1,637 unique firms from 2005 to 2018 with the average revenue of 513 million USD relative to the average revenue of 1.3 billion USD for the full sample. A one-standard-deviation increase in U.S. TPU increases the fraction of domestic suppliers by 0.81 percentage points for firms with mostly domestic customers. Compared to firms with mostly domestic customers, firms with mostly foreign customers decrease the share of domestic suppliers by 1.15 percentage points. The changes in supply chain composition come from changes in the number of foreign suppliers rather than changes in the number of domestic suppliers.

Second, we consider excluding conglomerates from our sample. To do so, we use Compustat Segments data to define as those with different primary and secondary SIC codes based on 1, 2,3, and 4 digits as different measures of firms being a conglomerate. We consider multiple classifications of conglomerates to show the robustness of our results across different subsamples. The SIC (Standard Industrial Classification) code is a big-endian structure established in the United States in 1937 for economic analysis purposes. The one-digit SIC code corresponds to economic divisions, two-digit corresponds to major groups, three-digit corresponds to industry groups, and four-digits corresponds to an industry. Companies may have both a primary SIC code as well as secondary SIC codes. For example, Apple – a large two-trillion-dollar conglomerate and one-time largest company in the world – has a primary SIC code of 7372, corresponding to "Prepackaged Software", and secondary industry codes corresponding "Electronic Computers" (3571), "Computer Terminals" (3575), "Computer Peripheral Equipment" (3577), "house hold audio and video equipment" (3651) and "radio and TV communications equipment" (3663). The numerous industry classifications straddle different industries, industry groups, major groups, and divisions. Therefore, excluding those with multiple 4-digit SIC codes is

Table A13 Robustness Tests for On-Shoring vs. Off-Shoring Decisions

Panel A: Coefficient (LHS = Fraction Domestic Suppliers)							
			U.S. TPU×		U.S. EPU×		Foreign EPU×
Empirical Specification	N	U.S. TPU	Mostly Foreign	U.S. EPU	Mostly Foreign	Foreign EPU	Mostly Foreign
Baseline	50,725	0.868***	-1.646***	-0.324**	1.377***	-3.377***	-0.072
		(0.303)	(0.431)	(0.160)	(0.370)	(0.630)	(0.577)
Excl. Top 25% of Assets	38,047	0.737**	-1.153***	-0.014	0.662**	-4.010***	-0.125
		(0.303)	(0.419)	(0.146)	(0.327)	(0.633)	(0.620)
Excl. Total Assets < 10 bn	43,988	0.808***	-1.241***	-0.140	0.963***	-3.805***	-0.169
		(0.298)	(0.408)	(0.147)	(0.333)	(0.641)	(0.542)
No Multiple 4-Digit SIC	15,327	0.987***	-1.922***	-0.090	1.104**	-3.317***	1.188
		(0.288)	(0.611)	(0.177)	(0.479)	(0.729)	(0.855)
No Multiple 3-Digit SIC	21,211	0.698**	-1.061*	-0.002	0.831*	-3.515***	0.528
		(0.262)	(0.544)	(0.179)	(0.428)	(0.701)	(0.667)
No Multiple 2-Digit SIC	26,377	0.813***	-1.337**	-0.077	0.949**	-3.360***	0.831
		(0.257)	(0.501)	(0.190)	(0.404)	(0.696)	(0.684)
No Multiple 1-Digit SIC	31,481	0.924***	-1.629***	-0.170	1.112***	-3.433***	0.716
		(0.252)	(0.462)	(0.159)	(0.381)	(0.700)	(0.657)
Retail	3,866	1.010***	-5.000***	-0.678***	4.234***	-1.764**	4.234***
		(0.214)	(1.200)	(0.184)	(1.048)	(0.861)	(1.048)
Manufacturing	26,203	0.889***	-1.578***	-0.327*	1.451***	-3.927***	-0.189
		(0.328)	(0.520)	(0.191)	(0.450)	(0.777)	(0.747)
Sample ≤ 2016	41,163	1.137**	-1.793*	-0.263	1.412***	-3.432***	-1.374**
		(0.501)	(0.949)	(0.201)	(0.460)	(0.883)	(0.641)
Panel B: Coefficient (LHS = f(Number of Foreign Suppliers))							
			U.S. TPU×		U.S. EPU×		Foreign EPU×
Empirical Specification	N	U.S. TPU	Mostly Foreign	U.S. EPU	Mostly Foreign	Foreign EPU	Mostly Foreign
Baseline	50,725	-0.039***	0.079***	0.023***	-0.079***	0.090***	0.008
		(0.013)	(0.022)	(0.008)	(0.017)	(0.021)	(0.019)
Excl. Top 25% of Assets	38,047	-0.030***	0.041**	0.006	-0.031***	0.124***	0.004
		(0.011)	(0.015)	(0.005)	(0.011)	(0.019)	(0.017)
Excl. Total Assets < 10 bn	43,988	-0.033***	0.047***	0.011*	-0.047***	0.115***	0.009
		(0.011)	(0.016)	(0.006)	(0.013)	(0.020)	(0.015)
No Multiple 4-Digit SIC	15,327	-0.069***	0.139***	0.021**	-0.076***	0.074***	-0.033
		(0.014)	(0.030)	(0.009)	(0.023)	(0.026)	(0.030)
No Multiple 3-Digit SIC	21,211	-0.053***	0.086***	0.017*	-0.060***	0.088***	-0.002
		(0.013)	(0.025)	(0.009)	(0.019)	(0.024)	(0.022)
No Multiple 2-Digit SIC	26,377	-0.052***	0.089***	0.018**	-0.066***	0.095***	-0.025
		(0.013)	(0.024)	(0.009)	(0.018)	(0.023)	(0.024)
No Multiple 1-Digit SIC	31,481	-0.052***	0.094***	0.018**	-0.067***	0.099***	-0.028
		(0.011)	(0.022)	(0.008)	(0.017)	(0.023)	(0.022)
Retail	3,866	-0.043***	0.220***	0.037***	-0.242***	0.061	-0.177*
		(0.010)	(0.079)	(0.012)	(0.071)	(0.043)	(0.091)
Manufacturing	26,203	-0.043***	0.078***	0.025***	-0.077***	0.095***	0.018
		(0.013)	(0.024)	(0.008)	(0.019)	(0.023)	(0.023)
Sample ≤ 2016	41,163	-0.049**	0.089**	0.020*	-0.079***	0.105***	0.056***
		(0.023)	(0.042)	(0.010)	(0.020)	(0.029)	(0.020)

Note: The table shows our robustness tests for the firm-quarter regressions across subsamples. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

more stringent than excluding those with multiple 3-digit SIC codes, which is more stringent than excluding those with multiple 2-digit SIC codes, which is more stringent than excluding those with multiple 1-digit SIC codes.

In rows 4 to 6 of both panels in Table A13, we find that all subsets excluding conglomerates show the same results as those in the main analyses. Increases in U.S. TPU tend to increase the share of domestic suppliers for firms with majority domestic customers, while that effect is mitigated for firms with majority foreign customers. As before, rather than increasing or decreasing the number of domestic suppliers, the changes in the supply chain composition comes from changes in foreign suppliers.

C.4. Single Segment Firms

We include a specification that restricts the sample only to firms with those with a single segment and no reported international revenue presence in terms of foreign revenue disclosure. This subset contains 643 unique firms from 2005 to 2018 with the average revenue of 977 million USD relative to the average of 1.3 billion USD for the full sample. Unfortunately, this restriction substantially reduces the number of data points, down to around 7,000 firm-by-year quarters.

Table A14 below shows the empirical analyses studying the relation between measures of policy uncertainty and supply chain variables. There is no cross-sectional sorting in terms of whether firms have mostly foreign sales because these single segment firms are all majority domestic by definition. This analysis is similar to our main empirical analyses if the mostly foreign sales indicator is zero. We find that more U.S. TPU increases the fraction of domestic suppliers, led by a decrease in foreign links relative to domestic links. However, we find overall that higher U.S. TPU decreases both foreign and domestic links, with no overall change in the total supplier diversification measure as proxied by the number of suppliers per dollar of costs of goods sold.

Table A14 Subset without Foreign Geography Data

Dependent Variable:	Domestic Fraction	f(Foreign Link)	f(Domestic Link)	Num. Supp/COGS
	(1)	(2)	(3)	(4)
U.S. TPU	0.416*	-0.021***	-0.019*	0.078
	(0.213)	(0.007)	(0.010)	(0.089)
U.S. EPU	0.112**	-0.004**	-0.005	-0.047
	(0.053)	(0.002)	(0.008)	(0.043)
Foreign EPU	-3.054***	0.099***	0.039**	0.066
	(0.671)	(0.019)	(0.018)	(0.052)
Observations	7,090	7,090	7,090	7,090
R^2	0.803	0.887	0.924	0.453

Note: The table below shows the results using the firm-quarter dataset subsetting those without any foreign geography data. Column (1) studies the fraction of domestic relationships represented as a percentage, Columns (2) and (3) study the number of foreign and domestic relationships respectively. Column (4) studies the number of suppliers per unit of log costs of goods sold. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

C.5. Manufacturing and Retail Industry

So far, our interpretation of the main results is that firms change their sourcing decisions when U.S. TPU rises. In this robustness test, we consider subsets of the manufacturing and retail industries to study whether they exhibit similar or stronger results as our main sample.

We conduct our main analysis in two sub-samples of manufacturing and retail respectively and the results are shown in rows 8 and 9 of Table A13. We find that when the U.S. TPU increased, the proportion of domestic suppliers of all manufacturing companies dropped significantly, and at the same time, overseas supplier relationships increased significantly. This indicates that U.S. manufacturing companies would indeed increase the purchase of intermediate parts. Furthermore, we find that U.S. companies whose main customers are overseas will be more aggressive in making this change. On the other hand, the retail industry as a whole does not present a similar significant result as the manufacturing industry. Only retailer firms with majority foreign customers will experience a decline in local suppliers. In summary, American companies may indeed increase their overseas purchases, especially intermediate parts required by the manufacturing industry. However, retail firms who are close to consumers do not appear to shift suppliers overseas as a whole. In terms of trade diversion, we find that as the specific foreign country TPU increases, the number of foreign suppliers in that country for U.S. manufacturing companies decreases. However, this is less seen for U.S. retail companies.

C.6. Different Time Periods

We show our empirical results are robust to different time periods in our sample, and not driven by any particular episode. We consider two analyses. First, the last rows in Table A13 in both Panel A and B repeat our empirical analyses only considering a subset before President Trump's inauguration in January 2017. We find that compared to firms with majority domestic sales, a one-standard-deviation of U.S. TPU for firms with mostly foreign sales predicts a decrease in the fraction of domestic suppliers by 1.79 percentage points. As with the main results, the change is driven by the number of foreign suppliers.

Second, we consider subsets of the data split by two in Table A15 below, from 2005 to 2011 and from 2012 to 2018. Unfortunately, these only include 24 year-quarter clusters, which is below the rule of thumb of 30 clusters for stable standard errors. In both these subsamples, we find a similar pattern of coefficients, although the results in Panel A from 2005 to 2011 has almost half of the number of observations of the second half. This difference in sample size is due to the FactSet Revere Supply Chain coverage increasing over time. However, the overall result is that American firms with majority foreign suppliers decrease their domestic supplier fraction, mostly with a response in the number of foreign suppliers.

Third, Figure A2 below shows estimates in rolling windows. Since observations are at the firm-year quarter level and we cluster standard errors at the year-quarter level due to the same U.S. TPU/EPU measures across firms in a given quarter, we must use a long-enough rolling sample to produce stable estimates of standard errors. Therefore, we use a sub-sample period of 8 with 32 year-quarters (clusters), just above around the rule of thumb of 30 clusters needed for stable standard error estimation (using a 7-year sample, 28 clusters does not change the results). Since the number of countries covered in the FactSet Revere Supply Chain data increases in the early part of the sample but becomes more stable after 2010, we consider a subset after 2010

Table A15 Splitting Time Periods for Policy Uncertainty and the Off-Shoring Decisions

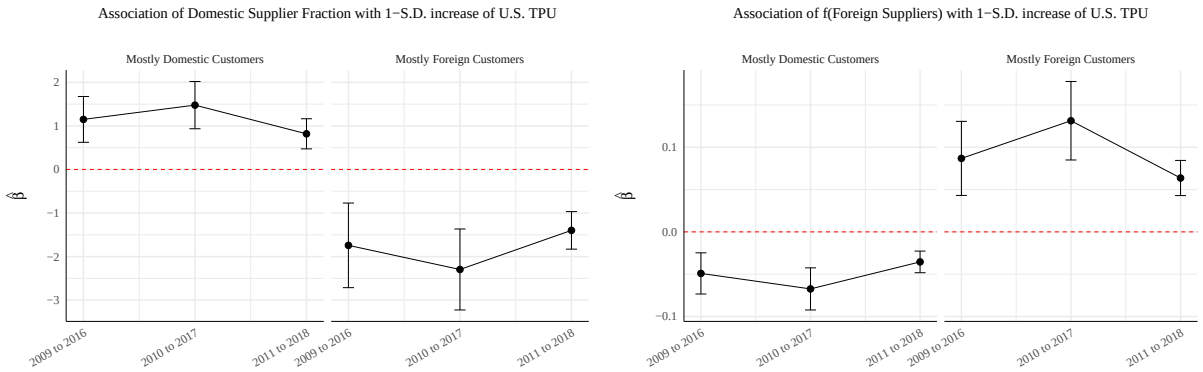
Panel A: Sample from 2005 to 2011								
Dependent Variable:	Domestic Fraction		f(Foreign Link)		f(Domestic Link)		Num. Supp/COGS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	-0.741	-0.040	0.028	-0.0003	0.008	0.009	-0.086**	-0.179**
	(0.498)	(0.541)	(0.017)	(0.019)	(0.008)	(0.009)	(0.037)	(0.071)
U.S. TPU × Mostly Foreign Sales		-1.652***		0.066***		-0.003		0.219**
		(0.385)		(0.014)		(0.014)		(0.103)
U.S. EPU	0.216	-0.006	-0.006	-0.001	0.003	0.006	0.004	0.010
	(0.136)	(0.147)	(0.005)	(0.006)	(0.003)	(0.004)	(0.004)	(0.010)
U.S. EPU × Mostly Foreign Sales		0.539***		-0.012		-0.008		-0.014
		(0.168)		(0.008)		(0.008)		(0.019)
Foreign EPU	-2.819	-1.658	0.092	0.072	0.011	0.009	0.070	0.076
	(1.855)	(1.498)	(0.056)	(0.049)	(0.010)	(0.012)	(0.050)	(0.060)
Foreign EPU × Mostly Foreign Sales		-2.961*		0.051		0.004		-0.012
		(1.495)		(0.034)		(0.019)		(0.034)
Mostly Foreign Sales		-1.045*		0.024		0.020		0.055
		(0.587)		(0.024)		(0.019)		(0.058)
Observations	14,876	14,876	14,876	14,876	14,876	14,876	14,876	14,876
R^2	0.841	0.841	0.909	0.909	0.940	0.940	0.810	0.810
Panel B: Sample from 2012 to 2018								
Dependent Variable:	Domestic Fraction		f(Foreign Link)		f(Domestic Link)		Num. Supp/COGS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	0.103	0.688*	0.0002	-0.026**	0.012**	0.009	0.032*	0.051*
	(0.301)	(0.353)	(0.006)	(0.012)	(0.006)	(0.008)	(0.018)	(0.025)
U.S. TPU × Mostly Foreign Sales		-1.264***		0.056***		0.006		-0.042
		(0.423)		(0.020)		(0.012)		(0.035)
U.S. EPU	0.185	-0.231	-0.008**	0.014*	-0.011	-0.005	-0.007	-0.013
	(0.156)	(0.193)	(0.004)	(0.007)	(0.007)	(0.008)	(0.014)	(0.018)
U.S. EPU × Mostly Foreign Sales		0.917**		-0.049***		-0.013		0.014
		(0.410)		(0.016)		(0.008)		(0.032)
Foreign EPU	-2.933***	-3.304***	0.077***	0.089***	0.028***	0.031***	0.030*	0.034
	(0.639)	(0.634)	(0.019)	(0.020)	(0.009)	(0.011)	(0.017)	(0.021)
Foreign EPU × Mostly Foreign Sales		0.818		-0.027		-0.009		-0.007
		(0.538)		(0.018)		(0.013)		(0.027)
Mostly Foreign Sales		-0.332		0.025		0.027*		-0.025
		(0.545)		(0.022)		(0.016)		(0.052)
Observations	35,849	35,849	35,849	35,849	35,849	35,849	35,849	35,849
R^2	0.751	0.751	0.870	0.871	0.880	0.880	0.464	0.464

Note: The table below shows the results using the firm-quarter split from 2005 to 2018 split into two samples, where Panel A studies the sample from 2005 to 2011 and Panel B studies the sample from 2012 to 2018. Columns (1,2) study the fraction of domestic relationships represented as a percentage, Columns (3,4) and (5,6) study the number of foreign and domestic relationships respectively. Columns (7,8) study the number of suppliers per unit of log costs of goods sold. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on Total Assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

which results in a more stable number of observations. The 2010 to 2016 window has 1,707 unique firms and 40,210 firm-year quarter observations, the 2011 to 2017 window has 1,726 unique firms and 41,270 firm-year quarter observations, and the window from 2012 to 2018 has 1,742 unique firms and 40,983 firm-year quarter

observations. The figures above suggest that the estimates found in the main analysis of the paper are not due to peculiarities in the beginning of the FactSet Revere sample or due specifically to the trade-war which started in 2017 following the election of President Donald Trump.

Figure A2 Supply Chains Across Time



As with the previous two robustness tests, considering a rolling window does not produce statistically different point estimates compared to the main empirical results in the paper. This set of robustness tests shows that our empirical results are not driven by any particular time period and are robust to the time period before the Trump administration and the U.S.-China trade war, even excluding President Obama's administration. The rolling estimates generally quantitatively similar point estimates that are not statistically different from each other. Therefore, our results are not driven only by periods of time where the variation in U.S. TPU or U.S. EPU is high relative to historical variations.

C.7. Excluding Suppliers in China

Tables A16 and A17 below repeat the main empirical analyses removing all supply chain connections to China. We find similar results as in the main results. Therefore, our empirical results are not simply driven by the US-China trade war (as also shown in the subsection above considering different time periods) or simply driven by suppliers in China.

We find that compared to firms with majority domestic sales, overall, firms with majority foreign sales decrease the fraction of domestic suppliers. The relationship is driven by the number of foreign suppliers. Finally, as with our main paper, firms also diversify across different foreign suppliers, as an increase in a country-specific EPU also predicts a decrease in foreign customers within that foreign country and American firms are more likely to exit that country even when excluding all US-China relationships.

C.8. Alternative Measure of Foreign Firm Exposure

In this subsection, rather than using the fraction of foreign sales as a classifier of whether a firm has majority foreign exposure, we consider using the number of reported foreign customers. Table A18 shows the similar baseline and robustness summary table of different empirical specifications as in Table A13 and all show similar patterns of results.

Table A16 Quarterly Supplier-Customer Relationships (Excluding Suppliers in China)

Dependent Variable:	Domestic Fraction		f(Foreign Link)		f(Domestic Link)		Num. Supp/COGS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	-0.330**	0.067	0.013*	-0.010	0.007	0.002	0.002***	0.006
	(0.115)	(0.155)	(0.006)	(0.007)	(0.006)	(0.007)	(0.0005)	(0.006)
U.S. TPU×Mostly Foreign Sales		-0.902***		0.055**		0.013		0.013*
		(0.267)		(0.011)		(0.010)		(0.008)
U.S. EPU	0.036	-0.106	-0.004	0.012***	0.003	0.008	0.001	-0.003
	(0.085)	(0.137)	(0.003)	(0.004)	(0.009)	(0.010)	(0.001)	(0.004)
U.S. EPU×Mostly Foreign Sales		0.327		-0.036**		-0.012		0.008
		(0.247)		(0.011)		(0.010)		(0.008)
Foreign EPU	0.140	0.202	0.015	0.012***	0.004	0.008	-0.001	-0.003
	(0.214)	(0.229)	(0.015)	(0.004)	(0.006)	(0.010)	(0.004)	(0.004)
Foreign EPU×Mostly Foreign Sales		-0.094		0.028**		0.013		-0.007
		(0.261)		(0.011)		(0.009)		(0.006)
Mostly Foreign Sales		-0.491		0.030		-0.076***		-0.015
		(0.451)		(0.020)		(0.019)		(0.019)
Observations	49,800	49,800	49,800	49,800	49,800	49,800	49,800	49,800
R^2	0.611	0.613	0.773	0.702	0.857	0.744	0.574	0.639

Note: The table shows results using the firm-quarter dataset from 2003 to 2018Q1 with China excluded from the sample. Columns (1,2) study the fraction of domestic relationships represented as a percentage, Columns (3,4) and (5,6) study the number of foreign and domestic relationships respectively. Columns (7,8) study the number of suppliers per unit of log costs of goods sold. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

However, we do not use this formulation in the main empirical specification as our stance is not so much that firms care about individual customers, but that the first order pertains to the exposure of revenues. In addition, there is a mandatory reporting threshold according to U.S. GAAP rule SFAS 30 titled "Disclosure of Information About Major Customers" whereby firms are only required to disclose customers if a customer represents 10% or more of sales. Firms may also voluntarily disclose their customers. As with the majority foreign sales exposure variable, we impute a firm with majority domestic customers if they do not report foreign customers. Therefore, sorting the majority of customers based on this measure can introduce measurement error. Firms may have high foreign sales as a fraction of total revenue which come from many small customers. If so, the firm would show as having majority foreign sales but not majority foreign customers. Meanwhile, a firm that sells 70% of its sales to one customer in the U.S. and 15% of its sales to two customers each will appear to have a majority foreign customer base but a large majority domestic sales. Therefore, this measurement error manifests as an attenuation bias in our empirical analyses.

These empirical results are consistent with our main results: firms with relatively more foreign customers relative to domestic customers increase foreign suppliers when U.S. TPU increases. We also note that in some estimates, the interaction term between U.S. TPU and majority foreign customers generates a quantitatively smaller point estimate, consistent with an attenuation bias resulting from the mismeasurement of foreign customer exposures.

Table A17 Do Firm Substitute Away from Foreign EPU? (No US-China Pair)

Dependent Variable:	f(Foreign Suppliers) × 100		1(Exit Country) × 100		$\frac{\text{Foreign Suppliers}}{\text{Total Foreign Suppliers}} \times 100$	
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU	1.521***	-0.251	-0.818*	-0.108	0.240***	0.264***
	(0.393)	(0.420)	(0.424)	(0.421)	(0.075)	(0.077)
U.S. TPU×Mostly Foreign Sales		3.647***		-1.476***		-0.045
		(0.574)		(0.385)		(0.066)
U.S. EPU	0.733*	1.282***	-0.864**	-0.919**	0.206***	0.018
	(0.377)	(0.438)	(0.362)	(0.400)	(0.078)	(0.084)
U.S. EPU×Mostly Foreign Sales		-1.316*		0.220		0.365***
		(0.721)		(0.483)		(0.106)
Foreign EPU	-2.173***	-1.255*	2.385***	1.330**	-0.736***	-0.305
	(0.552)	(0.660)	(0.454)	(0.525)	(0.148)	(0.196)
Foreign EPU×Mostly Foreign Sales		-2.849***		2.064***		-0.837***
		(0.847)		(0.628)		(0.246)
Mostly Foreign Sales		4.448***		-3.341***		0.376***
		(1.057)		(0.769)		(0.123)
Observations	138,595	138,595	138,595	138,595	138,595	138,595
R^2	0.286	0.287	0.231	0.232	0.286	0.286

Note: The table shows results using the firm-foreign country-quarter dataset from 2003 to 2018Q1 with China excluded from the sample. Columns (1,2) study the number of foreign relationships. Columns (3,4) study the probability of exiting a foreign country entirely. Columns (5,6) study the fraction of foreign-country relationships over total foreign relationships represented as a percentage. Other specification details are the same as to Table A16, except with firm-by-foreign country fixed effects

C.9. Alternative Measure of Trade Policy Uncertainty

Rather than using Baker et al. (2016)'s measure of trade policy uncertainty, that is based on newspaper articles mentioning words related to trade policy, we also consider a web-based measure of trade policy uncertainty following Caldara et al. (2020). The approach is similar in that it focuses on the archives of 7 leading newspapers for keywords related to trade policy uncertainty, but the repository comes only from electronic records (which is why we call it the "Web-based TPU" measure). This index is constructed by staff in the International Finance Division of the Federal Reserve Board and measures media attention to news related to trade policy uncertainty Caldara et al. (2020). It reflects automated text-search results of the electronic archives of 7 leading newspapers discussing trade policy uncertainty: Boston Globe, Chicago Tribune, Guardian, Los Angeles Times, New York Times, Wall Street Journal, and Washington Post.

We follow the same principle as with all our analyses to maximize the amount of data possible. The sample for this analysis goes from 2003 through 2018.

Table A19 shows our empirical results and shows qualitatively and quantitatively similar results. Compared to firms with majority domestic sales, those with majority foreign sales increase the domestic fraction of suppliers by 1.71 percentage points when U.S. TPU rises by one standard deviation. As with the main results, the changes are driven by the number of foreign links, as shown in Column (4). Table A20 shows the foreign supplier diversification result using the web-based TPU, which is also consistent with our main analysis.

Note that there is another well-known trade policy uncertainty, i.e., the IMF measure. We do not use it due to data availability. The IMF touts a trade policy uncertainty measure available for 143 countries starting in 1996, based on textual analysis from the Economist Intelligence Unit country reports. However, due to

Table A18 Robustness Tests for On-Shoring vs. Off-Shoring Decisions using Number of Customers

Panel A: Coefficient (LHS = Fraction Domestic Suppliers)							
			U.S. TPU×		U.S. EPU×		Foreign EPU×
Empirical Specification	N	U.S. TPU	Mostly Foreign	U.S. EPU	Mostly Foreign	Foreign EPU	Mostly Foreign
Baseline	50,725	0.902***	-1.722***	-0.035	0.690*	-3.324***	-0.314
		(0.295)	(0.407)	(0.163)	(0.345)	(0.635)	(0.516)
Excl. Top 25% of Assets	38,047	0.518	-0.657	0.312*	-0.102	-3.914***	-0.380
		(0.319)	(0.408)	(0.177)	(0.305)	(0.656)	(0.518)
Excl. Total Assets < 10 bn	43,988	0.719**	-1.047***	0.225	0.106	-3.794***	-0.255
		(0.307)	(0.382)	(0.169)	(0.309)	(0.663)	(0.495)
No Multiple 4-Digit SIC	15,327	0.630**	-1.038	0.190	0.333	-2.744***	-0.146
		(0.312)	(0.651)	(0.205)	(0.497)	(0.686)	(0.859)
No Multiple 3-Digit SIC	21,211	0.723**	-1.058*	0.270	0.170	-3.296***	0.049
		(0.298)	(0.545)	(0.175)	(0.410)	(0.665)	(0.718)
No Multiple 2-Digit SIC	26,377	0.881***	-1.479***	0.035	0.620	-2.958***	-0.080
		(0.289)	(0.522)	(0.179)	(0.395)	(0.676)	(0.755)
No Multiple 1-Digit SIC	31,481	0.715**	-1.169**	0.051	0.549	-3.061***	-0.127
		(0.276)	(0.471)	(0.160)	(0.354)	(0.676)	(0.658)
Retail	3,866	0.817**	-2.620**	-0.373	1.436	-1.229	-2.337
		(0.335)	(1.190)	(0.263)	(1.030)	(0.867)	(1.938)
Manufacturing	26,203	0.960***	-1.718***	0.212	0.348	-4.215***	0.279
		(0.348)	(0.502)	(0.211)	(0.440)	(0.780)	(0.695)
Sample ≤ 2016	41,163	0.871*	-1.216	0.081	0.578	-3.422***	-1.427***
		(0.454)	(0.789)	(0.194)	(0.397)	(0.950)	(0.518)
Panel B: Coefficient (LHS = f(Number of Foreign Suppliers))							
			U.S. TPU×		U.S. EPU×		Foreign EPU×
Empirical Specification	N	U.S. TPU	Mostly Foreign	U.S. EPU	Mostly Foreign	Foreign EPU	Mostly Foreign
Baseline	50,725	-0.048***	0.099***	0.011	-0.048***	0.095***	0.003
		(0.012)	(0.021)	(0.008)	(0.017)	(0.021)	(0.019)
Excl. Top 25% of Assets	38,047	-0.018*	0.012	-0.011*	0.009	0.124***	0.004
		(0.010)	(0.014)	(0.006)	(0.010)	(0.020)	(0.016)
Excl. Total Assets < 10 bn	43,988	-0.026**	0.032**	-0.007	-0.005	0.122***	-0.004
		(0.011)	(0.015)	(0.007)	(0.012)	(0.021)	(0.015)
No Multiple 4-Digit SIC	15,327	-0.046***	0.080***	0.009	-0.039*	0.072***	-0.028
		(0.013)	(0.030)	(0.008)	(0.022)	(0.024)	(0.031)
No Multiple 3-Digit SIC	21,211	-0.052***	0.078***	0.008	-0.035*	0.101***	-0.026
		(0.013)	(0.024)	(0.008)	(0.018)	(0.022)	(0.026)
No Multiple 2-Digit SIC	26,377	-0.057***	0.100***	0.016*	-0.056***	0.091***	-0.012
		(0.013)	(0.024)	(0.008)	(0.019)	(0.022)	(0.026)
No Multiple 1-Digit SIC	31,481	-0.048***	0.086***	0.013*	-0.052***	0.093***	-0.011
		(0.012)	(0.022)	(0.007)	(0.017)	(0.022)	(0.022)
Retail	3,866	-0.031*	0.100	0.009	-0.045	0.020	0.191*
		(0.019)	(0.081)	(0.014)	(0.061)	(0.049)	(0.111)
Manufacturing	26,203	-0.059***	0.109***	0.007	-0.041**	0.115***	-0.016
		(0.011)	(0.023)	(0.009)	(0.020)	(0.023)	(0.023)
Sample ≤ 2016	41,163	-0.039	0.068	0.004	-0.040**	0.116***	0.032
		(0.024)	(0.044)	(0.009)	(0.019)	(0.030)	(0.019)

Note: The table shows our robustness tests for the firm-quarter regressions across subsamples and with number of customers as sorting variable. Mostly foreign is if fraction of foreign customers is greater than 50%. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

Table A19 On-shoring vs. Off-Shoring with Web-based TPU

Dependent Variable:	Domestic Fraction		f(Foreign Link)		f(Domestic Link)		Num. Supp/COGS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. TPU	-0.334***	0.419**	0.014***	-0.030***	0.004	-0.003	0.024**	0.012
	(0.041)	(0.191)	(0.003)	(0.010)	(0.006)	(0.008)	(0.005)	(0.009)
U.S. TPU × Mostly Foreign Sales		-1.708***		0.100***		0.016		0.028
		(0.428)		(0.021)		(0.012)		(0.029)
U.S. EPU	0.051	-0.173	-0.005	0.014**	0.005	0.009	(0.009)	0.009
	(0.134)	(0.175)	(0.005)	(0.006)	(0.008)	(0.009)	(0.013)	(0.013)
U.S. EPU × Mostly Foreign Sales		0.494		-0.041***		-0.008		0.001
		(0.322)		(0.015)		(0.009)		(0.019)
Foreign EPU	-0.055	0.123	(0.024)	0.003	0.004	-0.001	(0.007)	0.035
	(0.326)	(0.335)	(0.022)	(0.020)	(0.006)	(0.008)	(0.029)	(0.037)
Foreign EPU × Mostly Foreign Sales		-0.316s		0.040**		0.011		-0.058
		(0.421)		(0.018)		(0.009)		(0.040)
Mostly Foreign Sales		-0.981		0.053*		-0.071***		-0.023
		(0.624)		(0.029)		(0.019)		(0.035)
Observations	50,725	50,725	50,725	50,725	50,725	50,725	50,725	50,725
R^2	0.704	0.705	0.825	0.826	0.857	0.857	0.431	0.375

Note: The table shows the results using the firm-quarter dataset from 2003 to 2018Q1 with an alternative measure of TPU. Columns (1,2) study the fraction of domestic relationships represented as a percentage, Columns (3,4) and (5,6) study the number of foreign and domestic relationships respectively. Columns (7,8) study the number of suppliers per unit of log costs of goods sold. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

Table A20 Foreign Supplier Diversification with Web-Based TPU

Dependent Variable:	f(Foreign Suppliers) × 100		1(Exit Country) × 100		$\frac{\text{Foreign Suppliers}}{\text{Total Foreign Suppliers}} \times 100$	
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU	1.302***	-0.925**	-0.612**	0.303	0.068	0.127**
	(0.349)	(0.444)	(0.292)	(0.295)	(0.045)	(0.054)
U.S. TPU×Mostly Foreign Sales		4.323***		-1.770**		-0.115**
		(0.727)		(0.444)		(0.046)
U.S. EPU	0.291	0.884***	-0.413	-0.570*	0.028	-0.036
	(0.310)	(0.341)	(0.293)	(0.319)	(0.030)	(0.041)
U.S. EPU×Mostly Foreign Sales		-1.333**		0.393		0.127**
		(0.640)		(0.418)		(0.052)
Foreign EPU	-1.197**	-0.400	1.110**	0.460	-0.130	-0.034
	(0.578)	(0.594)	(0.473)	(0.482)	(0.082)	(0.105)
Foreign EPU×Mostly Foreign Sales		-1.530**		1.251**		-0.184
		(0.770)		(0.586)		(0.131)
Mostly Foreign Sales		4.252***		–3.333***		0.060
		(1.093)		(0.750)		(0.074)
Observations	150,730	150,730	150,730	150,730	150,730	150,730
R^2	0.290	0.291	0.237	0.238	0.456	0.456

Note: The table shows results using the firm-foreign country-quarter dataset from 2003 to 2018Q1 with an alternative measure of TPU. Columns (1,2) study the number of foreign relationships. Columns (3,4) study the probability of exiting a foreign country entirely. Columns (5,6) study the fraction of foreign-country relationships over total foreign relationships represented as a percentage. Other specification details are the same as to Table A19, except with firm-by-foreign country fixed effects.

the reliance on only one text data source, the uncertainty measures are numerically zero for the majority of the sample due to the Economist Intelligence Unit country report not mentioning trade in every country report issue. In the country and time period that we use, 86.1% of the IMF data are zeros, whereas none of the Baker et al. (2016) EPU measures that we use are missing. Therefore, the IMF data is likely subject to more measurement error and therefore has less power. In untabulated analyses, using the IMF trade policy uncertainty measure generates qualitatively similar results as what we find but with less statistical significance.

C.10. Monthly On-Shoring vs. Off-Shoring Analyses

This robustness test uses more granular monthly variation; however, the mismatch with firm fundamentals does not allow for horizon-consistent firm controls. All regressions include industry time trends as controls and also include firm, industry-by-month fixed effects. Standard errors are two-way clustered by firm and year-month and shown in parentheses.

Table A21 studies the relation between supply chain relationships and policy uncertainty measures from the same month, with a one-month lag, a two-month lag, and a three-month lag. We find the same results as in the main paper. Overall, our results obtain even looking at the contemporaneous month in terms of supply chain decisions and policy uncertainty measures.

Because the results obtain even when using lagged measures of U.S. TPU, U.S. EPU, and foreign EPU, we conclude that our results are not driven by simultaneous or reverse causality. If anything, including lags generates larger and more statistically significant point estimates of our main results. Columns (2) to (4) show that allowing lags at the monthly level shows that firms with majority foreign sales decrease the fraction of domestic suppliers even more relative to firms with majority domestic sales. A similar pattern of results obtain in Columns (6) through (8), whereby firms with majority foreign sales increase foreign links by more than those with majority domestic sales.

C.11. Other Measures of Production Network Centrality

To study the robustness of firm-level production network characteristics and the relationship between EPU and supply chain variables, we consider several measures of product network centrality. We calculate the centrality measure at each quarter based on the existing supply chain relationships there were available over that quarter. Thus, as the overall global production network changes, a firm's centrality in the network through time also changes. Rather than focusing on the authority measure of production network centrality, we consider alternative measures. We note that these measures may not have a natural interpretation compared to the authority measure, but we include them for robustness.

We consider two additional measures of centrality that were selected to capture slightly different notions of importance in the network. First, we consider page-rank centrality, a derivative of the eigenvector centrality which permits more robust numerical analyses. The eigenvector centrality takes into account the importance of a company's linkages in the network and weights firms proportional to the sum of the scores of its linkages. A counterpart's importance increases if it is an important company itself to many other companies. However, the traditional eigenvector centrality measure was designed for undirected networks. The variations relative

Table A21 Monthly Supplier-Customer Relationships

Dependent Variable:	Domestic Fraction				f(Foreign Link)				f(Domestic Link)			
$k=$	0	1	2	3	0	1	2	3	0	1	2	3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
U.S. TPU_{t-k}	-2.599***	-2.273***	-2.335***	-2.337***	0.222***	0.183***	0.185***	0.187***	0.126***	0.130***	0.130***	0.131***
	(0.488)	(0.304)	(0.283)	(0.292)	(0.033)	(0.020)	(0.018)	(0.018)	(0.022)	(0.015)	(0.014)	(0.013)
U.S. EPU_{t-k}	4.408***	3.491***	3.493***	3.473***	-0.324***	-0.255***	-0.253***	-0.251***	-0.174***	-0.169***	-0.167***	-0.164***
	(0.479)	(0.325)	(0.306)	(0.294)	(0.033)	(0.022)	(0.021)	(0.020)	(0.021)	(0.018)	(0.016)	(0.016)
Foreign $\text{EPU}_{i,t-k}$	-3.659***	-3.717***	-3.626***	-3.541***	0.260***	0.242***	0.239***	0.234***	0.094***	0.110***	0.111***	0.108***
	(0.586)	(0.418)	(0.408)	(0.398)	(0.042)	(0.028)	(0.027)	(0.027)	(0.031)	(0.020)	(0.020)	(0.020)
Mostly Foreign $\text{Cust}_{i,t-k}$	2.918*	2.498*	2.478*	2.437*	-0.338***	-0.274***	-0.272***	-0.270***	-0.698***	-0.572***	-0.559***	-0.549***
	(1.557)	(1.316)	(1.306)	(1.294)	(0.116)	(0.098)	(0.097)	(0.096)	(0.119)	(0.105)	(0.103)	(0.101)
U.S. $\text{TPU}_{t-k}\times$	-2.067***	-2.500***	-2.390***	-2.466***	0.044	0.100***	0.097***	0.098***	0.037	0.028	0.028	0.026
Mostly Foreign $\text{Cust}_{i,t-k}$	(0.590)	(0.482)	(0.487)	(0.451)	(0.029)	(0.022)	(0.023)	(0.022)	(0.029)	(0.020)	(0.020)	(0.020)
U.S. $\text{EPU}_{t-k}\times$	-0.853	0.351	0.330	0.350	0.106***	0.013	0.014	0.012	0.006	0.003	0.002	-0.001
Mostly Foreign $\text{Cust}_{i,t-k}$	(0.545)	(0.416)	(0.410)	(0.402)	(0.030)	(0.022)	(0.022)	(0.021)	(0.026)	(0.021)	(0.021)	(0.021)
Foreign $\text{EPU}_{i,t-k}\times$	-1.076	-0.798	-0.872	-0.938	-0.018	0.002	0.005	0.011	0.059	0.029	0.027	0.033
Mostly Foreign $\text{Cust}_{i,t-k}$	(0.977)	(0.696)	(0.704)	(0.692)	(0.053)	(0.034)	(0.034)	(0.033)	(0.047)	(0.033)	(0.032)	(0.032)
Observations	542,715	542,715	542,715	542,715	543,153	543,153	543,153	543,153	542,715	542,715	542,715	542,715
R^2	0.525	0.535	0.535	0.534	0.715	0.713	0.712	0.712	0.841	0.839	0.839	0.839

Note: The table shows results using the firm-month dataset from 2003 to 2019. Columns (1-4) study the fraction of domestic relationships represented as a percentage, Columns (5-8) and (9-12) study the number of foreign and domestic relationships respectively. The foreign EPU for each firm is calculated for each firm in a month based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include industry time trends as controls and also include firm, industry-by-month fixed effects. Standard errors are two-way clustered by firm and year-month and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

to eigenvector centrality allow a directed network adjacency matrix and also introduces a scaling factor that aids in the numerical inversion of the adjacency matrix. The page-rank centrality discounts the centrality of each firm by its number of outside connections. Consequently, a firm will get less contribution from a supplier if it has many other suppliers, and vice versa for customers.

Second, we also include the betweenness measure of centrality, which is the inverse of the average shortest distance between one firm and every other firm in the network. Firms with low betweenness are more embedded in the global production network. We exclude degree centrality because it is simply subsumed by all the previous empirical analyses using the number of suppliers, customers, and domestic fraction.[17] The summary statistics for various centrality is shown in Table A23.

Table A22 Production Network Centrality

Centrality:					
Eigen	0.45	0.98	0.00	0.06	0.44
Pagerank	0.61	0.91	0.23	0.32	0.62
Betweenness	0.26	0.91	0.00	0.00	0.14
Authority	0.35	0.93	0.00	0.08	0.29

[17] The degree centrality measures the number of companies that a company relates to, and can be both an undirected or directed measure. When directed, it captures the supplier-customer relationship. Intuitively, a company is more important to the economy if it connects with many companies. However, we use the number of connections in each country to focus more on how those change directly.

Table A23 shows our empirical results. We find quantitatively and qualitatively similar point estimates as in the main results from Table 6. However, unlike the main results using authority centrality measures, the differential sensitivity of firms with majority foreign sales compared with those with majority domestic sales is not statistically significant.

Table A23 Production Network Centrality

Dependent Variable:	Domestic Supplier Fraction					
	Full Sample		Mostly Foreign Customers		Mostly Domestic Customers	
$X_{i,t-1} =$	Pagerank	Between	Pagerank	Between	Pagerank	Between
	(1)	(2)	(3)	(4)	(5)	(6)
U.S. TPU	-0.239	0.029	-0.448**	-0.045	-0.212	-0.187
	(0.189)	(0.232)	(0.207)	(0.280)	(0.251)	(0.276)
U.S. TPU×	0.107	-0.520	0.280	-0.704	0.355	0.149
$1(X >$ Median)	(0.356)	(0.338)	(0.533)	(0.490)	(0.366)	(0.338)
U.S. EPU	-0.646***	-0.693***	-0.785**	-0.751**	-0.179	-0.659**
	(0.236)	(0.213)	(0.317)	(0.298)	(0.250)	(0.225)
U.S. EPU×	1.176***	1.604***	1.141**	1.436**	0.410	0.671
$1(X >$ Median)	(0.378)	(0.418)	(0.497)	(0.638)	(0.364)	(0.414)
Foreign EPU	0.012	0.595*	0.193	0.714	-0.050	0.123
	(0.412)	(0.325)	(0.578)	(0.457)	(0.469)	(0.381)
Foreign EPU×	-0.389	-1.333***	0.017	-0.829	-0.373	-0.666
$1(X >$ Median)	(0.531)	(0.410)	(0.650)	(0.566)	(0.585)	(0.463)
$1(X >$ Median)	0.133	0.228	0.762	-0.742	-0.422	0.199
	(0.567)	(0.651)	(0.875)	(0.922)	(0.647)	(0.735)
Observations	42,274	42,274	18,092	18,092	24,182	24,182
R^2	0.735	0.735	0.751	0.752	0.719	0.719

Note: The table shows regressions using domestic supplier fraction as dependent variables and alternative centrality measures as moderators. Columns (1,3,5) and (2,4,6) respectively study the pagerank-centrality and between-centrality. Columns (1,2), (3,4), and (5,6) respectively study the full sample, firms with mostly foreign sales, and firms with mostly domestic sales. Mostly foreign sales is if fraction of foreign sales is greater than 50% and mostly domestic is if fraction of foreign sales is less than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

C.12. Employment and Labor Costs

From a policymaker perspective, a key consideration is not simply about the production process, but a frequent policy goal that pertains to American jobs. As such, there may be a scenario in which more offshoring introduces a complementarity of jobs domestically as companies may source more intermediate parts internationally for final assembly onshore. In this analysis, we study whether measures of trade or economic policy uncertainty are correlated with additional labor costs and the number of employees.

However, the latter data is only available at the annual level from Compustat. This subsample only has 13,886 firm-by-year observations with an average of around 1,000 firms per year. Of these, only 747 observations from 110 firms have non-missing labor cost variables as the disclosure of labor costs are voluntary.

Given so few observations, we do not conduct analyses on labor costs. We show the results below, showing both the main results on supply chain decisions as a robustness test as well as changes in the number of employees. The number of employees is represented as the number of full-time equivalents.

Table A24 shows the results replacing supply chain variables with measures of employment. We find no statistically significant or reliable point relation between measures of trade policy uncertainty and employment. Therefore, firms' off-shoring decisions that we document in the main empirical result do not appear to correlate with lower employment by those firms. However, we note that it is possible the employment decreases may manifest in the supplier firms instead, rather than a firm's own employment. We leave this latter analysis for future research.

Table A24 Impact on Firm Employment

Dependent Variable:	f(Employees)		f(Employees/Assets)	
	(1)	(2)	(3)	(4)
U.S. TPU	0.031	0.028	-0.004	-0.003
	(0.034)	(0.034)	(0.014)	(0.014)
U.S. TPU×Mostly Foreign Sales		-0.019		-0.011
		(0.014)		(0.008)
U.S. EPU	-0.022	0.016	-0.013	0.019*
	(0.015)	(0.012)	(0.008)	(0.011)
U.S. EPU×Mostly Foreign Sales		-0.003		-0.002
		(0.013)		(0.008)
Foreign EPU	0.025**	0.006	0.024**	-0.002
	(0.010)	(0.007)	(0.009)	(0.005)
Foreign EPU×Mostly Foreign Sales		-0.004		-0.003
		(0.008)		(0.007)
Mostly Foreign Sales		0.022		0.012
		(0.020)		(0.017)
Observations	13,886	13,886	13,886	13,886
R^2	0.987	0.987	0.966	0.966

Note: The table shows regressions using firm fundamentals as dependent variables. Panel A studies fundamentals of operating metrics. Columns (1,2), (3,4), (5,6), and (7,8) respectively study the return on assets, revenue over assets, costs of goods sold over assets, and inventory over sales. Panel B studies fundamentals of corporate investments. Columns (1,2) and (3,4) study the number of employees and the number of employers relative to total assets. Mostly foreign sales is if fraction of foreign sales is greater than 50%. Quarterly EPU is calculated from quarterly EPU values by country by taking the simple mean. The foreign EPU for each firm is calculated for each firm in a quarter based on its lagged number of foreign relationships in a foreign country multiplied by its z-scored EPU value. In each country, the EPU values are z-scored over the sample for cross-country comparability. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions include lagged log total assets, book-to-market ratios, return on assets, and long term book leverage ratio as controls and also include firm, year, 4-digit NAICS-by-year and 4-digit NAICS-by-seasonal quarter fixed effects. Standard errors are two-way clustered by firm and year-quarter and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.

Appendix D: President Donald Trump's Election

This section presents a difference-in-differences specification studying changes in supply chain variables around the time of President Donald Trump's election in 2016. For the purposes of this analysis, we classify "treated" firms as those where the number of foreign suppliers as of Q3 in 2015 is in the top 25% among all firms with customer data and "control" firms as American firms with no foreign customers. Figure A3 shows the time series of log foreign suppliers across treatment and control groups. Although the number of foreign and domestic customers are endogenous, there is no difference in pre-trends for the treated and control groups, suggesting that the post-election results we document are not purely driven by mean reversion. Table A25 reports the difference-in-differences estimates based on an event indicator taking the value of one after President Donald Trump's election. We find that treated firms start increasing foreign suppliers since Donald Trump's presidential campaign announcement.

Figure A3 Supply Chains Across Time

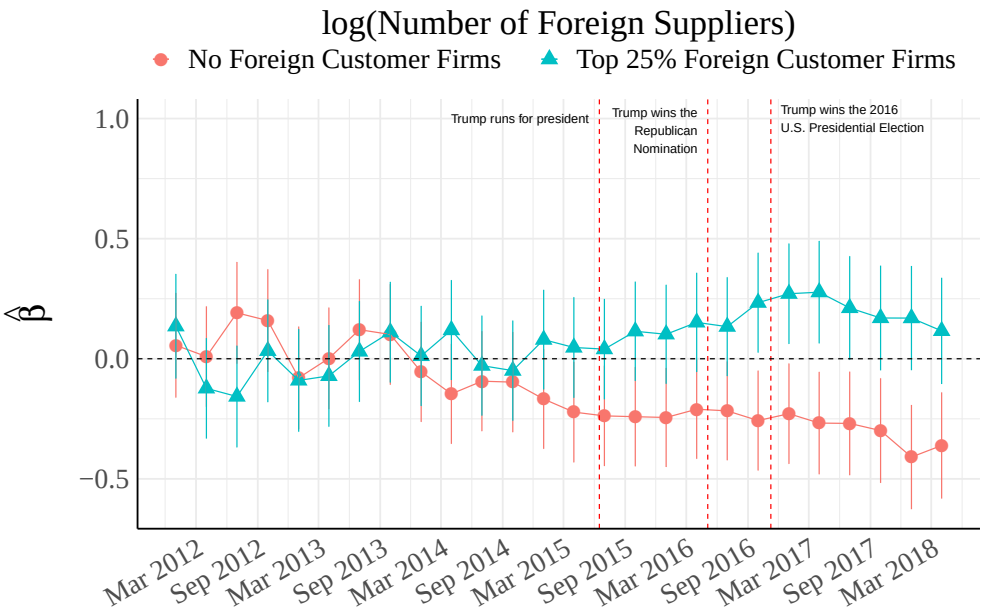


Table A25 Trump Election and Firm Supply Chains

Dependent Variable:	log(Num. Foreign Suppliers Suppliers (1)	log(Num. Domestic Suppliers Suppliers (2)	f(Foreign Suppliers) (3)	f(Domestic Suppliers) (4)	Fraction of Foreign Suppliers (5)
Exposure × Post 2016 Election	0.341***	-0.052	0.244***	-0.101**	10.411***
	(0.069)	(0.054)	(0.061)	(0.051)	(2.409)
Observations	11.909	14,905	19,523	19,523	27,020
R^2	0.949	0.913	0.936	0.932	0.769

Note: The table shows our main results using our firm-foreign country-quarter dataset from 2014 to 2019. Exposures to the election is defined based on the average number of domestic relationships based on whether we study suppliers or customers measured in the first quarter of 2016, splitting the exposures into two groups based on the median exposure. Columns (1) and (2) use the log transformation of the number of suppliers or customers respectively. Columns (3) and (4) use the inverse hyperbolic sine transformation of the number of suppliers or customers respectively. Column (5) studies the fraction of foreign relationships represented as a percentage. Observations are at the firm-quarter-foreign country level. $f(\cdot)$ represents the inverse-hyperbolic sine function. All regressions control for the firm's lagged market-to-book ratio, a cubic function of lagged firm size, lagged return on assets, lagged long-term book leverage ratios, and lagged asset tangibility, as well as industry-by-year-by-quarter and firm fixed effects. Standard errors are clustered by firm and shown in parentheses. * denotes p<0.1, ** denotes p<0.05, and ***denotes p<0.01.