Where have all the IPOs gone? Trade liberalization and the changing nature of U.S. public corporations

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Abstract

I show that a tariff policy change that increased trade with China led to a decline in U.S. public listing rates and elevated industry concentration. Consistent with heterogeneous firm models of trade, the shock impeded the entry and performance of small domestic manufacturers but did not adversely impact large multinationals. In addition, stock price reactions to the policy change and threat of reversal imply that trade liberalization creates or destroys value depending on firm size. These findings suggest that recent trends in the U.S. public equity market are driven, in part, by fundamental changes in the global competitive landscape.

Keywords: IPOs, Stock market listing, Industry concentration, Trade liberalization
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1. Introduction

The number of publicly-traded U.S. corporations has fallen dramatically since the turn of the 21st century. At the end of 2016, only 3,618 firms were listed on U.S. exchanges – down 50 percent from the late 1990s. The demise of small public firms was particularly acute. Gao, Ritter, and Zhu (2013) show that small firms accounted for nearly two thirds of the decline in IPO activity over the past 20 years. Meanwhile, the average listed firm tripled in size as market shares became increasingly concentrated among the largest firms (Grullon, Larkin, Michaely, 2019). These trends captured the attention of both the academic literature and the business press, with many experts wondering "is the U.S. public corporation in trouble?"[1]

This paper examines whether trade liberalization contributed to these market trends. Drawing on heterogeneous firm models of international trade, I argue that liberalization leads to within-industry reallocation of market shares by disproportionally harming small firms. Melitz (2003) develops the intuition behind this hypothesis. In his model, trade liberalization unevenly affects firms within the same industry: small firms cannot afford the fixed cost to establish global operations, face negative profits after liberalization, and exit, while large firms enter the export market and expand.[2] Over time, the model predicts that market shares will reallocate toward larger more productive firms, leading to an increase in concentration and a dearth of small firms.

I empirically test this hypothesis using a change in U.S.-China trade relations as a natural experiment. Prior to this policy change, China held *temporary* Most-Favored Nation (MFN) status that required annual renewal by the U.S. Government. If Congress or the President chose not to

[1] See "Is the US public corporation in trouble," Kahle and Stulz (2017); "Where have all the IPOs gone," Gao, Ritter, and Zhu (2013); "Wall Street's dead end," *New York Times* (2011); "The endangered public company: The big engine that couldn't," *The Economist* (2012); and the JOBS Act.

[2] Although the Melitz (2003) model focuses on firm export activity, its framework can be extended to explain selection into other types of multinational activities such as offshoring. See Helpman (2006) for a literature review.

renew China's trade status in a given year, U.S. tariffs on imports from China would have jumped from MFN rates, averaging less than 5 percent, to Non-Market Economy (NME) rates, averaging over 35 percent. On May 24, 2000, the U.S. House of Representatives voted 237 to 197 in favor of granting China *permanent* MFN status, thereby eliminating these potential tariff hikes and putting "an end to years of uncertainty in which [U.S. companies] had put off major decisions about investing in China" (Knowlton, 2000).[3] After this watershed event, U.S. imports from China surged from less than $100 billion in 1999 to over $500 billion today.

I begin my analysis of this policy change, which I refer to as the "China trade shock," by examining stock price reactions to the May 24, 2000 House vote for a sample of 1,745 U.S. public manufacturers. Classifying firms as small if they report less than $250 million in annual sales and large otherwise, I find that small firms experience negative 1.18 percent cumulative abnormal returns (CARs), on average, in the five days around the vote.[4] In contrast, large firms earn positive CARs of 0.87 percent. Moreover, stock reactions vary cross-sectionally with exposure to the shock, measured as the industry-level gap between MFN and NME tariff rates. These results imply that investors expected the China shock to either create or destroy value depending on firm size.

Next, I examine the long-run effects of the China shock using a differences-in-differences (DiD) econometric strategy that compares U.S. manufacturing industries before and after China obtained permanent MFN trade status in 2000 (first difference) depending on industry-level variation in tariff rates (second difference). The identifying assumption is that U.S. industries would have followed parallel trends absent the shock. While this assumption is inherently untestable, I argue that industry-level exposure to the China shock is plausibly exogenous because

[3] MFN trade status is the more familiar term for Normal Trade Relations (NTR). See Pierce and Schott (2016) for a comprehensive discussion of the change from temporary to permanent Normal Trade Relations with China.
[4] This size cutoff follows Gao et al.'s (2013) analysis of seasoned firms and denotes the 60th percent of the distribution.

it derives from variation in NME tariff rates set 70 years prior by the Smoot-Hawley Act. In addition, exposure to the China shock exhibits significant variation across sectors: pesticides, medical instruments, and outerwear are all in the top tercile of industry exposure, while alkalies and chlorine, motor vehicle parts, and paint are in the bottom tercile.

I find that the China shock led to a precipitous decline in the number of listed firms and a spike in industry concentration. Using a sample of 363 manufacturing industries with at least one U.S. public company listed in the CRSP-Compustat Merged Database between 1992 and 2007, I show that a one standard deviation increase in an industry's exposure to the China shock leads to a 4.3 percent drop in the number of publicly-listed firms after 2000.[5] For comparison, Doidge, Karolyi, and Stulz (2017) report that the total number of listed firms fell by 24.8 percent over the same period. In addition, my DiD estimates imply that a one standard deviation increase in an industry's exposure to the China shock leads to a 2.7 percentage point increase in HHI after 2000, an economically large effect relative to the 9.8 percentage point HHI increase that the average U.S. manufacturing industry experienced over the same period.

To better understand the effect of the China shock on public list rates, I decompose the evolution of U.S. industries into new list and delist rates. While policymakers and the business press focus most of their attention on the weak IPO market, Doidge et al. (2017) show that an abnormally high delist rate played nearly as large of a role in the disappearance of U.S. public firms. I confirm these trends in my sample of manufacturers and find that, after 2000, the new list rate is 21.7 percent lower and delist rate is 30.0 percent higher for industries that have a one standard deviation above mean exposure to the China shock.

[5] The analysis ends in 2007 to avoid confounding effects of the Great Recession. This cutoff is standard practice in the literature that studies the China trade shock (e.g., Pierce and Schott, 2016; Hombert and Matray, 2018).

Gao et al. (2013) highlight that the recent decline in new lists is concentrated among small firms and conjecture that the downturn could be driven by an economic change that reduced their profitability. Given this discussion, I examine whether the China shock had a different impact on the listing rate of small and large firms. My results indicate that the *entire* impact of the China shock on listing rates was borne by small firms. Further, I examine CRSP delisting codes and find that the effect is primarily driven by an increase in mergers and acquisitions of small firms. Together with my event study analysis, these findings imply that the recent decline in public listings was driven, at least in part, by changing economic fundamentals that disproportionately harmed small firms, leading them to sell out rather than continue as a standalone firm.

The results thus far are consistent with heterogeneous firm models of international trade. Small firms were less able to cope with the China shock, leading to fewer new lists, more delists, and higher concentration. Drawing on these models, I hypothesize that small manufacturers were disproportionally harmed because they were unable to incur the fixed cost to offshore production and remain competitive against foreign imports. Firm-level analyses provide suggestive evidence for this mechanism. First, I classify firms as domestic or multinational to proxy for their ability to incur the fixed cost of offshoring and find that size strongly predicts the likelihood that a firm reports multinational operations. Second, I examine firm responses to the China shock and find that domestic firms significantly cut investment, employment, and debt issuance while multinationals were unaffected. Third, using the text-based offshoring database of Hoberg and Moon (2017), I show that a significant fraction of multinational corporations began producing inputs in China after the shock. Together, these results suggest that multinationals were able to withstand the China shock in part by offshoring production, while domestic firms faltered.

I conclude the analysis with an event study around President Trump's surprise announcement on March 1, 2018 imposing new tariffs and his corresponding tweet claiming that, "…trade wars are good, and easy to win." This reversal in trade policy prompted opposite stock price reactions compared to the initial China trade shock: Trump's tweet induced positive stock price reactions for small domestic manufacturers and negative reactions for large multinationals. This out-of-sample evidence suggests that protectionism improves the competitive outlook of small domestic manufacturers, and bolsters the interpretation that the China trade shock harmed small U.S. firms.

This paper contributes to the ongoing debate about the cause of the recent decline in U.S. public listing rates. Much of this debate focuses on the costs and benefits of listing on U.S. exchanges. Although a host of critics blame new regulations that increase the cost of being public, academic research shows that regulatory changes cannot fully account for the drop in public listings (Leuz, 2007; Doidge et al. 2013, 2017). Other researchers argue that developments in the private securities market lowered the benefits of being public. Kwon, Lowry, and Qian (2020) and Ewens and Farre-Mensa (2020) provide evidence consistent with this notion by showing that an influx of private capital enabled late-stage startups to postpone public listing and grow to a size that few private firms previously reached. My results offer a complementary view: a significant portion of the decline in U.S. listing rates is due to fundamental changes in the economy that hinder small firms. These findings support the hypothesis of Gao et al. (2013), who document an abnormally high acquisition rate of small private targets and conjecture that the trend may be the result of an ongoing change in the economy that requires greater economies of scope. I provide direct evidence of such a change by studying the China trade shock.

This paper also contributes to the literature on the secular rise in U.S. industry concentration. My finding that the China shock led to higher U.S. industry concentration provides a new explanation behind the trend documented by Kahle and Stulz (2017), Grullon et al. (2019), and De Loecker, Eeckhout, and Unger (2020). Consistent with heterogeneous firm models of trade, my results suggest that trade liberalization can lead to within-industry reallocation of market shares from small to large firms.

Finally, this paper adds to our understanding of how Chinese import competition affects the U.S. economy. This issue is an important one, given high-profile discussions among policymakers on the future of U.S.-China trade relations. Prior research shows that the rise of China led to a decline in U.S. manufacturing employment (Autor, Dorn, and Hanson, 2013) by reducing labor demand within continuing plants and inducing plant exit (Pierce and Schott, 2016), an increase in household debt (Barrot, Loualiche, Plosser, and Sauvagnat, 2021), and a decline in household entrepreneurial activity (Aslan and Kumar, 2021). Hombert and Matray (2018) find that R&D-intensive firms are more resilient to trade shocks. I complement this literature by showing that the ability to respond to the China shock hinged crucially on firm size and multinational scope. In sum, my results show that the inability of small domestic firms to cope with the China shock contributed to the recent decline in public listing rates and increase in U.S. industry concentration.

2. Institutional background

The goal of this paper is to understand whether trade liberalization contributed to the recent drop in U.S. public listing rates and the simultaneous increase in industry concentration. To do so, I study China's receipt of permanent MFN status, which eliminated potential tariff hikes on goods imported from China. This section provides institutional details about the natural experiment and describes how I use these features to generate plausibly exogenous industry-level variation in Chinese-U.S. trade.

2.1. The setting: U.S. tariff rates

The origin of this natural experiment dates back to the late 1920s when Herbert Hoover espoused the benefits of higher tariffs in an effort to win the presidential election. After winning the presidency, Hoover fulfilled his protectionist promises and signed the Smoot-Hawley Tariff Act of 1930, which led to massive tariff hikes on more than 800 products (Irwin, 2011). These hikes were short-lived, however, as the U.S. Congress passed the Reciprocal Trade Agreements Act of 1934 to lower tariff rates on imports from most trade partners.

Today, U.S. tariff schedules consist of two rates: low “column 1” rates offered to Most-Favored Nations and Smoot-Hawley “column 2” rates offered to Non-Market Economies.[6] China first received access to low MFN rates in 1980 and successfully renewed their temporary access every year without issue until the Tiananmen Square protests of 1989. After this inflexion point, members of the U.S. House of Representatives sought to end trade relations with China and introduced annual legislation to revoke China’s temporary MFN status. The legislation received more than 50 percent of House votes in three different years, but never passed the Senate.

Although China retained its temporary MFN status every year between 1980 and 2000, the annual review process generated considerable uncertainty. If Congress revoked China’s temporary MFN status, tariffs would have immediately jumped from MFN rates, averaging less than 5 percent, to punitive NME rates, averaging over 35 percent. Pierce and Schott (2016) provide anecdotal evidence that the annual renewal process impeded American investment in China. Most incriminating among these anecdotes are reports from the U.S. General Accounting Office (1994) that state, “U.S. government and private sector officials cited uncertainty surrounding the annual renewal of China's Most-Favored Nation trade status as the single most important issue affecting

[6] As of 2018, Cuba and North Korea are the only two countries still subject to NME tariff rates.

U.S. trade relations with China." The report continues, "… government policies designed to address concern about China's human rights, trade, and weapons proliferation practices may prevent U.S. companies from being able to more fully realize the business opportunities associated with China's economic growth and development."

2.2. Time series variation: China's receipt of permanent MFN status

In 2000, the U.S. Congress passed a bill that granted China permanent MFN status, eliminating uncertainty associated with annual renewals. The bill culminated several years of negotiation regarding China's ascension to the World Trade Organization. According to a report from the U.S. Ways and Means Committee, President Clinton began lobbying for China to receive permanent MFN status during the June 1998 U.S.-China Summit.[7] The agreement was finalized in November 1999, passed the House by a 237-197 margin in May 2000, passed the Senate by an 83-15 margin in September 2000, and was signed into law in October 2000.

By removing uncertainty about potential tariff hikes, China's receipt of permanent MFN status led to a substantial increase in trade and investment. As noted by Pierce and Schott (2016), a Congressional Commission evaluating the policy change found "an escalation of production shifts out of the US and into China. … [B]etween October 1, 2000 and April 30, 2001 more than eighty corporations announced their intentions to shift production to China, with the number of announced production shifts increasing each month." This anecdote is consistent with research that finds a negative relation between policy uncertainty and corporate investment, particularly for outlays with a high degree of irreversibility (Julio and Yook, 2012, 2016; Baker, Bloom, and Davis 2016; Gulen and Ion, 2016; Bonaime, Gulen, and Ion, 2018).

[7] https://www.congress.gov/congressional-report/106th-congress/house-report/632/1

2.3. Cross-sectional variation: Industry-level tariff rates

Although China's receipt of permanent MFN status eliminated potential tariff hikes on all Chinese goods shipped to the U.S., exposure to this shock varied across industries depending on the gap between MFN and NME rates. Importantly, 79 percent of this variation derives from variation in NME rates, which were established 70 years before the policy change (Pierce and Schott, 2016). According to Irwin (2011), NME rates vary significantly across industries as a result of intense Congressional lobbying during the passage of the Smoot-Hawley Tariff Act. Conversely, MFN rates are ubiquitously low across all industries. In my sample, I find that the average industry has an NME tariff rate of 36.5 percent, an MFN rate of 3.7 percent, and thus a potential tariff hike of 32.8 percent. The interquartile ranges of NME rates, MFN rates, and potential tariff hikes in my sample are 18.0 percent, 3.3 percent, and 17.1 percent, respectively. As a result of these details, I contend that China's receipt of permanent MFN status generated plausibly exogenous industry-level variation in Chinese-U.S. trade.

3. Empirical design

To identify a causal effect, my research design must meet the following conditions: i) China's receipt of permanent MFN status must increase China-U.S. trade more for industries with higher potential tariff hikes (relevance), and ii) variation in potential tariff hikes must be uncorrelated with other industry factors that influence the outcome variables (exogeneity). In other words, industries would have followed parallel trends throughout the sample period if China did not receive permanent MFN status. This section describes the DiD estimation strategy, potential threats to identification, and the ways the empirical design addresses these challenges.

3.1. Differences-in-differences specification

The DiD specification compares within-industry changes before and after China obtained permanent MFN status in 2000 (first difference) depending on variation in potential tariff hikes (second difference). I estimate this model using the following ordinary least squares regression,

$$Y_{i,t} = \beta \cdot Post_t * China\ Trade\ Shock_i + \theta \cdot Post_t * Controls_i + \gamma \cdot Industry_i + \tau \cdot Year_t + \varepsilon_{i,t} \qquad (1)$$

$Y_{i,t}$ is the outcome of interest for 6-digit NAICS (North American Industry Classification System) manufacturing industry i in year t. $Post_t$ is an indicator that equals one from 2000 onwards and captures the aggregate trend after China received permanent MFN status. $China\ Trade\ Shock_i$ is a continuous variable that measures the potential tariff hike industry i faced before 2000 (i.e., the gap between MFN and NME tariff rates) and captures industry exposure to the shock. Hence, the interaction of these two variables captures different trends after the shock depending on industry-level variation in exposure. $Controls_i$ are variables that control for confounding factors at the industry level. $Industry_i$ represents industry fixed effects that control for time-invariant heterogeneity at the 6-digit NAICS level. $Year_t$ represents year fixed effects that control for aggregate time series trends.[8] These fixed effects absorb the effect of other regulatory changes in the early 2000s, such as the Sarbanes-Oxley Act and exchange listing requirements, and mitigate the potential for bias as long as the effect of these regulatory changes is not correlated with industry-level exposure to the China trade shock. Finally, I follow the advice of Petersen (2009) and cluster standard errors by industry to account for potential serial correlation and heteroscedasticity. Thus, estimations of equation (1) compare within-industry changes around China's receipt of permanent MFN status depending on the industry's exposure to the shock.

3.2. Relevance

Panel A of Figure 1 shows that China's receipt of permanent MFN status was a watershed

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[8] The non-interacted constituent terms, $Post_t$, $China\ Trade\ Shock_i$, and $Controls_i$ are not included in the regression because they are perfectly collinear with year fixed effects and industry fixed effects, respectively.

moment for U.S.-China trade relations. After this policy change, U.S. imports from China surged from less than $100 billion in 1999 to more than $300 billion per year in 2007. Panel B shows that U.S. manufacturing industries in the top and bottom tercile of potential tariff hikes followed parallel trends in Chinese import penetration prior to 2000. After potential tariff hikes were eliminated, however, Chinese import penetration grew nearly 25 percent faster in high exposure industries (top tercile) than in low exposure industries (bottom tercile).

3.3. Exogeneity

Causal inference of observational data can be complicated by reverse causality and correlated omitted variables. The primary concern in my setting is that unobserved demand or productivity shocks simultaneously influence the level of U.S-China trade and structure of U.S. industries. For example, negative productivity shocks would lead to the decline of U.S. industries and more imports from China, upwardly biasing the estimated effect of trade liberalization. Conversely, positive demand shocks would improve U.S. industry conditions and encourage more imports from China, downwardly biasing the estimated effect.

To address these issues, I follow Pierce and Schott (2016) and use a DiD estimation strategy where industries are differentially exposed to the China trade shock based on historical tariff rates. This strategy mitigates the scope for reverse causality because it relies on variation in NME tariff rates that were set 70 years before the policy change. Figure 2 shows that the gap between MFN and NME tariff rates is widely dispersed among industries, even within the same manufacturing sector. Moreover, the inclusion of industry fixed effects lessens the possibility of spurious correlation by controlling for time-invariant differences. Nevertheless, it could be the case that some industries follow a different trend after 2000 due to changes unrelated to the China shock.

After all, China's receipt of permanent MFN status occurred in 2000, a time of tremendous technological change for the U.S. economy.

Angrist and Pischke (2009) warn that controlling for variables on the causal pathway can introduce bias in a DiD setting. Therefore, I do not include time-varying controls that could be affected by the policy change and, instead, control for potentially confounding factors by interacting industry-level characteristics from before the shock with the *Post* indicator. These $Controls_i$ include High Tech Industry, an indicator that equals one if the industry is classified in the Computers and Electronics Manufacturing Subsector (NAICS 334), and Unskilled Labor Percentage, the fraction of industry employees that are production workers. By allowing for different trends after the shock, these controls lessen the possibility that my results are driven by the technology bubble or a general decline in America's unskilled-labor intensive industries.

4. Data

My analysis uses data from the U.S. Harmonized Tariff Schedule (HTS), collected and made available by John Romalis. The Romalis dataset contains 8-digit HTS product-level ad valorem tariff rates for Most-Favored Nations and Non-Market Economies.[9] I calculate potential tariff hikes as the difference between the MFN and NME rate for each of the 9,997 unique 8-digit HTS products in 1999, the year before China received permanent MFN status. Next, I map HTS products to 6-digit NAICS industries using crosswalks available on David Dorn's website. The resulting dataset contains 468 unique 6-digit NAICS manufacturing industries that map to an average of 80 products (37 median). Finally, I compute industry-level exposure to the China trade shock as the average gap between MFN and NME rates for the corresponding products. I find that the average industry would have experienced a 33 percentage point increase in tariffs if Congress

[9] See Feenstra, Romalis, Schott (2002) for more details.

failed to renew China's temporary MFN status (standard deviation of 0.14). These values are identical to the summary statistics reported by Pierce and Schott (2016).

I assign this industry-level measure to manufacturers (NAICS 31-33) with positive sales in the CRSP-Compustat Merged Dataset (CCM) between 1992 and 2007. The sample spans 1992 to 2007 – eight years pre/post China's receipt of permanent MFN status – to create a symmetric panel while avoiding the confounding effects of the Great Recession. I filter the sample to include only U.S. public firms (share code 10 or 11) traded on NYSE, NASDAQ, or AMEX (exchange code 1, 2, or 3). Finally, I collapse the dataset to the industry-year level, yielding a sample of 4,736 observations from 363 6-digit NAICS industries with at least one U.S. public manufacturer between 1992 and 2007.

Table 1 reports summary statistics. The average 6-digit NAICS industry-year contains 6.4 listed firms. I compute the Herfindahl-Hirschman Index (HHI) by summing the squared market shares of these firms and find that the average industry has an HHI of 0.67, which is close to the 0.69 average HHI reported at the 4-digit SIC level by Ali, Klasa, and Yeung (2009). To better understand the dynamics of U.S. manufacturing industries over time, I follow Doidge et al. (2017) and calculate new list (delist) rates as the number of firms that enter (exit) an industry, divided by the number of listed firms in the industry during the previous year.[10] I find that the average industry-year new list rate and delist rate is 0.06 and 0.09, respectively. These values differ slightly from the 0.08 new list rate and 0.09 delist rate that Doidge et al. (2017) report for all U.S. public firms over the same period, implying that fewer manufacturers went public over the sample period than non-manufacturers. Finally, I decompose list rates separately for small and large firms using

[10] I assign firms to their primary industry using the *naics* data item from Compustat's header (i.e., most recent) file so list rates capture firms entering/exiting the public equity market and are not influenced by firms switching industries.

a threshold of $250M in sales (2007 purchasing power), which corresponds to the 60th percentile of the size distribution.

Ali et al. (2009) warn that Compustat-based concentration measures may be poor proxies of actual industry concentration and recommend that researchers use U.S. Census-based measures as an alternative. The advantage of Census-based measures is that they cover all firms operating in the U.S. regardless of ownership status and classify sales into industries based on the primary activity at establishment level rather than the firm level. The drawback of these measures, however, is that the Census only occurs every five years and does not use consistent industry definitions. In particular, the Census Bureau's switch from SIC to NAICS codes in 1997 greatly complicates the comparison of industry concentration over time. To minimize measurement error, I hand collect concentration data for 6-digit NAICS industries that did not change between the 1997 and 2007 Economic Census. This process yields a sample of 832 observations from 416 6-digit NAICS industries with data available in the 1997 and 2007 Census. Consistent with Ali et al. (2009), I find that industry concentration is an order of magnitude lower when accounting for sales by private and foreign firms operating in the U.S.

Finally, I construct a firm-year sample to examine heterogeneous responses to the China shock. I construct the sample using the same filters described above, except that I also require non-missing data on firm performance, investment, and financing. These requirements yield a sample of 28,222 observations from 3,407 U.S. public manufacturing firms between 1992 and 2007. I classify these firms as multinational if they report positive foreign sales and domestic otherwise. The fraction of multinational corporations in my sample is 0.49, which lies between the 0.48 reported by Gu (2017) and 0.51 reported by Dyreng, Hanlon, Maydew, and Thornock (2017). The average manufacturer in my sample has an ROA of 0.03 and employment growth of 0.05, which is close to the 0.02 and 0.06 reported by Hombert and Matray (2018). Overall, my summary statistics are similar to those reported in the literature.

5. Results

Heterogeneous firm models of international trade show that trade liberalization unevenly affects firms within the same industry, leading to reallocation of market shares toward larger, more productive firms (see Melitz and Trefler, 2012, for a review). By permitting foreign entrants, liberalization induces a negative *competitive effect* that harms all firms. However, by enabling international expansion, liberalization generates a positive *market access effect* for firms that can afford the fixed cost of establishing global operations. I conjecture that the negative competitive effect of the China shock outweighed the positive market access effect for all but the largest U.S. manufacturers, contributing to recent trends in the U.S. public equity market. I test this hypothesis by examining whether the China shock led to i) a decline in public listing rates and increase in concentration ii) by disproportionately harming small firms iii) that were unable to offshore production and remain competitive against foreign imports.

5.1. Preliminary evidence: The China trade shock and firm value

I begin my analysis with an event study around the May 24, 2000 U.S. House of Representatives vote on China's trade status. The vote culminated months of lobbying that pitted large corporations against organized labor and human rights advocates. The expected outcome of the vote was uncertain. On the eve of the vote, administration officials insisted that they were a "handful of votes shy of the 218 needed for passage [and] opponents claimed the race was even at 210" (Schmitt and Kahn, 2000). Surprisingly, the House voted 237-197 in favor of granting China permanent MFN status, thereby eliminating potential tariff hikes on Chinese goods shipped to the United States.[11]

I use this close vote to examine the value implications of the China trade shock. Figure 3 plots cumulative abnormal returns (CARs) in the five days around the vote for a sample 1,745 U.S. public manufacturers with data available in the CRSP-Compustat Merged Database.[12] Diverging returns in Panel A imply that investors expected the China shock to create winners and losers depending on firm size. Moreover, the graphical evidence in Panel B shows that stock price reactions are negatively correlated with exposure to the shock and suggests that the effect is not driven by outliers.

I corroborate these findings in Table 2. Estimates in Panel A imply a $3.7 million decrease in market value for the average small U.S. manufacturer ($318M market cap*-1.175% CAR) and a $49.3 million increase in market value for the average large U.S. manufacturer ($5,693M market cap*0.866% CAR). Panel B confirms that the effect varies cross-sectionally with exposure to the China shock. A one standard deviation increase in firm exposure is associated with 0.744 to 0.790 percentage point lower CARs for small firms but does not have a statistically significant effect on large firms. Thus, my event study findings support the Melitz (2003) model and suggest that trade liberalization has heterogeneous value implications depending on firm size. This evidence sets the stage for my main empirical analyses in which I study the long-run effects of the China shock.

5.2. Main findings: Public listing rates and industry concentration

In this section, I examine whether the China trade shock contributed to recent trends in the

[11] I focus on the House vote, and not the Senate, because the partisan breakdown implied that the vote would be close in the House but guaranteed the Senate. Indeed, the Senate passed the bill by an 83-15 margin in September 2000.
[12] I exclude biological product manufacturers (NAICS 325414) because of outliers. The industry is in the bottom one percent of exposure to the China shock and was in the midst of a large sell-off due to a joint statement by President Clinton and Prime Minister Blair that human genome data should be should be freely available to all researchers.

U.S. public equity market using the CCM industry-year sample. I begin by regressing the log number of listed manufacturers on industry fixed effects and the *Post* indicator. The point estimate in Column (1) of Table 3, Panel A implies that the average manufacturing industry experienced a 26.7 percent drop in the number of publicly-listed firms after 2000. This number is slightly higher than the 24.8 percent decline that Doidge et al. (2017) report for all firms in CRSP, which reflects the fact that Compustat classifies over 60 percent of public firms as manufacturing (NAICS 31-33) and implies that manufacturers experienced a larger decline than the broader economy.

Models (2) and (3) determine the impact of the China shock. I standardize the exposure variable, *China Trade Shock*, to have unit variance so that the coefficient on the interaction term, *Post*China Trade Shock*, is interpreted as the change in trend from increasing industry exposure by one standard deviation. Thus, the negative and statistically significant point estimate in Column (2) implies that a one standard deviation increase in exposure to the China shock leads to a 4.1 percent drop in the number of publicly-listed firms after 2000. The specification in Column (3) refines this estimate by interacting *Post* with industry-level controls for technology and unskilled labor. Adding these covariates has little impact on the China shock coefficient, which remains large and statistically significant. The minor impact of these control variables should not be surprising given the wide dispersion of treatment across industries, as shown in Figure 2.

Columns (4)-(6) report within-industry changes in HHI after China received permanent MFN status. The coefficient in Column (4) indicates that the average industry experienced a 9.8 percentage point increase in HHI after 2000, which corresponds to a 14.7 percent increase relative to the sample mean (0.098/0.665=0.147). Columns (5) and (6) imply that a one standard deviation increase in exposure to the China shock leads to a 3.9 percent increase in HHI relative to the sample mean (0.026/0.665=0.039). Together, these estimates confirm that industry concentration increased after 2000 and imply that the China shock contributed to the trend.

This interpretation hinges crucially on the validity of the DiD specification. Therefore, I follow the advice of Roberts and Whited (2013) and plot the timing of the effect to verify the internal validity of my empirical design. Figure 4 plots estimates from industry-year panel regressions of industry concentration on exposure to the China shock, controls, industry fixed effects, and year fixed effects. The specifications are the same as those reported in Table 3A Columns (3) and (6), except that *China Trade Shock* is interacted with annual dummies instead of the post-2000 indicator. In addition, I omit the year-2000 indicator so that the magnitude of each point estimate is relative to the year of the shock. Visual inspection of Figure 4 reveals a clear break around China's receipt of permanent MFN status, encouraging a causal interpretation.

5.3. Economic significance

Doidge et al. (2017) and Grullon et al. (2019) show that the recent decline in public listing rates and spike in concentration was widespread across industries, including non-manufacturing. Hence, it is important to note that the China shock was not the sole driver of these trends. For example, Ewens and Farre-Mensa (2020) and Kwon et al. (2020) show that an increased supply of capital enabled firms to grow larger while private and delay their IPO. In addition, the secular trend in industry concentration may be partly explained by lax antitrust enforcement (Grullon et al., 2019) and the emergence of information technology that exacerbated productivity differences among firms (McAfee and Brynjolfsson, 2008).

Therefore, I assess the economic significance of the China shock by calculating the effect relative to a hypothetical industry with zero exposure (i.e., no gap between MFN and NME rates). To do so, I re-estimate the model from Column (3) of Table 3A using the non-standardize *China*

Trade Shock variable, multiply the estimated coefficient by each industry's exposure, and then average the implied effects across industries. My results imply that the China shock led to a 9.9 percent decline in the number of publicly-listed firms during the post-period relative to a hypothetical industry with zero exposure. Similarly, re-estimation of Column (6) indicates a China shock-induced relative increase in HHI of 6.3 percentage points. Assuming that absolute effects are equal in magnitude to relative effects (as assumed in Autor et al., 2013 and Acemoglu, Autor, Dorn, Hanson, and Price, 2016), these estimates suggest that the China shock explains more than one third of the aggregate drop in publicly-listed manufacturers and nearly two thirds of the increase in manufacturing HHI between 2000 and 2007 (9.9/26.7=0.37 and 6.3/9.8=0.64, respectively).[13] Considering that roughly 60 percent of public firms are classified as manufacturing (NAICS 31-33) in 1999, my estimates imply that the China trade shock can account for almost one-quarter of the total decline in the number of publicly-traded U.S. corporations over the sample period (0.6*0.37=0.22).

5.4. Accounting for private and foreign-owned firms

The previous results indicate that the China trade shock contributed to recent trends among public firms. Ali, Klasa, and Yeung (2009) warn, however, that Compustat-based measures of industry concentration may be biased because they fail to capture sales from private and foreign firms. To address this concern, I repeat the analysis using data from the U.S. Economic Census, which provides a more comprehensive snapshot of industry conditions by including data from all manufacturers operating in the U.S. regardless of ultimate ownership. Panel B of Table 3 presents the results. The point estimate in Column (1) implies that 11.1 percent fewer manufacturers were

[13] As noted by Muendler (2017), DiD estimators identify relative disparities between groups and cannot quantify absolute effects without strong assumptions. Since very few manufacturing industries have zero exposure to the China shock, this exercise requires an assumption of linearity and substantial out-of-sample extrapolation.

operating in the U.S. in 2007 than in 1997. Columns (2) and (3) imply that a one standard deviation increase in exposure to the China shock leads to roughly an 11.4 percent drop in the total number of manufacturing firms – a relative effect almost three times larger than the estimate for public firms alone – reducing the opportunity set of firms that could potentially be listed on U.S. exchanges.

Analysis of Census-based HHI produces similar inferences. The point estimate in Column (4) implies that the average industry experienced a 16.2 percent increase in HHI relative to the sample mean (0.012/0.074=0.162), which is slightly above the 14.7 percent increase among public firms. Columns (5) and (6) show that a one standard deviation increase in exposure leads to roughly an 8.1 percent spike in HHI relative to the sample mean (0.006/0.074=0.081) – an effect more than twice as large as the estimate for public firms alone. These results confirm that the China shock led to an increase in industry concentration after 2000. Moreover, the difference between CCM and Census-based results suggests that private firms, which tend to be smaller, were particularly affected by the China shock and shows that foreign-owned firms operating in the U.S. did not offset the aggregate decline.

5.5. The channel: Demise of small firms

Gao et al. (2013) show that IPO activity tumbled from an average of over 300 per year in the 1980s and 1990s to less than 100 per year today. They highlight that the trend is strongest among small firms and conjecture that the downturn could be driven by a fundamental change requiring greater economies of scope. However, the authors "leave the testing of this implication for future work" because to do so "would need industry definitions and measures of which industries have seen the greatest increase in the importance of economies of scope" (Gao et al., 2013, pg. 1675).

This section provides a direct test of this “economies of scope” hypothesis by studying whether the China trade shock had a different impact on the listing rates of small and large firms.

I begin by decomposing the evolution of U.S. industries into new list and delist rates. The point estimate in Column (1) of Table 4 indicates that the new list rate fell by 6.0 percentage points in the average manufacturing industry after 2000. Columns (2) and (3) show that a one standard deviation increase in exposure to the China shock leads to a 1.3 percentage point decrease in new list rates post 2000. Together, these estimates imply that, after 2000, the new list rate is 21.7 percent lower for industries with one standard deviation above mean exposure to the China shock (0.013/0.060=0.217). Similarly, Columns (4)-(6) imply that, after 2000, the delist rate is 30.0 percent higher for industries that have a one standard deviation above mean exposure to shock (0.012/0.040=0.300). These results suggest that the China shock led to a decrease in the number of public firms through a combination of abnormally low new list rates and high delist rates.

Next, I refine the dependent variable to focus separately on the listing rate of large and small firms. Columns (1) and (4) of Table 5, Panel A confirm that new list rates fell for both small and large firms after 2000. The remaining columns report the effect of the China shock: a one standard deviation increase in industry exposure leads to a 1.3 percentage point decrease in new list rates among small firms and no change among large firms. Notably, the null effect for large firms is precisely estimated, with a 95 percent confidence interval bound tightly around the point estimate of 0.000. Panel B reports similar dynamics for delist rates. In unreported tests, I examine CRSP delisting codes and find that the effect is primarily driven by an increase in mergers and acquisitions of small firms. Together with my event study analysis, these results imply that the inability to cope with the China shock as a small standalone manufacturer was an important factor in the decline of publicly-listed firms since 2000.

5.6. Potential mechanism: Offshoring

The preceding results are consistent with heterogeneous firm models of trade that predict liberalization will differently impact large and small firms. The friction that leads to this prediction is a fixed cost of establishing global operations that only large firms have enough sales volume to afford. I conjecture that the China trade shock affects U.S. firms through a similar mechanism. Specifically, I argue that China's receipt of permanent MFN status exposed U.S. industries to fierce competition and only some U.S. manufacturers were able to remain competitive by offshoring production. This section investigates the validity of my conjecture.

I begin by constructing a proxy of firms' ability to offshore production to China. I do so by classifying firms as multinational if they report positive foreign sales in their initial year in the sample and domestic otherwise. My assumption is that firms with foreign sales already possess global operations and therefore have the ability to offshore production. Figure 5 confirms that this proxy is strongly related to firm size, consistent with the underlying economic friction.

Next, I examine firm-level responses. Consistent with my event study evidence, Table 6 shows that multinationals were able to withstand the China shock while domestic manufacturers suffered. The regression specifications in Table 6 are similar to those described in Section 3, except that they are at the firm-year level rather than the industry-year level. I include firm fixed effects to isolate within-firm changes in behavior based on exposure to the China shock and cluster standard errors by industry to allow for arbitrary correlation among firms with the same exposure to the shock. The estimate in Column (1) of Panel A implies that a one standard deviation increase in exposure leads to a 9.2 decrease in market capitalization for the average firm after 2000. However, Column (2) shows that this effect is concentrated among domestic manufacturers. Analysis of firm profitability, investment growth, and employment growth produces similar results. Across all specifications, the results suggest that domestic firms shrank after China received permanent MFN status while multinationals were able to withstand the trade shock.

Panel C explores the role that financing played in firms' ability to respond. Point estimates in Column (3) suggest that exposed domestic firms issued significantly less new debt than exposed multinationals in the post period. Unfortunately, I cannot observe whether domestic firms issued less debt because they had fewer positive net present value projects or because they were unable to secure financing. Nonetheless, anecdotal evidence suggests that U.S.-China trade relations affect the ability of U.S. firms to secure international financing. Prior to China's receipt of permanent MFN status, for example, the U.S. General Accounting Office (1994) stated that, "the annual MFN review process may also be a negative factor for U.S. companies in securing financing for business transactions in China from the international lending community."

Handley and Limão (2017) build a dynamic heterogenous firm model with trade policy uncertainty and show that China's WTO ascension lowered Chinese export price indices, particularly in industries with high sunk costs of exporting. In an ideal world, I would directly observe whether multinationals responded to the China shock by offshoring production and lowering product prices more than domestic competitors. Since disaggregated price data is not publicly available, however, I can only provide suggestive evidence of this mechanism. To do so, I test whether multinational firms were more likely to offshore production after China received permanent MFN status. The underlying assumption of this analysis is that offshoring enables these firms to better compete with Chinese exporters on price.

Figure 6 plots offshoring incidence using text-based data from Hoberg and Moon (2017, 2019). Panel A shows that approximately 25 percent of multinationals and 5 percent of domestic firms produced inputs in China during the late 1990s. This fraction quickly doubled for highly exposed multinationals after the shock, while it slowly and moderately increased for domestic firms. Notably, Panel B shows that offshoring to the rest of the world remained flat over the same period, reinforcing the validity of the experimental design. Firm-panel regressions reported in Table 7 corroborate these inferences, though the unavailability of text-based offshoring data prior to 1997 limits the precision of the estimates. These findings are consistent with Pierce and Schott (2016), who show that the China shock increased related party trade, and suggest that large multinationals were able to withstand Chinese competition partly by offshoring production.

My firm-level results build on a large literature that documents heterogeneous responses to trade liberalization.[14] They are most closely related to Pierce and Schott (2018), who show that investment declines due to the China shock were concentrated among plants with low initial levels of labor productivity, capital intensity, and skill intensity. In a similar vein, Covarrubias, Gutiérrez and Philippon (2019) use the China shock as a case study to establish a causal relation between competition and investment and find that competition induces relative increases in investment among industry "leaders" (defined as firms in the top quartile of market value). My event-study and firm-level analyses add to this literature by providing suggestive evidence that the inability to offshore is a potential mechanism behind the demise of small firms. Indeed, Greenland, Ion, Lopresti, and Schott (2021) show that stock price reactions around changes in trade policy are positively correlated with future firm performance. Other potential mechanisms include differences in the ability to adapt via technological change (Bloom, Draca, and Van Reenan, 2016) or upgrade product quality (Bernard, Jensen, and Schott, 2006; Khandelwal, 2010). In the absence of an instrument to isolate the effect of offshoring, my firm-level results should be interpreted with caution.

[14] For example, prior research shows that firms with high cash holdings (Fresard, 2010), high R&D stock (Hombert and Matray, 2018), and multi-segment operations (Bai, 2021) are more resilient to trade shocks.

5.7. Out-of-sample evidence: Stock price reactions to the Trump trade war

I conclude by examining stock price reactions to President Trump's surprise announcement on March 1, 2018 imposing new tariffs and his corresponding tweet claiming that, "…trade wars are good, and easy to win." Although President Trump had long proclaimed anti-trade sentiments, "no one at the State Department, the Treasury Department or the Defense Department had been told that a new policy was about to be announced" (Ruhle, 2018). Therefore, this event provides an ideal setting for an out-of-sample test on the firm value implications of trade liberalization.

My event study analysis of 1,022 publicly-traded U.S. manufacturers suggests that a shift in U.S. trade policy toward protectionism benefits small domestic firms and harms large multinationals. Figure 7 plots CARs in the five days around the event. Manufacturers in the bottom size quintile increased in value by 3.5 percent while manufacturers in the top two size quintiles lost roughly 1.0 percent of market value. Similarly, estimates reported in Table 8 show that domestic manufacturers earned 2.4 percentage points higher CARs, on average, than multinationals around Trump's announcement.

These findings provide an important check of the validity of my empirical design. As noted by Roberts and Whited (2013), if the onset of a treatment causes a change in behavior then its reversal should cause a return to the pre-treatment behavior. Together, my two event studies show that trade liberalization either creates or destroys value depending on firm size.

6. Conclusion

This paper empirically examines whether trade liberalization contributed to recent trends in the U.S. public equity market. Drawing on heterogeneous firm models of trade, I argue that liberalization can lead to within-industry reallocation of market shares by disproportionately harming small firms. I test this hypothesis in a differences-in-differences setting and find that manufacturing industries exposed to the "China trade shock" experienced a decline in public listing rates and elevated concentration. Firm-level analyses show that large multinationals were able to withstand the trade shock while small domestic firms faltered. These findings suggest that public companies today are older, larger, and garner a higher portion of industry revenues, in part, because of fundamental changes in the global competitive landscape. Thus, the recent decline in the number of U.S. IPOs may not be driven solely by a reduction in the net benefits of being a *public* firm (e.g., Doidge et al., 2017; Kwon et al., 2020; Ewens and Farre-Mensa, 2020), but also as a result of an increase in the costs of being a *small* firm, as first conjectured by Gao, Ritter, and Zhu (2013).

I bolster this interpretation by examining stock price reactions to large shifts in U.S. trade policy. Event study analysis of the May 24, 2000 U.S. House of Representatives vote granting China permanent Most-Favored Nation status indicates that trade liberalization increases the value of large firms and destroys the value of small firms. Similarly, stock price reactions to President Trump's March 1, 2018 tariff hike and tweet that "…trade wars are good, and easy to win" imply that protectionism benefits small domestic firms while harming large multinationals. Together, this evidence suggests that trade liberalization heterogeneously affects firm value.

Although this paper highlights distributional consequences of the China trade shock, it remains silent on welfare implications. In the Melitz (2003) model, trade liberalization increases aggregate welfare by raising the zero-profit productivity cutoff. Melitz and Ottaviano (2008) extend the model and show that trade liberalization also raises aggregate welfare through higher product variety and lower prices. However, these models require assumptions that may not perfectly map into the real world. Since young, small firms tend to innovate more than their counterparts (Loderer, Stulz, and Walchli, 2016), trade liberalization could decrease aggregate productivity in the long run by harming key firms. In either case, more research is needed to understand the impact of the trade liberalization-induced drop in U.S. listing rates documented by this paper and inform the public policy debate about future trade relations.

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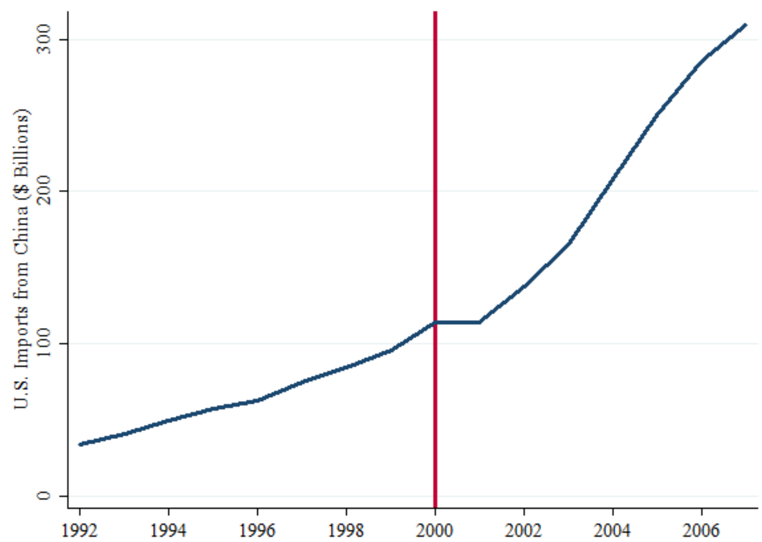
Figure 1: China trade shock. This figure displays the rise in U.S. imports from China between 1992 and 2007. China obtained permanent Most-Favored Nation (MFN) trade status in 2000, eliminating potential tariff hikes on goods shipped to the United States. Panel A plots the annual value of Chinese imports to the U.S. in billions of 2007 dollars. Panel B displays the average Chinese import penetration ratio for U.S. manufacturing industries that were facing a high (top tercile) or low (bottom tercile) potential tariff hike, standardized to unity in 2000.

Panel A: U.S. imports from China



Panel B: Elimination of potential tariff hikes and Chinese import penetration

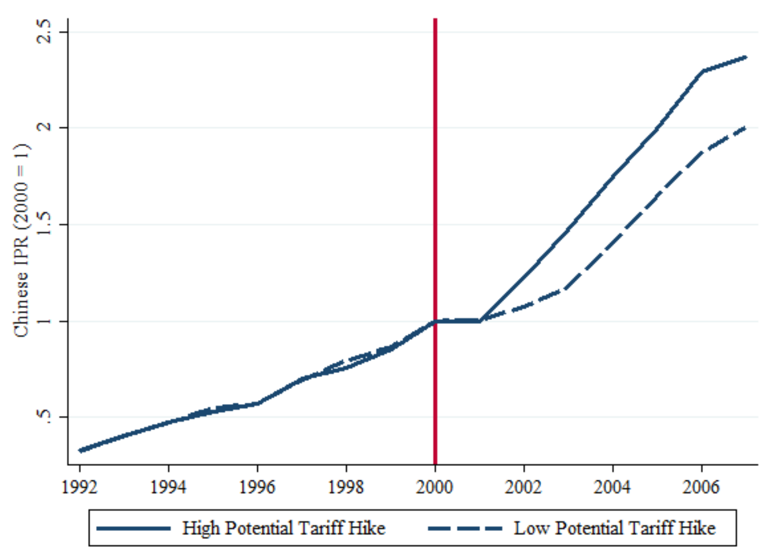


Figure 2: Industry exposure to the China trade shock. This figure plots the potential tariff hike each industry faced before China obtained permanent Most-Favored Nation trade status in 2000. Common markers group 416 6-digit NAICS industry observations into 10 broad manufacturing sectors.

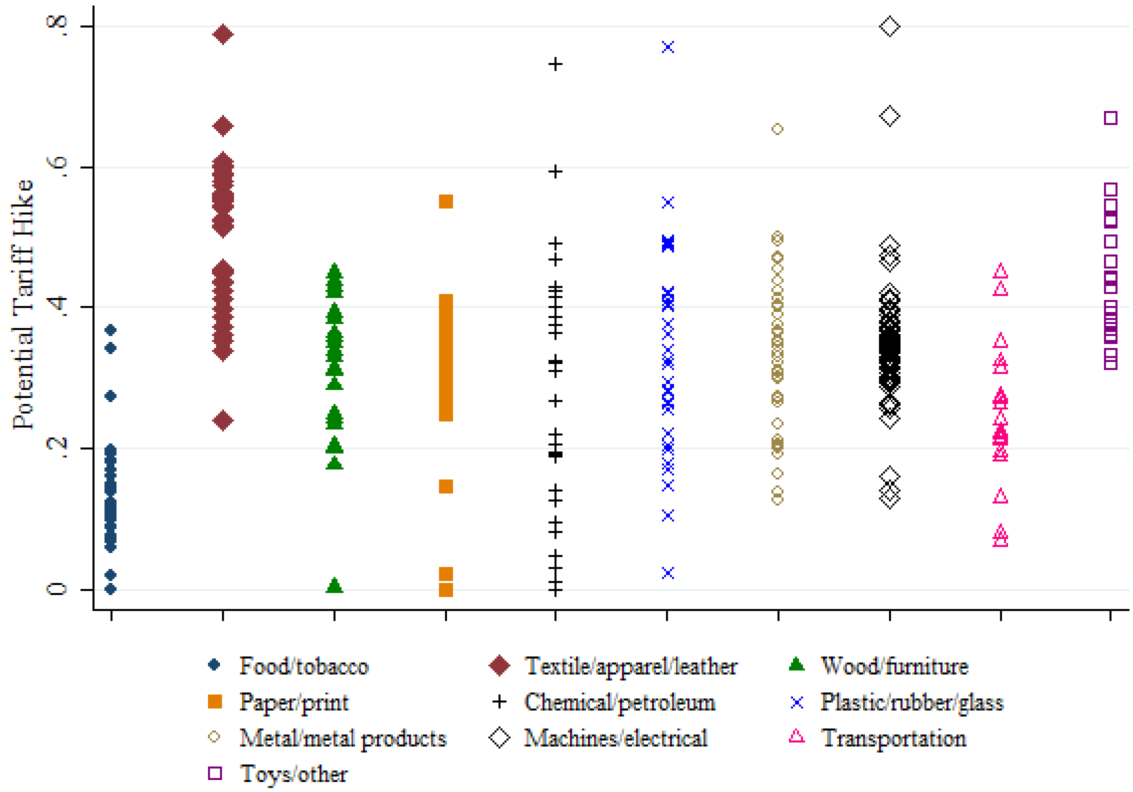
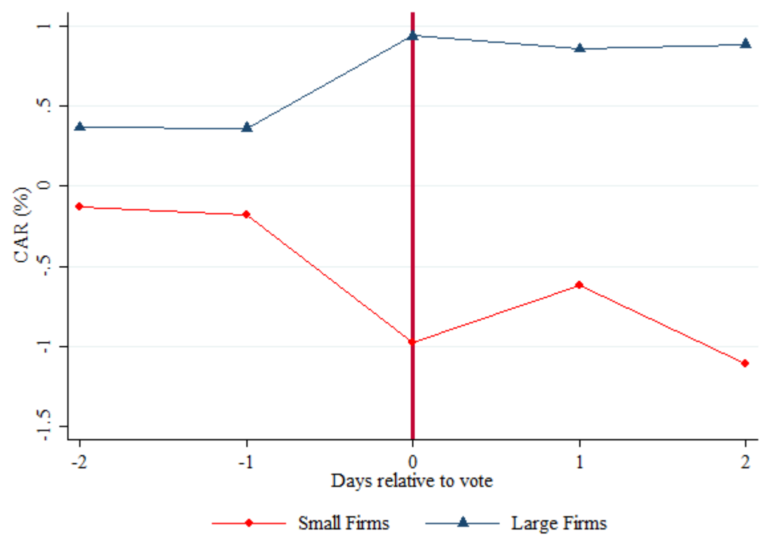


Figure 3: Stock reactions to China's receipt of permanent Most-Favored Nation (MFN) trade status. This figure plots percentage cumulative abnormal returns (CARs) associated with China's receipt of permanent MFN trade status. On May 24, 2000, the U.S. House of Representatives voted 237 to 197 in favor of granting China permanent MFN status, thereby eliminating potential tariff hikes on Chinese goods shipped to the U.S. Panel A displays average CARs for five days around this vote. Panel B displays binned scatter plots of CARs against firm exposure to the China trade shock. I measure exposure as the size of the potential tariff hike the firm's industry faced before the vote. Firms are classified as small if they report less than $250 million total sales in the fiscal year preceding the vote (red lines) and large otherwise (blue lines). The sample consists of 1,745 U.S. public manufacturers with data available in the CRSP-Compustat Merged Database. CARs are winsorized at the 1/99 percent tails.

Panel A: CARs around vote



Panel B: CARs by firm exposure and size

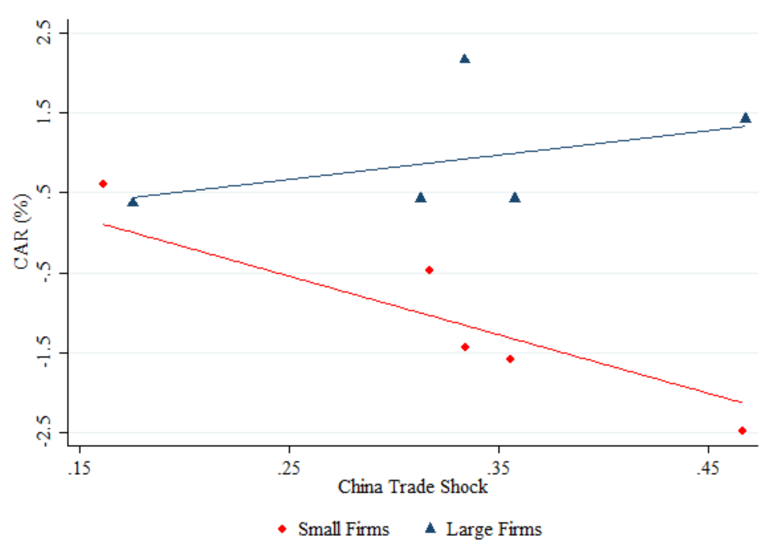
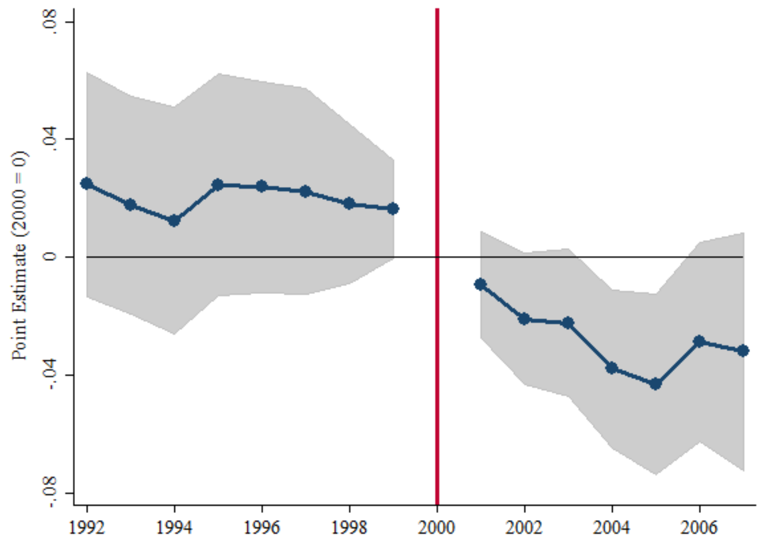


Figure 4: Coefficient dynamics. This figure plots the estimated effect of the China trade shock on the composition of U.S. manufacturing industries. Panel A plots point estimates from an industry-year panel regression of the log number of listed firms on exposure to the China trade shock, controls, industry fixed effects, and year fixed effects. The specification is the same as that reported in Table 3A Column (3), except that China Trade Shock is interacted with annual dummies instead of a post 2000 indicator. Panel B plots the estimated effect of the China trade shock on HHI. The magnitude of each point estimate is relative to year 2000. Shaded areas display 90% confidence intervals, adjusted for clustering by industry.

Panel A: Number of listed firms



Panel B: HHI

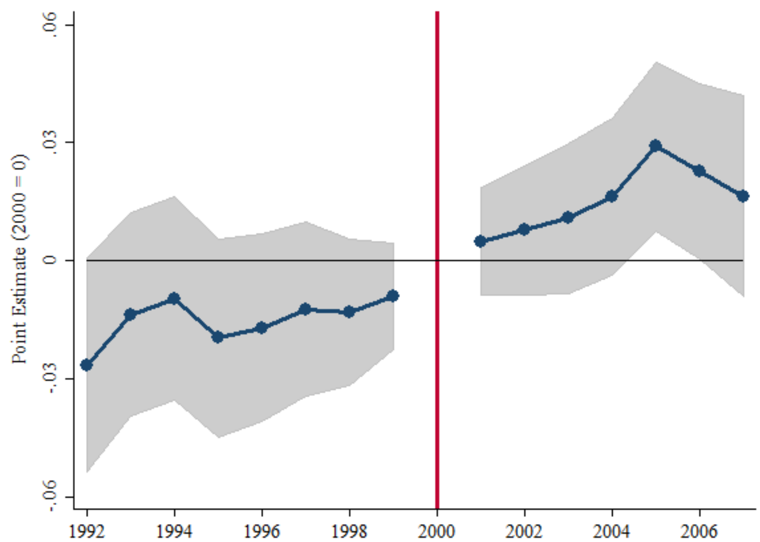


Figure 5: Firm size and multinational scope. This figure plots the fraction of U.S. public manufacturers that report multinational operations for 100 size quantiles. Firms are classified as multinational corporations if they report positive foreign sales and are sorted into size quantiles based on total sales. The red line and gray shading plot a restricted cubic spline of this relationship with 90 percent confidence intervals.

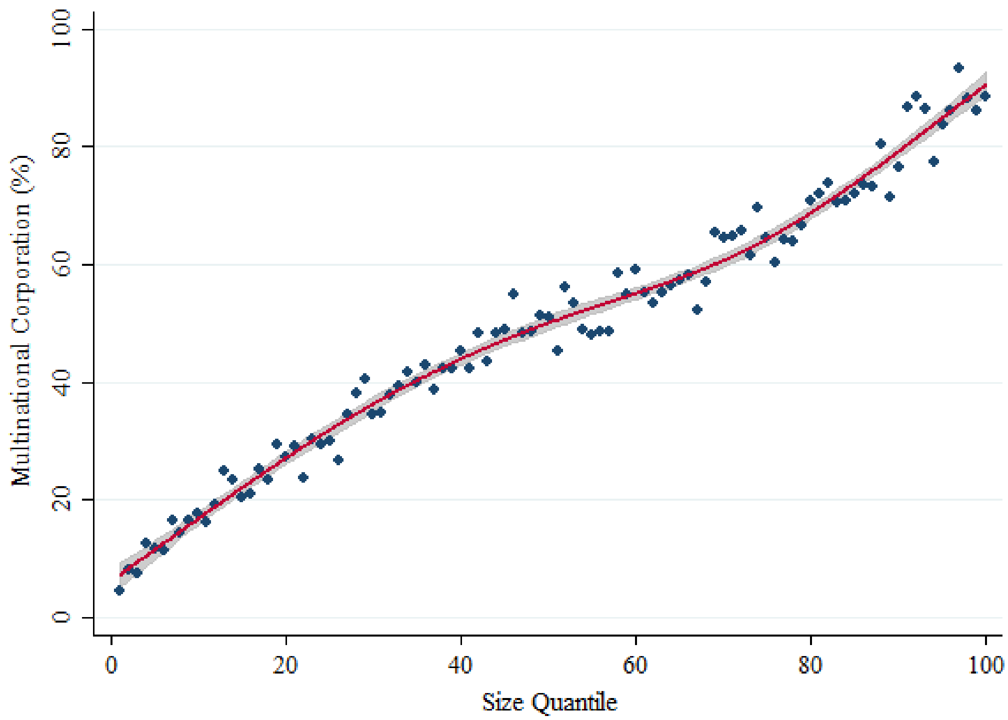
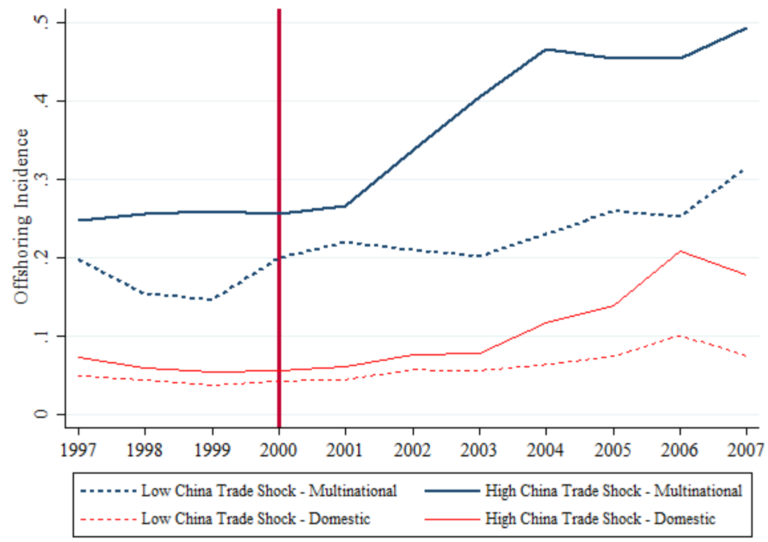


Figure 6: Offshoring. This figure displays the rise in offshoring by U.S. manufacturers. The sample consists of 17,986 firm-year observations from 2,943 U.S. manufacturers with information available in the Hoberg and Moon (2017) text-based offshoring database between 1997 and 2007. Panel A plots the fraction of firms that produce inputs in China. Panel B plots the fraction of firms that produce inputs in a foreign country other than China. Firms are classified as multinational if they report positive foreign sales (blue lines) and domestic otherwise (red lines). Solid (dashed) lines display firms operating in industries that were facing a top tercile (bottom tercile) potential tariff hike before China obtained permanent MFN status.

Panel A: Offshore production in China



Panel B: Offshore production in Rest-of-World

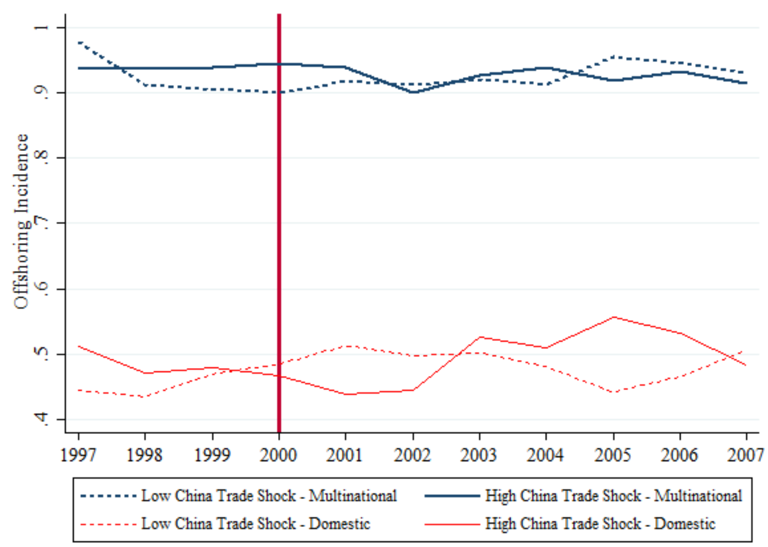
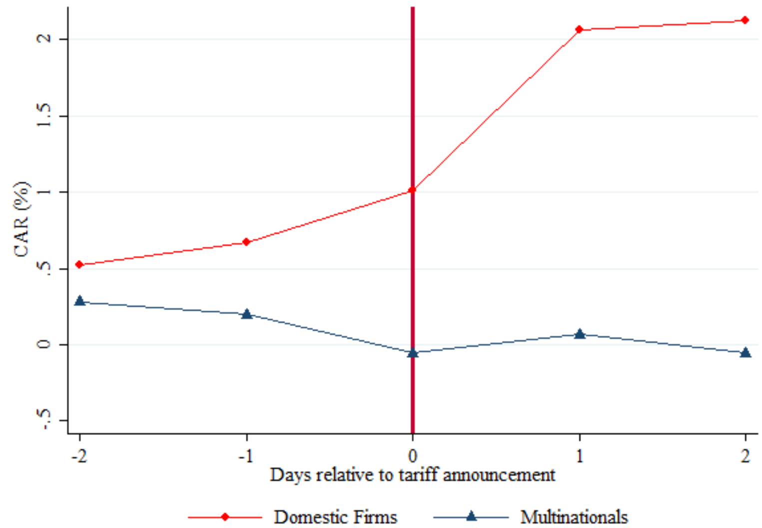


Figure 7: Stock reactions to the Trump trade war. This figure plots percentage cumulative abnormal returns (CARs) associated with President Trump's surprise announcement on March 1, 2018 imposing new tariffs and his corresponding tweet claiming that, "…trade wars are good, and easy to win." Panel A displays average CARs for five days around the announcement. Firms are classified as multinational if they report positive foreign sales (blue lines) and domestic otherwise (red lines). Panel B displays binned scatter plots of CARs against the natural log of firm size, measured as total sales in the previous fiscal year. The sample consists of 1,022 U.S. public manufacturers with data available in the CRSP-Compustat Merged Database. CARs are winsorized at the 1/99 percent tails.

Panel A: CARs around Trump's announcement



Panel B: CARs by firm size

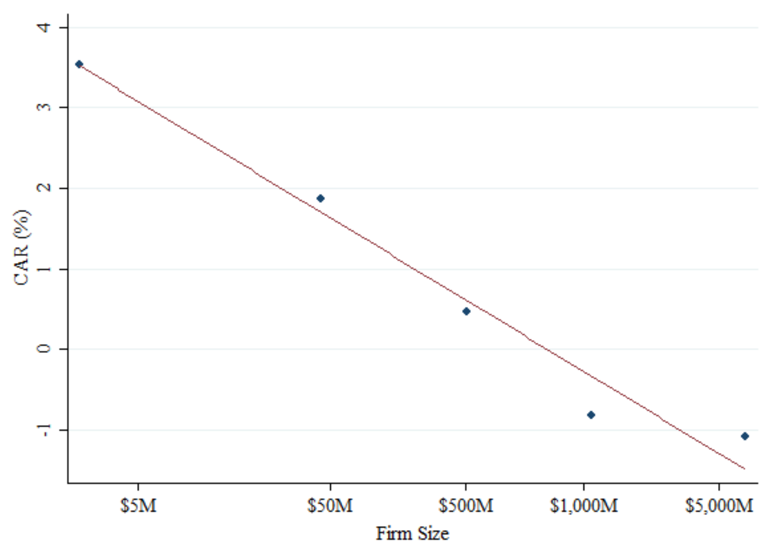


Table 1: Sample description. This table reports descriptive statistics for samples of U.S. manufacturers. The Census Industry-Year Sample contains 832 observations from 416 6-digit NAICS industries with data available in the 1997 and 2007 U.S. Economic Census. The CCM Industry-Year Sample consists of 4,736 observations from 363 6-digit NAICS industries with at least one U.S. public manufacturer in the CRSP-Compustat Merged Database between 1992 and 2007. The Firm-Year Sample contains 28,222 observations from 3,407 U.S. public manufacturing firms with data available in the CRSP-Compustat Merged Database between 1992 and 2007. Firm fundamentals are winsorized at the 1/99 percent tails. Appendix 1 provides variable definitions.

	Mean	**S.D.**	**P25**	**Median**	**P75**	**Obs**
Census Industry-Year Sample						
China Trade Shock	0.328	0.142	0.242	0.335	0.412	832
High Tech Industry (0/1)	0.063	0.242	0.000	0.000	0.000	832
Unskilled Labor Percentage	0.726	0.109	0.673	0.750	0.804	832
Number of Firms	667.787	1456.951	133.000	298.000	660.000	832
HHI	0.074	0.063	0.027	0.056	0.104	832
CCM Industry-Year Sample						
Number of Listed Firms	6.433	14.226	1.000	3.000	5.000	4,736
HHI	0.665	0.297	0.414	0.660	1.000	4,736
New List Rate	0.060	0.195	0.000	0.000	0.000	4,736
Small Firm New List Rate	0.043	0.162	0.000	0.000	0.000	4,736
Large Firm New List Rate	0.017	0.104	0.000	0.000	0.000	4,736
Delist Rate	0.088	0.208	0.000	0.000	0.069	4,736
Small Firm Delist Rate	0.056	0.168	0.000	0.000	0.000	4,736
Large Firm Delist Rate	0.032	0.129	0.000	0.000	0.000	4,736
Firm-Year Sample						
Multinational Corporation (0/1)	0.491	0.500	0.000	0.000	1.000	28,222
Domestic Firm (0/1)	0.509	0.500	0.000	1.000	1.000	28,222
Market Capitalization ($B)	2.331	13.771	0.043	0.160	0.669	28,222
Return on Assets	0.026	0.272	-0.004	0.105	0.169	28,222
Investment Growth	0.097	0.384	-0.068	0.039	0.209	28,222
Employment Growth	0.054	0.273	-0.054	0.036	0.155	28,222
Debt Issuance	0.055	0.180	-0.009	0.000	0.078	28,222
Equity Issuance	0.225	0.765	0.000	0.013	0.087	28,222
Operating Costs	2.546	7.863	0.879	0.993	1.237	28,222
Input Costs	1.687	5.471	0.535	0.710	0.897	28,222
Offshore production in China (0/1)	0.202	0.401	0.000	0.000	0.000	17,986
Offshore production in ROW (0/1)	0.728	0.445	0.000	1.000	1.000	17,986

Table 2: Stock reactions to China's receipt of permanent Most-Favored Nation (MFN) trade status. This table reports percentage cumulative abnormal returns (CARs) associated with China's receipt of permanent MFN trade status. On May 24, 2000, the U.S. House of Representatives voted 237 to 197 in favor of granting China permanent MFN status, thereby eliminating potential tariff hikes on Chinese goods shipped to the U.S. The sample consists of 1,745 U.S. public manufacturers with data available in the CRSP-Compustat Merged Database. Panel A displays CARs split according to firm size and reports significance using *t*-tests for means and Wilcoxon-tests for medians. Panel B reports OLS regressions of CARs on firm exposure to the shock, size, and controls. China Trade Shock measures the potential tariff hike the industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Firms are classified as small if they report less than $250 million total sales in the fiscal year preceding the vote and large otherwise. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. CARs are winsorized at the 1/99 percent tails. Appendix 1 provides additional variable definitions.

Panel A: CARs by firm size

	Full Sample	Small Firms	Large Firms	Difference-in-Means	Difference-in-Medians
Mean CAR% [-2,2]	-0.364*	-1.175***	0.866***	-2.041***	
Median CAR% [-2,2]	-0.038	-0.740***	0.641***		1.381***
Observations	1,745	1,052	693		

Panel B: CARs by firm exposure and size

	5-day CAR (%)			
	(1)	(2)	(3)	(4)
China Trade Shock * Large Firm		1.118***		1.074***
		(0.347)		(0.353)
China Trade Shock	-0.347*	-0.790***	-0.316	-0.744**
	(0.198)	(0.284)	(0.202)	(0.299)
Large Firm		-1.376		-1.134
		(1.128)		(1.133)
High Tech Industry			-0.656	-0.490
			(0.529)	(0.551)
Unskilled Labor %			-0.167	-0.361
			(0.275)	(0.284)
Observations	1,745	1,745	1,745	1,745
R-squared	0.002	0.018	0.002	0.019
Total Effect on Large Firms		0.328		0.330
		(0.239)		(0.236)

Table 3: Evolution of U.S. industries. This table reports the estimated effect of the China trade shock on the composition of U.S. manufacturing industries. China Trade Shock measures the potential tariff hike the industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Post is an indicator that equals one from 2000 onwards. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Table 1 describes the samples. Appendix 1 provides additional variable definitions.

Panel A: CCM industry-year sample

	Ln(Number of Listed Firms)			**HHI**		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.267***			0.098***		
	(0.020)			(0.011)		
Post * China Trade Shock		-0.041**	-0.043**		0.026**	0.027**
		(0.021)	(0.021)		(0.013)	(0.013)
Post * High Tech Industry			0.053			-0.025
			(0.072)			(0.030)
Post * Unskilled Labor %			0.014			0.006
			(0.020)			(0.011)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Observations	4,736	4,736	4,736	4,736	4,736	4,736
R-squared	0.924	0.930	0.930	0.779	0.786	0.787

Panel B: Census industry-year sample

	Ln(Number of Firms)			**HHI**		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.111***			0.012***		
	(0.019)			(0.002)		
Post * China Trade Shock		-0.120***	-0.114***		0.006**	0.006**
		(0.020)	(0.021)		(0.003)	(0.003)
Post * High Tech Industry			-0.161**			0.010
			(0.073)			(0.014)
Post * Unskilled Labor %			-0.029			-0.004
			(0.019)			(0.003)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Observations	832	832	832	832	832	832
R-squared	0.973	0.976	0.976	0.864	0.866	0.868

Table 4: Public listing rates. This table reports the estimated effect of the China trade shock on public listing rates in U.S. manufacturing industries. The sample consists of 4,736 observations from 363 6-digit NAICS industries with at least one U.S. public manufacturer in the CRSP-Compustat Merged Database between 1992 and 2007. China Trade Shock measures the potential tariff hike the industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Post is an indicator that equals one from 2000 onwards. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides additional variable definitions.

	New List Rate			**Delist Rate**		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.060***			0.040***		
	(0.006)			(0.006)		
Post * China Trade Shock		-0.013**	-0.013**		0.011*	0.012*
		(0.006)	(0.006)		(0.006)	(0.006)
Post * High Tech Industry			0.005			-0.012
			(0.014)			(0.016)
Post * Unskilled Labor %			0.003			0.015***
			(0.006)			(0.006)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Observations	4,736	4,736	4,736	4,736	4,736	4,736
R-squared	0.103	0.125	0.125	0.114	0.137	0.139

Table 5: Public listing rates by firm size. This table reports the estimated effect of the China trade shock on public listing rates for small and large U.S. manufacturers. The sample consists of 4,736 observations from 363 6-digit NAICS industries with at least one U.S. public manufacturer in the CRSP-Compustat Merged Database between 1992 and 2007. China Trade Shock measures the potential tariff hike the industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Post is an indicator that equals one from 2000 onwards. Firms are classified as small if they report less than $250 million total sales, and large otherwise. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides additional variable definitions.

Panel A: New list rate

	Small Firms			**Large Firms**		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.045***			-0.016***		
	(0.005)			(0.003)		
Post * China Trade Shock		-0.013***	-0.013**		0.000	-0.000
		(0.005)	(0.005)		(0.003)	(0.003)
Post * High Tech Industry			-0.007			0.012**
			(0.014)			(0.005)
Post * Unskilled Labor %			0.006			-0.003
			(0.005)			(0.003)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Observations	4,736	4,736	4,736	4,736	4,736	4,736
R-squared	0.107	0.125	0.125	0.087	0.095	0.096

Panel B: Delist rate

	Small Firms			**Large Firms**		
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.022***			0.018***		
	(0.005)			(0.004)		
Post * China Trade Shock		0.011**	0.012**		-0.000	-0.000
		(0.005)	(0.005)		(0.004)	(0.004)
Post * High Tech Industry			-0.011			-0.001
			(0.013)			(0.011)
Post * Unskilled Labor %			0.006			0.009**
			(0.004)			(0.004)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Observations	4,736	4,736	4,736	4,736	4,736	4,736
R-squared	0.146	0.158	0.159	0.104	0.123	0.124

Table 6: Firm behavior. This table reports the estimated effect of the China trade shock on U.S. public manufacturers. The sample consists of 28,222 observations from 3,407 U.S. public manufacturing firms with data available in the CRSP-Compustat Merged Database between 1992 and 2007. China Trade Shock measures the potential tariff hike the firm's industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Post is an indicator that equals one from 2000 onwards. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides additional variable definitions.

Panel A: Firm performance

	Ln(Market Capitalization)		**Return on Assets**	
	(1)	(2)	(3)	(4)
Post * China Trade Shock * Multinational		0.078**		-0.003
		(0.035)		(0.008)
Post * China Trade Shock	-0.092***	-0.136***	-0.008**	-0.006
	(0.029)	(0.029)	(0.003)	(0.005)
Post * Multinational		-0.079		0.007
		(0.093)		(0.024)
Post * High Tech Industry	-0.046	-0.058	-0.042**	-0.042**
	(0.103)	(0.103)	(0.019)	(0.019)
Post * Unskilled Labor %	-0.179***	-0.179***	-0.011	-0.011*
	(0.040)	(0.041)	(0.007)	(0.007)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	28,222	28,222	28,222	28,222
R-squared	0.892	0.893	0.742	0.742
Total Effect on Multinational Corporations		-0.059		-0.009
		(0.039)		(0.006)

Panel B: Firm investment

	Investment Growth		**Employment Growth**	
	(1)	(2)	(3)	(4)
Post * China Trade Shock * Multinational		0.020**		0.015
		(0.009)		(0.010)
Post * China Trade Shock	-0.019**	-0.030***	-0.010**	-0.018***
	(0.009)	(0.010)	(0.005)	(0.005)
Post * Multinational		-0.026		-0.032
		(0.026)		(0.028)
Post * High Tech Industry	-0.041*	-0.043**	-0.007	-0.008
	(0.021)	(0.022)	(0.013)	(0.013)
Post * Unskilled Labor %	-0.004	-0.004	-0.008	-0.008
	(0.009)	(0.009)	(0.006)	(0.006)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	28,222	28,222	28,222	28,222
R-squared	0.214	0.214	0.211	0.212
Total Effect on Multinational Corporations		-0.010		-0.003
		(0.010)		(0.009)

Table 6: Firm behavior (cont.).

Panel C: Firm financing

	Debt Issuance		**Equity Issuance**	
	(1)	(2)	(3)	(4)
Post * China Trade Shock * Multinational		0.017***		0.037
		(0.005)		(0.025)
Post * China Trade Shock	-0.005	-0.013***	0.008	-0.010
	(0.004)	(0.003)	(0.007)	(0.008)
Post * Multinational		-0.050***		-0.084
		(0.013)		(0.069)
Post * High Tech Industry	-0.001	-0.000	-0.029	-0.030
	(0.007)	(0.007)	(0.021)	(0.021)
Post * Unskilled Labor %	-0.013***	-0.012***	0.033***	0.033***
	(0.003)	(0.003)	(0.008)	(0.008)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	28,222	28,222	28,222	28,222
R-squared	0.209	0.209	0.333	0.333
Total Effect on Multinational Corporations		0.005		0.027
		(0.005)		(0.020)

Table 7: Offshoring. This table reports the estimated effect of the China trade shock on offshoring by U.S. manufacturers. The sample consists of 17,986 firm-year observations from 2,943 U.S. manufacturers with information available in the Hoberg and Moon (2017) text-based offshoring database between 1997 and 2007. China Trade Shock measures the potential tariff hike the industry faced before China obtained permanent MFN trade status in 2000, and has been standardized to have unit variance. Post is an indicator that equals one from 2000 onwards. Heteroskedasticity-consistent standard errors clustered by industry are reported in parentheses. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Appendix 1 provides additional variable definitions.

Panel A: Offshoring to China

	Offshore Production in China (0/1)			
	(1)	(2)	(3)	(4)
Post * China Trade Shock * Multinational		0.014		0.015*
		(0.009)		(0.009)
Post * China Trade Shock	0.019**	0.008	0.010	-0.000
	(0.009)	(0.007)	(0.007)	(0.006)
Post * Multinational		0.018		0.011
		(0.022)		(0.022)
Post * High Tech Industry			0.091***	0.085***
			(0.025)	(0.025)
Post * Unskilled Labor %			0.029***	0.028***
			(0.010)	(0.010)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	17,725	17,725	17,725	17,725
R-squared	0.679	0.680	0.680	0.681
Total Effect on Multinational Corporations		0.022**		0.015*
		(0.011)		(0.009)

Panel B: Offshoring to Rest-of-World

	Offshore Production in ROW (0/1)			
	(1)	(2)	(3)	(4)
Post * China Trade Shock * Multinational		-0.003		-0.004
		(0.013)		(0.013)
Post * China Trade Shock	-0.004	-0.004	-0.005	-0.005
	(0.010)	(0.015)	(0.010)	(0.014)
Post * Multinational		0.029		0.029
		(0.037)		(0.036)
Post * High Tech Industry			0.018	0.015
			(0.021)	(0.021)
Post * Unskilled Labor %			-0.017*	-0.018*
			(0.010)	(0.011)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	17,725	17,725	17,725	17,725
R-squared	0.681	0.681	0.681	0.681
Total Effect on Multinational Corporations		-0.007		-0.009
		(0.009)		(0.009)

Table 8: Stock reactions to the Trump trade war. This table reports percentage cumulative abnormal returns (CARs) associated with President Trump's surprise announcement on March 1, 2018 imposing new tariffs and his corresponding tweet claiming that, "…trade wars are good, and easy to win." Panel A displays average CARs for five days around the announcement. The sample consists of 1,022 U.S. public manufacturers with data available in the CRSP-Compustat Merged Database. Firms are classified as multinational if they report positive foreign sales and domestic otherwise. I assess statistical significance using *t*-tests for means and Wilcoxon-tests for medians. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively. CARs are winsorized at the 1/99 percent tails.

	Full Sample	Domestic Firms	Multinational Firms	Difference-in-Means	Difference-in-Medians
Mean CAR% [-2,2]	0.797***	2.322***	-0.058	2.380***	
Median CAR% [-2,2]	-0.048*	0.944***	-0.376*		1.320***
Observations	1,022	367	655		

Appendix 1: Variable definitions. This table lists variable definitions and data sources. Census refers to the 1997 and 2007 U.S. Economic Census. NBER refers to the NBER-CES Manufacturing Industry Database. COMP denotes Compustat's North America Fundamentals Annual File. SEG refers to Compustat's Geographic Segment File. Romalis denotes John Romalis' website. HM denotes the Hoberg and Moon (2017) data library.

Variable	**Source**	**Description**
Industry-Year Sample		
China Trade Shock	Romalis	Potential tariff hike the industry faced before China obtained permanent Most-Favored Nation (MFN) status in 2000. It is the average gap between MFN rates and Non-Market Economy (NME) rates on HTS-8 products that map to the industry. I standardize this variable to have unit variance in all regression analyses.
High Tech Industry		Indicator equal to one if industry is classified in Computers and Electronics Manufacturing Subsector (NAICS 334), 0 otherwise.
Unskilled Labor Percentage	NBER	The fraction of industry employees in 1999 that are production workers. I standardize this variable to have unit variance in all regression analyses.
HHI	COMP & Census	Herfindahl-Hirschman Index calculated by summing the squared market shares of firms within each 6-digit NAICS industry-year.
Number of Firms	COMP & Census	Number of firms with positive sales operating within each 6-digit NAICS industry-year.
New List Rate	COMP	Number of firms that enter industry *j* divided by the lagged number of firms in industry *j*. Small (large) firm rates are constructed the same way, except that the numerator only includes firms with less (more) than $250 million sales (2007 purchasing power).
Delist Rate	COMP	Number of firms that exit industry *j* divided by the lagged number of firms in industry *j*. Small (large) firm rates are constructed the same way, except that the numerator only includes firms with less (more) than $250 million sales (2007 purchasing power).
Firm-Year Sample		
Multinational Corporation	SEG	Indicator equal to one if firm reports positive foreign sales, 0 otherwise.
Domestic Firm	SEG	Indicator equal to one if firm does not report positive foreign sales, 0 otherwise.
Market Capitalization	COMP	Common shares outstanding times fiscal year closing price (2007 purchasing power).
Return on Assets	COMP	Operating income before depreciation, divided by total assets.
Investment Growth	COMP	Log of net PP&E minus the log of lagged net PP&E.
Employment Growth	COMP	Log number of employees minus the log of lagged number of employees.
Debt Issuance	COMP	Change in total long-term debt plus change in long-term debt due in one year plus notes payable, divided by lagged assets.
Equity Issuance	COMP	Change in common equity plus change in deferred taxes minus change in retained earnings, divided by lagged assets.
Offshore production in China (0/1)	HM	Indicator equal to one if 10-K mentions that firm owns assets and purchases inputs from China, 0 otherwise.
Offshore production in ROW (0/1)	HM	Indicator equal to one if 10-K mentions that firm owns assets and purchases inputs from a non-Chinese foreign country, 0 otherwise.