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TRADE POLICY UNCERTAINTY, INVESTMENT, AND LOBBYING

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To my family, friends, and my wife Steph for their unwavering love and support.

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ABSTRACT

Trade policy uncertainty has skyrocketed in recent years with rising trade tensions between the US and China. In this paper, I empirically investigate how trade policy uncertainty (TPU) influences firms' lobbying and investment decisions, and how these decisions can potentially complement each other. Using a difference-in-differences design leveraging firms' differential exposure to trade with China and the timing of China's entry to the WTO in the early 2000s, I find that firms more exposed to trade with China have significantly higher trade-related lobbying expenditures in the years prior to China's WTO entry. I construct a newspaper-based index of US-China trade policy uncertainty to isolate uncertainty effects and again find positive lobbying responses. When these two forces are considered simultaneously, the increased level shift in lobbying during the pre-period outweighs the response to trade policy uncertainty. Various breakdowns of this result show evidence of response heterogeneity supporting the role of competition in lobbying. I also find significant negative investment responses to changes in the uncertainty index. Lastly, I present evidence showing that although lobbying can theoretically complement investment by counteracting the negative real option effects of uncertainty, other forces mute this response. Lobbying serves to build political capital that can be used to both increase the probability of positive policy outcomes for firms and protect the firms in the case of a negative outcome but also can take away resources from investment and allow other non-lobbying firms to free-ride.

CHAPTER 1

INTRODUCTION

Over the last few years, President Trump has pulled the United States out of the Trans-Pacific Partnership, threatened to leave the North American Free Trade Agreement, and imposed tariffs on a variety of goods from China and Europe. Economic policy uncertainty, fueled by acts like this, has been shown to adversely affect firms' investment (Gulen and Ion (2016)), R&D (Stein and Stone (2010)), and employment (Baker et al. (2016)).

This paper studies the effect of trade policy uncertainty on firms' joint decision to lobby and invest in physical capital. According to the Center for Responsive Politics, total lobbying expenditures have been increasing since the late 1990s¹, while trade-related lobbying expenditures have increased as a fraction of total lobbying expenditures in recent years (see Figure 1.1). Lobbying builds a firm's political capital which can then be used to both increase the probability of positive policy outcomes for the firm and protect the firm against possible negative outcomes.² Lobbying is therefore likely to reduce firms' uncertainty, thereby limiting the adverse "wait-and-see" impact of uncertainty on physical investment. However, lobbying consumes free cash flow which may otherwise be used for investment. As a result, the joint dynamics of lobbying and investment in response to rising trade policy uncertainty are ex-ante unclear.

Trade, in general, provides a uniquely well-suited field in which to study the effects of uncertainty. For U.S. firms, setting up exporting operations domestically, shifting operations to another country, or establishing relationships with other country producers all involve large sunk costs. These same sunk costs apply to producers in the other countries deciding whether to export to the U.S. or not. These sunk costs are what drive the real options effects in models of investment under uncertainty and give firms strong incentives to lobby the government.

1. This is the starting point for which high quality lobbying data has been recorded and made available.

2. See Hassan et al. (2019) for evidence of lobbying responses to political risk.

Trade Lobbying Percent of Total Lobbying (1998-2017)



Figure 1.1: Trade Lobbying Expenditures as a Percent of Total Lobbying Expenditures (1998HY1-2017HY2)

I exploit China's entry into the World Trade Organization (WTO) in the early 2000s to isolate the impact of reduced uncertainty on firm-level investment and lobbying expenditure using a difference-in-differences design. With rising concern for possible human rights violations in China, the U.S. government annually decided whether to revoke China's most-favored nation (MFN) status throughout the 1990s as punishment. In the early 2000s, the U.S. decided to stop these annual votes and grant China permanent normal trade relations (PNTR) if China was able to gain entry into the WTO. Thus, there was constant uncertainty over tariff levels against China that finally subsided with China's entry into the WTO in the beginning of 2002. Importantly, Congress never actually succeeded in revoking MFN status, so this episode is unique in that import tariff rates that the U.S. applied to Chinese goods

did not change over this period. This quality makes the case study convenient for analyzing the effects of uncertainty as opposed to the effects of changing tariff rates. Interestingly, we see evidence in Figure 1 that when trade policy uncertainty fell after China's WTO entry and then rose back up in recent years under President Trump, trade-related lobbying followed suit. Also, importantly, trade-related lobbying consistently remains a non-trivial share of total lobbying expenditures hovering around 5% over this time period.

To isolate the impact of trade policy uncertainty, I develop a newspaper-based measure of US-China trade policy uncertainty using 6 major newspapers. This index spikes around the key developments in China's eventual entry into the WTO including annual most-favored nation renewal votes for China in Congress, the Belgrade bombing where US forces accidentally bombed the Chinese embassy in Belgrade, and the Hainan Island incident where a US Navy signals intelligence aircraft collided with a People's Liberation Army Navy fighter jet. The latter two being major events that raised tensions between the US and China during China's bid to gain entry into the WTO. Compare this with a general US TPU Index where the main movement in the 1990s and early 2000s period is due to the discussion and eventual signing of NAFTA. Both indices elevate to never-before-seen levels in recent years due to raising trade tensions between the US and China. Discussion of China within general US TPU news articles has increased since the 1990s as the country has become increasingly integrated in world trade.

Armed with the news-based TPU index developed in this paper, I implement various difference-in-differences specifications leveraging changes in the TPU index along with differential firm-level exposures to Chinese trade in order to examine how lobbying and investment respond to TPU. I use two measures of exposure to Chinese trade recently developed in the literature. The first measure utilizes differential potential tariff changes across industries that would have resulted if China's most-favored nation status was revoked. In this event, the US would have reverted back to Smoot-Hawley tariff levels that were decided way back in 1930. Because these tariff levels differ across industries, the industry-by-industry impact of

MFN revocation was severely varied. The second measure uses firm stock responses around key US-China permanent normal trade relations events in the year 2000. According to the efficient markets view, stock price movements reflect all available news that could influence a company's future earnings. Thus, how much a firm's stock responds to news about China's bid to obtain permanent normal trade relations with the US tells us just how much they could potentially be hurt in the long-run due to increased trade with China. Indeed on average, we see strongly negative average abnormal returns in 2000 around the key events considered. I extend this analysis further back in time looking at various events throughout the 1990s.

I find that lobbying firms more exposed to TPU shocks lobby more on trade-related matters and invest less when TPU is high. A one standard deviation increase in the TPU Index leads the average exposed firm to increase trade-related lobbying expenditures by 5.11 thousand dollars. Firm investment rates decline by about 1.28 percentage points from a TPU shock equal in magnitude to the run up to a congressional vote on renewal of China's most-favored nation status. Interestingly, the lobbying response to trade policy uncertainty goes away when controlling for the first moment regime shift effect that there is a policy proposal on the table in the pre-period before 2002 and not in the post-period. Thus, it seems that more exposed firms respond to policy proposals by increasing lobbying but not necessarily to the shifts in uncertainty conditional on the level increase. On the other hand, the negative wait-and-see effect on investment remains strong while controlling for the regime shift effect.

Using production network linkages as described by BEA input-output tables, I am able to break down this relationship between the firms that are directly affected by the policy and the firms that are indirectly affected through the production network. There is limited evidence of lobbying response heterogeneity and no evidence of investment response heterogeneity within the manufacturing sector. Firms that are affected through uncertainty on their downstream consumers lobby more while firms affected through uncertainty on their

upstream producers lobby less. This is intuitive as the downstream affected firms are faced with the possibility of increased import competition to their consumers thus hurting demand for their product if permanent normal trade relations are made permanent. Upstream affected firms, on the other hand, potentially face lower input costs as they can get cheaper goods from Chinese imports. Using the average abnormal returns exposure measure, I can extend the analysis outside of the manufacturing sector in order to consider services producing firms as well. Again, there is evidence of lobbying response heterogeneity as more *negatively* exposed goods producing firms and more *positively* exposed services producing firms both increase lobbying in response to the policy proposal and uncertainty changes.

Furthermore, I find no evidence that lobbying can mitigate the negative investment rates resulting from increased TPU. It seems that the multitude of factors governing the complementarity between lobbying and investment in this scenario work to cancel each other out.

My work lies at the intersection of a few different literatures in order to connect their ideas to better understand how trade policy uncertainty, investment, and lobbying all interact together. There is a large literature dedicated to exploring the effects that economic uncertainty and economic policy uncertainty have on investment, employment, R&D, and sales. We can consider these the passive firm responses to policy uncertainty. Passive in the sense that these responses do not actively try to influence the uncertainty faced but instead are reactions to the uncertainty.

Many recent papers explore the passive responses to policy uncertainty empirically. Baker et al. (2016) develop a news-based measure of economic policy (EPU) uncertainty and show that firms more exposed to EPU reduce investment and employment in times of higher EPU. Gulen and Ion (2016) extend this EPU analysis of investment showing that the effect is stronger for firms with higher degrees of investment irreversibility.³ Altig et al. (2019) show

3. Bonaime et al. (2018) focuses on the effects of policy uncertainty on mergers and acquisitions. See Dorsey (2017) for an example of uncertainty influencing pollution via environmental investment.

using the Survey of Business Uncertainty (SBU) that according to the companies surveyed, the recent Trumpian trade policy uncertainty has had some negative effects on US business investment albeit not as large as one might expect. Uncertainty also hampers innovation and R&D expenditures as seen in Stein and Stone (2010). Trade policy uncertainty in particular has been linked to risk premiums as seen in Bianconi et al. (2019).

In conjunction with the empirically-focused papers, there is a long literature laying the theoretical foundation for how these passive responses arise in the face of uncertainty in general with more recent explorations of policy uncertainty in particular. Stokey (2016) develops a model of tax policy uncertainty where firms temporarily stop investing in response to the uncertainty and then exploit the build-up of projects after uncertainty resolves leading to a temporary investment boom. Handley and Limão (2017) develop a model of trade policy uncertainty (TPU) that they use to empirically identify the effects of TPU on exporting decisions using China's entry into the WTO as a case study.⁴ My work extends this literature by empirically showing that US-China trade policy uncertainty hampers US manufacturing investment and spurs trade-related lobbying. It also extends the empirical identification methodology of Baker et al. (2016) by highlighting another firm-level exposure variable in a more specific setting.

Another literature explores the active firm responses to policy uncertainty and political risk. Hassan et al. (2019) develop firm-level text-based measures of political risk using methods from computational linguistics. Firms increase overall lobbying expenditures in the face of higher general political risk and increase topic-specific lobbying levels in response to the same topic-specific risk increases. My China WTO entry case study supports these results in a specific setting with clear firm-level exposure identification. This particular case study allows me to compare the first and second moment effects as well since there is clear transition point where the policy is chosen. I also am able to separately consider how lobbying

4. Handley and Limao along with coauthors also study trade and policy uncertainty in other contexts: general trade agreements (Carballo et al. (2018)), Brexit (Graziano et al. (2019)), Australia (Handley (2014)), and Portugal (Handley and Limão (2015))

responses differ for firms directly affected by the policy as opposed to firms indirectly affected via production network linkages. This exploration of the differential lobbying responses for potential policy winners and losers is to my knowledge novel. Blanga-Gubbay et al. (2019), following up on traditional lobbying models in trade such as Grossman and Helpman (1994) and Bombardini (2008)⁵, study the political economy of free trade agreements and find that almost all firms are in favor of ratification. Their proposed model of endogenous lobbying explains this feature as well as various facts on the structure of lobbying versus non-lobbying firms.⁶

All in all, my work combines the passive and active response literatures to better understand the interactions between these various responses to uncertainty. Lobbying can directly affect the probability of policy outcomes consequently altering the expected value of the policy. This combined with the insurance against negative outcomes they may garner through political capital gives firms less of an incentive to use wait-and-see investment tactics. The closest paper in this vein is Lin et al. (2018). Using the Baker et al. (2016) EPU Index, they show that lobbying increases with EPU and that firms can mitigate some of the negative wait-and-see effects on investment and sales growth by lobbying. Their main focus is on the barriers to entry in the lobbying process, and they find that these barriers to entry increase as EPU rises leading less firms to enter into the lobbying process for the first time. My paper differs from theirs by utilizing a more focused empirical identification strategy. This case study is amenable to a more detailed analysis on how the economic benefits of lobbying change depending on what side of the policy debate you fall on, i.e. whether you are ex-ante a winner or loser of the policy in question.

My work also relates to the burgeoning literature using text analysis to better measure uncertainty, specifically trade policy uncertainty. Mine is not the first attempt at a trade

5. See also Mitra (1999) and Pecorino (1997), Pecorino (1998), and Pecorino (2001).

6. On lobbying outside of the trade context, see Arayavechkit et al. (2018), Bertrand et al. (2014), Cox (2018), and Kang (2016). On political connections in general, see Akey and Lewellen (2017) and Bertrand et al. (2018).

policy focused uncertainty index.⁷ Baker et al. (2016) have a version of their EPU index that focuses on trade policy uncertainty. Hlatshwayo (2016) develops multiple trade-related uncertainty indices focusing on European countries while Pierce and Schott (2016) have a basic version of a news-based index focusing on China’s entry to the WTO and granting of permanent normal trade relations. Baker et al. (2019) develop an equity market volatility tracker which can be parsed into many different categories including trade policy.

Finally, this paper contributes to the literature exploring the general consequences of increased trade liberalization. Autor et al. (2013) find that Chinese import penetration explains 26 to 55 percent of the overall decline in U.S. manufacturing employment from 2000 to 2007 which is about 5 to 11 percentage points of the overall 20 percent decline. This effect extends to other employment outcomes such as local wages. Pierce and Schott (2016) and Pierce and Schott (2018) show that the mid 2000s decline in manufacturing sector employment and investment can be partially attributed to the rise in import competition following China’s WTO entry.

The rest of the paper proceeds as follows. Chapter 2 discusses the various data sources and policy scenario. Chapter 3 presents evidence on the investment and lobbying responses of firms to trade policy uncertainty. Chapter 4 presents the key results on the ability of lobbying to mitigate negative wait-and-see investment effects of trade policy uncertainty. Chapter 5 summarizes and provides some directions for further research.

7. For overviews of some recent text-based trade policy uncertainty indices, see <https://voxeu.org/article/extraordinary-rise-trade-policy-uncertainty> and <https://www.weforum.org/agenda/2019/09/new-index-tracks-trade-uncertainty-globe>.

CHAPTER 2

DATA DESCRIPTION

This section provides a discussion of the main data sources that will be utilized in the analysis. In total, there are four types of data (lobbying, trade, investment, and news discussion) that will be discussed in sections 2.1, 2.2, and 2.4. Section 2.1 lays out the lobbying data, Section 2.2 discusses the trade and investment data, and Section 2.4 constructs the news-based measure of US-China trade policy uncertainty. Section 2.3 provides an overview of the policy episode and background context in order to give the reader a better understanding of the movements in the TPU index.

The trade data will be used in constructing a Chinese trade exposure measure which when coupled with the news-based TPU index will lay the foundation for the difference-in-differences analysis. The lobbying and investment data will serve as the main two outcome variables of interest. Other data sources that are used in the analysis will be presented and discussed at more appropriate points later in the paper.

2.1 Lobbying Data

The Lobbying Disclosure Act of 1995 which requires lobbyists and lobbying firms to report their lobbying activities with the Clerk of the House of Representatives and the Secretary of State.¹ The lobbying expenditures data comes from the Center for Responsive Politics (CRP), a nonpartisan not-for-profit research group that has obtained and organized these reports. The reports require lobbying firms and lobbyists to provide a good-faith estimate rounded to the nearest USD 10,000 of all lobbying-related income from each of their clients, as well as the list of topics that were lobbied on. There are 80 topics that could possibly

1. The Honest Leadership and Open Government Act of 2007 increased the filing frequency of these lobbying reports from semi-annually to quarterly. For the most part, since the case study is near the beginning of this period, I will consider all lobbying expenditures at the semi-annual level to avoid assigning semi-annual expenditures to a given quarter before 2008.

be lobbied on, but the analysis will focus on trade-related lobbying. The instructions for “Form LD-2, Lobbying Report” that goes through line by line what needs to be included in the lobbying disclosure reports is included in the Appendix. The CRP assigns a value of 0 for lobbying amounts below the disclosure threshold. I consider trade-related lobbying to be the sum of the “Trade” and “Tariff” categories under the assumption that lobbying expenditures are equally divided among all of the lobbying topics listed. I link firms in the lobbying database to firms in Compustat using a fuzzy matching algorithm based off firm name.² Out of the 43,721 unique entity names in the lobbying data, 30,566 are matched to firms in Compustat with a match score higher than 0.6. As seen in Figure A1, the match scores vary a lot with lower match scores corresponding to sometimes much worse matches. For now, I consider only those matches that have a score higher than 0.99 giving us 2,361 matched lobbying firms.

To get a sense of the importance of lobbying for the manufacturing industry, I present a few summary statistics. 35% of Compustat firms in the sample are in the manufacturing sector which is defined as two-digit NAICS codes 31-33. Conditional on being matched to a lobbying firm in the CRP data, 50% of the lobbying Compustat firms are in the manufacturing sector. This increases to 67% when considering trade-lobbying Compustat firms. The manufacturing sector as a whole represents 69% of total trade lobbying expenditures.

Furthermore, one can explore the issues that firms/organizations lobby on. Figure 2.1 breaks down the manufacturing sector’s lobbying expenditures by issue topic. The top five issues by total expenditure percent are: Taxes, Trade, Health Issues, Federal Budget and Appropriations, and Defense. We see that Trade issues constitute a large portion of the manufacturing sector’s total lobbying expenditures along with fiscal policy matters.

It is also important to get a sense of how many issues lobbyist/firm pairs lobby on in a

2. There is no other firm information such as location or telephone number in the lobbying database for us to incorporate into the fuzzy matching algorithm. The name-matching routine first cleans and standardizes company names by eliminating punctuation and entity designations such as “Inc”, “Corp”, and “LLC”. This is done via the `stnd_compname` package in Stata. Then, the fuzzy match is performed on these cleaned and standardized names via the `relink` package in Stata. This package uses a bigram fuzzy matching routine.

Percent of Lobbying Expenditures by Issue (1998-2017)

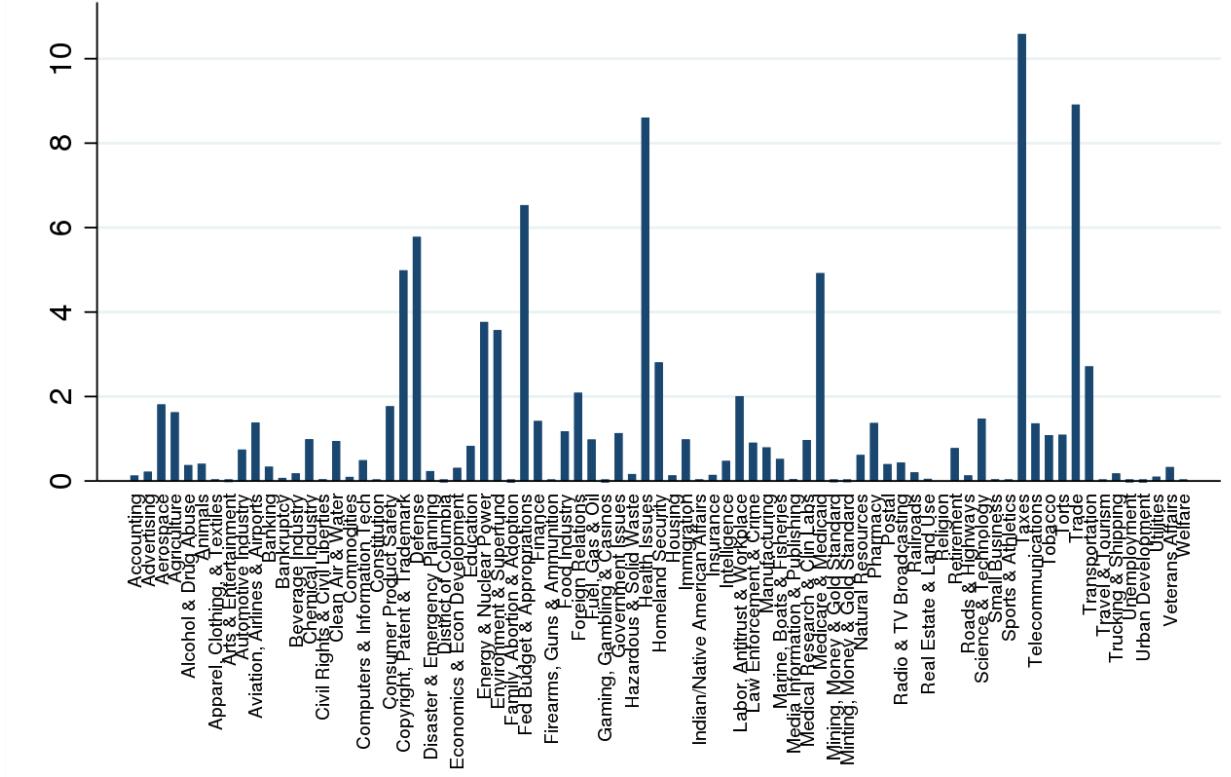


Figure 2.1: Manufacturing Lobbying Expenditures by Issue

given reporting period as I am using an equal share breakdown across issues when assigning total lobbying expenditures to constituent issues. Figure 2.2 shows the time series of the average number of issues reported for all lobbying organizations while Figure 2.3 shows the time series of the average number of issues conditional on trade being listed as one of the issues.

In both cases, the time series is relatively stable.³ It is the case that conditional on trade lobbying firms report more issues on average. It is possible that the trade issue gets lumped together with a few other issues closely related on average or that trade issues over the last couple decades have coincided with other policy issues.

3. I did not find any apparent reason for the big spikes in the first half of 2000 and the first half of 2002. It seemed like across the board there were higher issues listed and not just a couple outlier firms only in these periods.

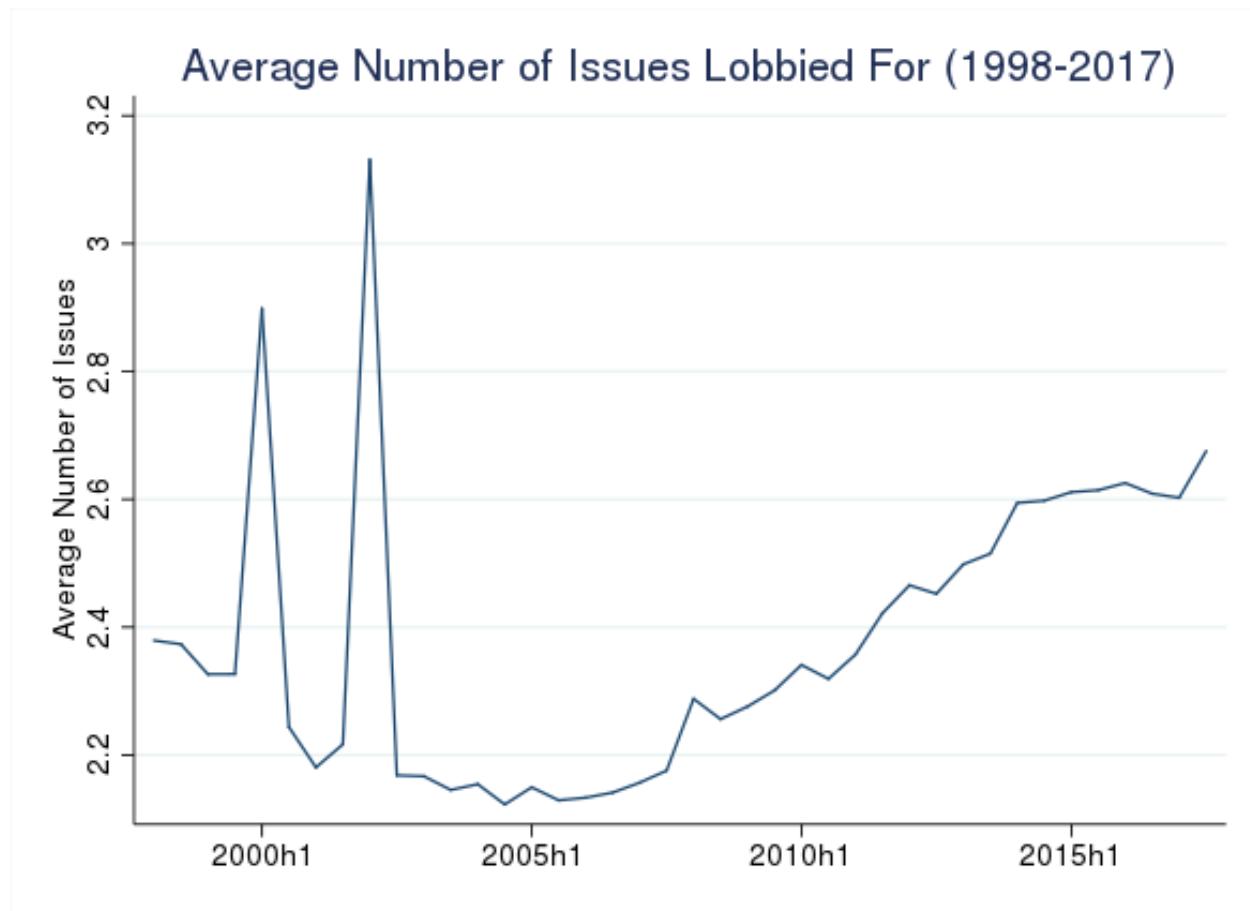


Figure 2.2: Average Number of Lobbying Issues

2.2 Trade and Investment Data

The trade data comes from Handley and Limão (2017). The variables I use for this analysis are the year 2000 column 2 tariff rates and the MFN tariff rates averaged to the HS-6 level. US tariff schedules were obtained via the World Bank's WITS. I also use US Census import data from 1998-2015 provided by Peter Schott via his website.

Firm-level financial variables at the quarterly level including investment and basic balance-sheet information (e.g. total assets) come from Standard and Poors' Compustat. Option-Metrics provides quarterly firm-level implied volatility. I also utilize Compustat's Historical Business Segments database that contains firm-year level sales breakdowns by firm business segments represented by 6 digit NAICS industries. This allows for a direct mapping between industry level tariff variables and individual firms.

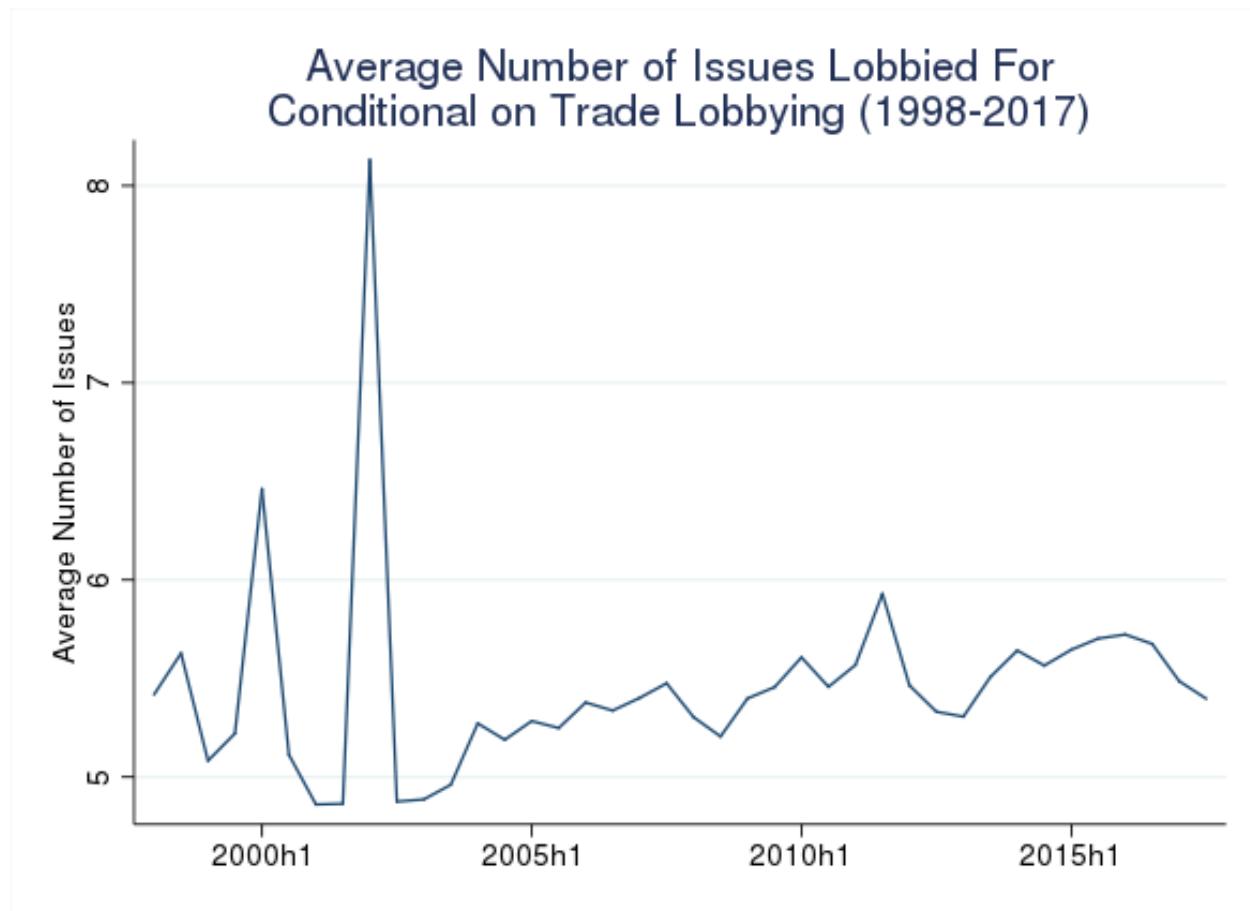


Figure 2.3: Average Number of Lobbying Issues Conditional on Trade Lobbying

I link the trade variables at the HS-6 level to 6 digit NAICS industries in Compustat using the HS-NAICS concordance developed by Pierce and Schott (2009).⁴ For this merge, I make sure that all NAICS codes in both the Pierce/Schott data and in Compustat are the 2002 versions using Census Bureau crosswalks.

Given this HS-NAICS concordance, I can consider trade flows at the industry level. One interesting fact to keep in mind: over the 1998-2015 period, approximately 80% of the total value of imports (defined by the HS codes) by the U.S. from all countries are classified as produced by the manufacturing sector (NAICS 31-33). This number increases to 98% when considering only Chinese imports. Thus, import competition predominantly affects

4. This mapping is unique in the sense that a given HS-10 code is uniquely mapped to a given 6 digit NAICS industry. The analysis is at the HS-6 code level though which means that a given HS-6 code can be mapped to multiple different 6 digit NAICS codes.

the manufacturing sector.

2.3 Policy Background

The main analysis centers around China's entry into the WTO and the preceding trade policy uncertainty. China obtained temporary most favored nation (MFN) status in 1980 and never lost it even though it came close on multiple occasions. Throughout the 1990s, after the Tiananmen Square protests, Congress had yearly votes on a bill to revoke MFN status from China, and the House managed to pass the bill three times. In the case that MFN status was revoked, the US would have reverted back to Smoot-Hawley tariff levels. For example, as given in Handley and Limão (2017), the average US tariff with MFN was only 4 percent whereas the average Smoot-Hawley tariff level was 31 percent.

Uncertainty over both China's accession to the WTO and its permanent normal trade relations (PNTR) status remained at least throughout 2000 and most likely through 2001 as events between the US and China unfolded. In October 2000, the US Congress passed the US-China Relations Act (HR 4444) which would grant China PNTR contingent on China's accession to the WTO. Lengthy accession negotiations along with a jet fighter collision known as the Hainan Island incident led the US Congress to once again vote to revoke China's MFN status in the summer of 2001. Finally, on December 11, 2001, China joined the WTO leaving the US to effectively enact PNTR on January 1, 2002.

2.4 News-Based US-China Trade Policy Uncertainty Measures

I construct news-based measures of US-China trade policy uncertainty using a similar approach as Baker et al. (2016). I utilize journalist discussion from 6 newspapers to construct the indices: Boston Globe, Chicago Tribune, Los Angeles Times, New York Times, Wall Street Journal, and Washington Post.

Two different term sets are used to construct two different indices. The first is a general

index of total US trade policy uncertainty.

US Trade Policy Uncertainty (TPU) Index:

{uncertain OR uncertainty} AND {“most favored nation” OR “normal trade relations” OR “trade policy” OR tariff OR “import duty” OR “import barrier” OR “import restriction” OR “trade quota” OR dumping OR “export tax” OR “export duty” OR “trade treaty” OR “trade agreement” OR “trade act” OR wto OR “world trade organization” OR “Doha round” OR “Uruguay round” OR gatt OR “export restriction” OR “investment restriction” OR Nafta OR North American Free Trade Agreement” OR “Trans-Pacific Partnership” OR “TransPacific Partnership” OR “Federal Maritime Commission” OR “International Trade Commission” OR “Jones Act” OR “trade adjustment assistance”}.

The second index appends {China OR Chinese} to the previous termset to isolate US-China trade policy uncertainty.

I collect counts of newspaper articles that satisfy each of those criteria at the monthly level. I adjust the counts to avoid trends in newspaper coverage by dividing by the total number of articles in the given newspaper in the given month. Then, I standardized each series to have unit standard deviation at the newspaper level before averaging across newspapers and renormalizing the index to have a mean of 100 over the period 1990-2003.⁵

Figure 2.4 presents the US TPU index. As we can see, there really are only a couple of major spikes since 1990: namely on in the early to mid 1990’s for NAFTA and then one much more recently with the election of Donald Trump and the following trade negotiations and trade wars. Figure A2 zooms in on this figure focusing on 2000-2015 to highlight the period after the US-China PNTR episode but before the recent escalation of TPU under President Trump. Here, we see that there are indeed some fluctuations during this period albeit much smaller than the large shocks due to NAFTA and Trump. This episode had many other free trade agreements going into effect including US-Singapore, US-Chile, US-Colombia, and

5. This renormalization does not have any material impact so the period was chosen to give reasonable looking index values for interpretation.

US-Korea along with the Doha round of trade talks.

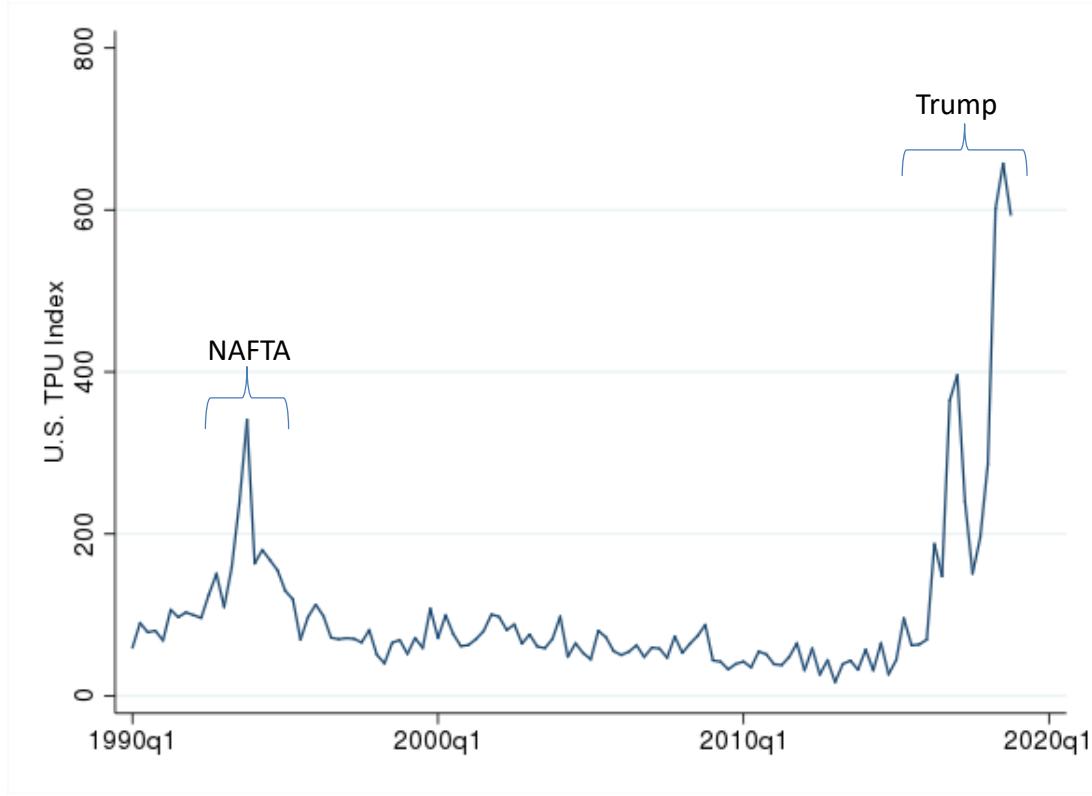


Figure 2.4: U.S. TPU Index (1990Q1-2018Q4)

Figure 2.5 shows the US-China TPU Index for 1990-2015. The recent Trump episode sees a massive spike in US-China TPU which can be seen in Figure A3, but I show 1990-2015 here to make all the other fluctuations in the index more readily visible.

We can see that the main spikes center around China MFN renewal discussions. These happened approximately biannually throughout the 1990s. Besides renewal votes, other US-China relations events influence US-China TPU including the Hainan Island incident and the Belgrade bombing. Most of the variation and large spikes occur in the period before China's entry to the WTO.⁶ Despite this, the US-China TPU index still sees some minor

6. At the monthly level, the average index value for the 1990-2001 period is 99.52 while the after value for 2002-2015 is 76.75.

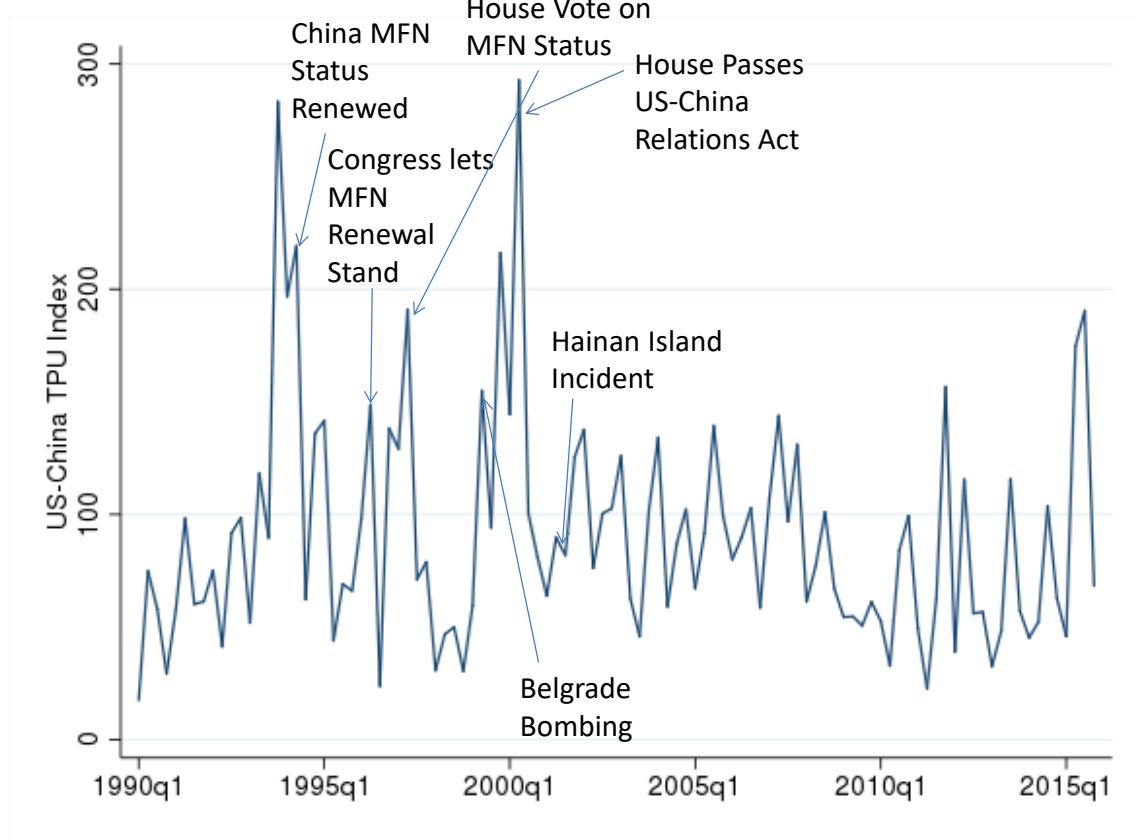


Figure 2.5: General US-China TPU Index (1990Q1-2015Q4)

fluctuations in the post-period.

Figure 2.6 explores the relationship between the US TPU Index and the US-China TPU Index. By construction, the US-China TPU Index is a strict subset of the US TPU Index, so I plot the percent of US TPU Index articles that also contain {China OR Chinese}. Despite the general term set used in the construction of the indices in order to pick up all trade policy uncertainty variation, China account for a large and relatively stable percentage of article discussion.

Given the consistently high levels of US TPU articles concerning China and the limited number of additional US TPU events between 2000 and 2015, I will focus my attention on the effects of US-China TPU and utilize the US-China TPU Index in the remainder of this paper.

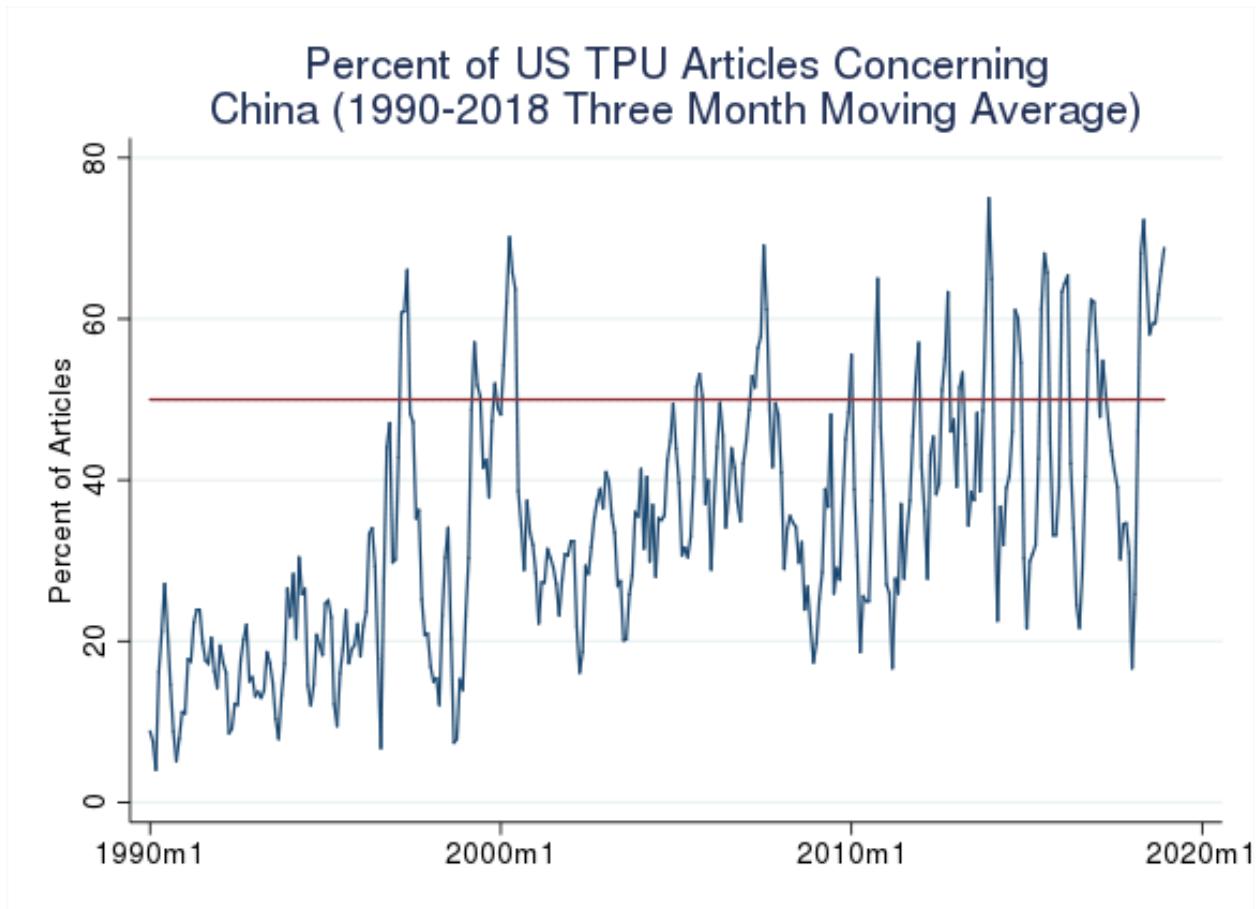


Figure 2.6: General US-China TPU Index (Three Month Moving Average 1990M1-2018M12)

CHAPTER 3

HOW DOES TPU AFFECT LOBBYING AND INVESTMENT DECISIONS?

This section presents the results on the direct effect of trade policy uncertainty on the investment and lobbying decisions of firms. I first describe the TPU exposure measures used in the analysis in Section 3.1 before presenting lobbying results in Sections 3.2-3.4 and concluding with investment results in Section 3.5.

3.1 TPU Exposure Measures

3.1.1 *NTR Gap Measure*

To understand how trade policy uncertainty affects firm lobbying and investment decisions, I utilize variation in firm exposure to China’s entry to the WTO and ensuing import competition. I follow the literature from Pierce and Schott (2016), Pierce and Schott (2018), and Handley and Limão (2017) in using a NTR gap measure of exposure. Specifically, I use the NTR gap trade policy uncertainty measure developed in Handley and Limão (2017) that is defined as

$$1 - (\tau_{2V}/\tau_{1V})^{-\sigma}$$

using year 2000 column 2 (τ_{2V}) and MFN tariff rates (τ_{1V}).¹ These are the logs of 1 plus the tariff rate computed at the HS-6 level. σ is the constant elasticity of substitution across varieties in the Handley and Limão (2017) model of trade policy uncertainty. As in their paper, I will set $\sigma = 3$. For my purposes, I will construct these NTR gap TPU exposure measures at the firm level. See the Data Appendix for a detailed description of how the NTR

1. I have also explored using the NRT gap τ_{2V}/τ_{1V} directly and results are similar. I choose to go with this modified exposure variable as this is what comes out of the model developed in Handley and Limão (2017) that is focused on the uncertainty effects.

gap measure of TPU is constructed. Figure A4 plots the firm-level density of just the NTR gap (τ_{2V}/τ_{1V}) for ease of interpretation. Table B3 presents some basic summary statistics of the measure at the firm level. B1 and B2 provide the same statistics for the product (HS) and industry (NAICS) levels of the measure which are used in the firm-level construction.

3.1.2 Average Abnormal Returns Measure

I construct another measure of a firm's exposure to US-China trade relations and TPU in particular following the methodology in Greenland et al. (2019). They use a stock-price-based method and calculate a firm's average abnormal returns (AAR) surrounding US-China PNTR events. The main AAR measure I will construct focuses on the following five legislative events that led up to the US granting China PNTR status: (1) May 15, 2000 introduction of HR 4444 in the US House of Representatives; (2) May 24, 2000 vote to approve China's PNTR status by the US House of Representatives; (3) the successful July 27, 2000 cloture motion to proceed with a vote on PNTR in the Senate; (4) September 19, 2000 vote to approve China's PNTR status by the US Senate; and (5) October 10, 2000 signature of PNTR into law by President Clinton.

As in the finance literature, I calculate abnormal returns using the residuals from a CAPM style regression

$$R_{i,t} - R_{f,t} = \beta_i(R_{m,t} - R_{f,t}) + \epsilon_{i,t}$$

where t , i , m , and f respectively denote time, firm, market rate, and risk-free rate.

As in Greenland et al. (2019), I estimate this regression for each firm over all trading days in 1999 so that the estimates do not include the relevant legislative period. I run this regression for all publicly-traded US firms that trade on the NYSE, AMEX, or NASDAQ and are also present for at least 120 of the 250 trading days in 1999. Firm-level daily returns data comes from the Center for Research in Security Prices (CRSP) and the daily market

return and risk-free return are taken from Kenneth French's website.²

The average abnormal return for firm i over event window e , AAR_i^e , is then calculated as the average of the daily abnormal returns during the five trading day window centered on the event date t_e :

$$AAR_i^e = \frac{\sum_{t_e-2}^{t_e+2} (R_{i,t} - R_{f,t}) - \hat{\beta}_i (R_{m,t} - R_{f,t})}{5}$$

I can then construct the average abnormal return across all five events as my general PNTR exposure measure:

$$AAR_i^{PNTR} = \frac{1}{5} \sum_{e \in E} AAR_i^e$$

I calculate AAR_i^{PNTR} using this method for 5,887 firms that are present in the CRSP dataset for at least one of the five PNTR events.³ I also extend this methodology to previous MFN status related annual congressional votes throughout the 1990s. See Figure A5 for a list of the dates I use for the AAR analysis.⁴ Figure 3.1 plots the average AAR_i^e for each of the eleven events considered.⁵

The House actually passed legislation to revoke MFN status for China in 1990, 1991, and 1992 but the Senate failed to sustain the vote. Thus, it is not surprising that we see positive

2. See https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. $R_{m,t}$ is the value-weight return of all CRSP firms incorporated in the US and listed on the NYSE, AMEX, or NASDAQ that have a CRSP share code of 10 or 11, and $R_{f,t}$ is the one-month Treasury bill rate.

3. Note, that this is actually a big larger than the sample Greenland et al. (2019) claim to estimate their AAR measure for: 5,368. I am not sure exactly where the additional firms are coming from as I follow the same methodology they do. I am considering each firm here to be a Compustat GVKEY and use the CRSP-Compustat Merged (CCM) Linktable to link permno's (CRSP firm identifiers) to gvkey's. It is possible that they are using another way to link such as CUSIP codes.

4. For now, I am using the final status dates for the US House of Representatives votes from the table in Figure A5.

5. The standard deviation of AAR_i^{PNTR} is 1.12 percent. The AAR_i^e associated with the five components of the 2000 episode have means and standard deviations as follows (in chronological order and all in percentage terms as in the plot). Means: 0.07, -0.66, -0.24, -0.40, -0.67. Standard Deviations: 2.02, 2.14, 2.10, 1.96, 2.28. The standard deviations for the AAR_i^e associated with the 1990 through 1999 episodes are as follows (again in chronological order and all in percentage terms): 1.95, 1.43, 1.44, 1.53, 1.35, 1.50, 1.45, 1.61, 1.71, 2.03.

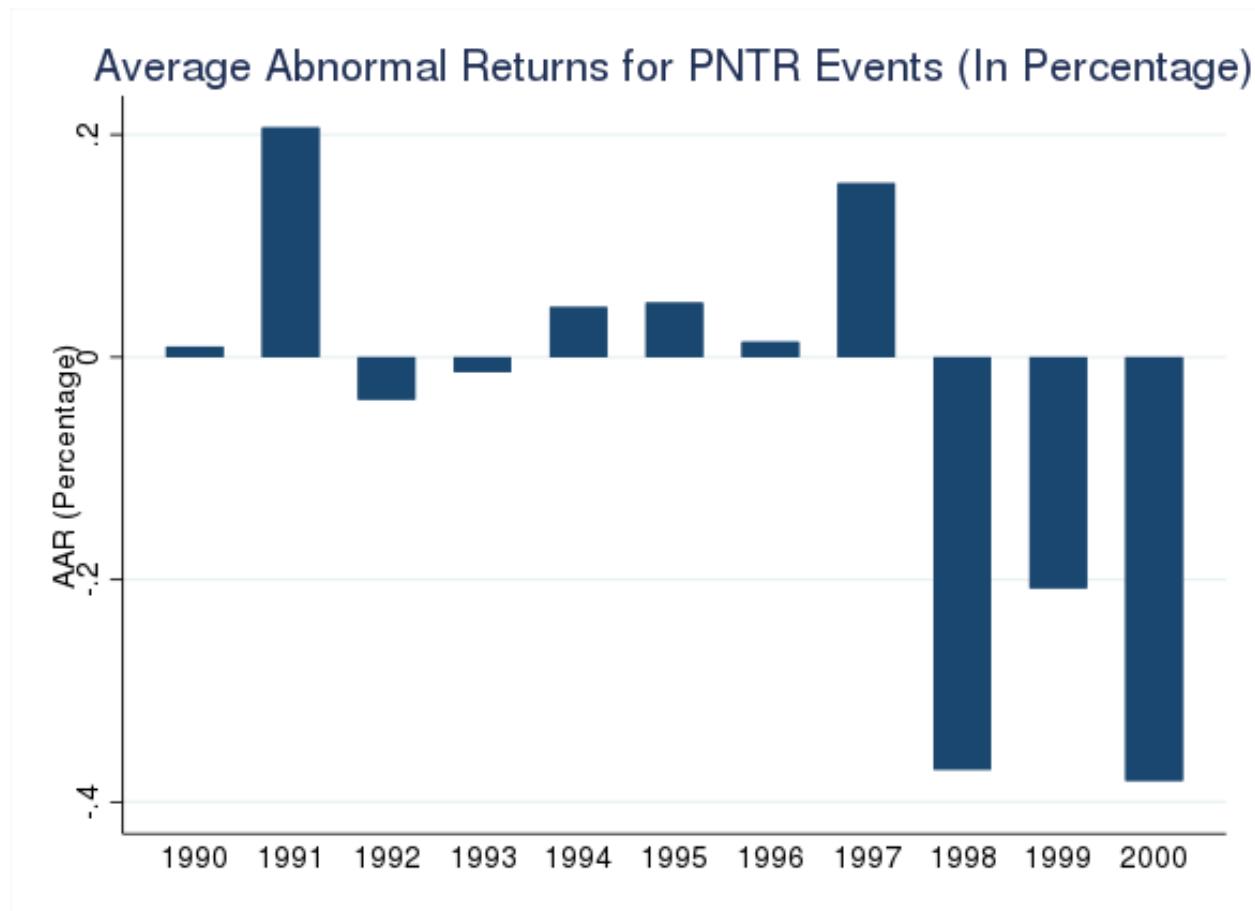


Figure 3.1: Average Abnormal Returns for China PNTR Events

average AAR values in the first couple years. In the couple of years preceding the actual PNTR votes in 2000, we see negative values quantitatively very close to the 2000 value.

For the following analysis, I will focus attention on the 2000 episode as defined above and used in Greenland et al. (2019). Figure A6 plots a histogram of the 2000 AAR exposure measures.⁶

As in Greenland et al. (2019), using historical business segments data from Compustat, I classify the firms in the AAR exposure sample into two mutually exclusive categories: goods producers and services producers.⁷ A firm is classified as a goods producer if their business

6. By definition, the mean of average abnormal returns across all firms is zero when weighted by market capitalization. The left skewness apparent in Figure A6 indicates that smaller market capitalization firms are more likely to have lower AAR values.

7. Compustat reports firms' sales in up to 10 6-digit NAICS business segments at a yearly level.

segments include Manufacturing (NAICS 31 to 33), Mining, Quarrying, and Oil and Gas Extraction (NAICS 21), or Agriculture, Forestry, Fishing, and Hunting (NAICS 11) and is classified as a service producer if their business segments do not include these sectors. In 2000, the sample consists of 2617 good producers, 2538 service producers, and 732 firms that could not be classified due to missing business segments data.⁸ Figure A7 plots histograms of the AAR values for both goods and service producing groups. Both are remarkably similar with the service producing group looking slightly more left-skewed. The means and standard deviations for these two groups of firms are -0.38 and 1.09 percent for goods producing firms and -0.49 and 1.27 percent for service producing firms.

3.1.3 Relationship between Exposure Measures

For interpretation of the later analysis, it is important to note that these two different exposure measures (the NTR gap based measure from Handley and Limão (2017) and the AAR measure from Greenland et al. (2019)) are oppositely related to each other. A higher NTR gap means that the firm faces a larger gap in potential tariff outcomes. Thus, conditional on preserving most-favored nation status, these firms will face higher import competition as they lost the potential for a great deal of protection. On the other hand, an increase in the AAR measure means that the firm benefits from keeping most-favored nation status with China. To help compare results using these two different exposure measures, I will reverse the sign on the AAR exposure measure for the regression analysis. This way, an increase in the AAR exposure measure can be interpreted as a larger negative exposure to the trade policy outcome.

8. In order to maximize the number of firms that I can classify, if a firm is missing business segments data for the year 2000, I use the most recent business segments data after 1990 and before 2000 to do the classification. Also, note that in the lobbying analysis that follows, not all of these firms appear in our lobbying data, and therefore sample counts across groups change.

3.2 Baseline

In this section, I explore how firms adjust lobbying expenditures and investment levels in response to changes in trade policy uncertainty preceding China's eventual succession to the WTO. As the literature discussed in the introduction would suggest, one might expect to find increases in lobbying expenditures and decreases in investment as trade policy uncertainty increases.

My baseline difference-in-differences (DID) specification tests whether firms with higher NTR gap measures of TPU (first difference) experience differential changes in either lobbying expenditures or investment after the change in US trade policy when China enters the WTO (second difference) versus the high uncertainty period before.

$$y_{i,t} = \alpha_i + \delta_t + \theta PrePNTR_t * NTRGap_i + \epsilon_{i,t} \quad (3.1)$$

where i denotes the firm and t is half-year for the lobbying regressions and quarter for the investment regressions. Firm (α_i) and time (δ_t) fixed effects are included to control for firm and time specific factors.⁹¹⁰ The independent variable of interest is the interaction between the NTR gap TPU measure denoted as $NTRGap_i$ and an indicator for the pre-PNTR period which I define as 2001 and earlier. I choose it to be an indicator for the pre-period for ease of interpretation since I am highlighting the uncertainty effects as opposed to the effects from increased import competition in the post-period. Also, note that in the tables the $PrePNTR_t$ variable will be commonly written as Pre_t .

Table 3.1 presents the results for this baseline specification.¹¹ Column (1) presents the

9. The results look similar if controlling for the lag of lobbying in the regression. Including lagged dependent variables leads to inconsistent and biased estimates though. However, as noted in Bernard and Jensen (2004), a specification in levels that includes fixed effects provides a lower bound on the coefficient for the lagged dependent variables. Another possibility would be to use an Arellano-Bond difference GMM approach using lagged levels as instruments.

10. Note, that the NTR_i and $PNTR_t$ variables do not need to be separately included in the regression as they would just be absorbed by the firm fixed effects and time fixed effects respectively.

11. I also explored a weighted variation of this specification and all other specifications that use lobbying

result using lobbying expenditure levels including all of the zeroes from Compustat firms that report lobbying expenditures but not trade as a listed issue. Column (2) presents the result when considering the log of one plus lobbying expenditures as the dependent variable. Columns (3) and (4) present the same regressions as (1) and (2) but with observations weighted by the lag of log total assets as a measure of firm size.

We see in column (1) that the interaction effect between the timing of China's WTO entry and the NTR gap TPU exposure measure is statistically significant. For the mean NTR gap TPU exposure firm (approximately 0.51), trade-related lobbying was 21.3 thousand dollars ($=41.8*0.51$) higher on average per half-year in the uncertain pre-period before China's entry to the WTO compared to the post-period. This is in comparison to average trade-related lobbying expenditures of approximately 23.2 thousand dollars per half-year when including zeros and 166.9 thousand dollars when only considering positive lobbying expenditures. Thus, this represents a very large 13% increase in lobbying expenditures from the positive lobbying average. Column (2) suggests that the uncertainty in the preperiod generated a 22.9% increase in the amount of trade-related lobbying expenditures for the average gap firm. The firm size weighting in columns (3) and(4) amplify the results. The lobbying coefficient increases by about 33% from columns (1) to (3) and about 24% when going from columns (2) to (4). Thus, it seems that firm size plays a moderate role in lobbying responses to trade policy and trade policy uncertainty.

3.3 News-Based TPU Index

I now explore variations to this baseline specification. The main variation will be to better isolate changes in trade policy uncertainty over time by replacing the $PrePNTR_t$ variable

data later in the paper. This variation weights observations by the reciprocal of the number of issues listed for that lobbying contribution. There are few caveats to note though. Some firms do not have trade listed as an issue or do not have any issues listed at all, so I impute a value of 1 for the weight as it is assumed that trade-related lobbying expenditures are equal to 0. The variations of the tables with this weighting are not included in the paper but can be sent upon request. Results are all the same in terms of sign and significance. The main difference is that this weighting leads to lower coefficient magnitudes. This makes sense as trade-related lobbying expenditures are small relative to some of the other big topics usually listed.

Table 3.1: Trade Policy Uncertainty Induced Trade Lobbying (1998-2015)

	(1) $l_{i,t}$	(2) $\log(1+l_{i,t})$	(3) $l_{i,t}$	(4) $\log(1+l_{i,t})$
$Pre_t^*NTR_i$	41.84** (17.72)	0.45** (0.21)	55.71** (25.16)	0.56** (0.27)
Weights	None	None	Assets	Assets
R^2	0.59	0.69	0.59	0.70
Observations	21372	21372	21372	21372

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

with the news-based measure of US-China TPU introduced earlier which I will denote as the Trade Policy Uncertainty (TPU) Index. Using this index helps to alleviate concerns that the timing of the final uncertainty resolution is different from the end of 2001 as I have been using. It also provides more granular changes over time compared with the one time change in the baseline specification.

In order to maximize the number of observations to estimate firm fixed effects, I will utilize data going up until 2015. The empirical specification that I am relying on utilizes exposure in the NTR gaps which, as has been argued in the previous literature using this exposure measure, are uncorrelated with other factors that could influence exposure to Chinese import competition apart from the uncertainty channel studied in this article. Thus, the NTR gap shouldn't predict exposure after China is granted permanent normal trade relations. As the TPU index used here has variation in the post-policy period and can only load on the NTR gap in the specification I implement, there would be a violation of the NTR gap identification strategy.

For this reason, I consider an adjusted version of my TPU index for this analysis. This adjusted version sets the value of the TPU index at the constant value of zero for all times after 2001 (the post-policy period). This eliminates variation in the index in the post-period so that we are isolating the variation in the pre-period but still allowing for firm level fixed

effects to be estimated using the post-period data. Furthermore, the adjusted index most likely better captures this specific policy episode. If one were to consider a more specific version of the TPU index made to only highlight the terms at the heart of the US-China PNTR debate as can be seen in Pierce and Schott (2016), we would see almost a constant zero level in the post period. Figure A8 shows this more specified TPU index using the termset: China AND uncertain OR uncertainty AND “most favored nation” OR “normal trade relations”.¹² The additional terms used in the construction of my version of the TPU index are useful in capturing the language that journalists and reporters potentially use to discuss these events but also opens up the door to potential false positives in the post-period. The proposed adjustment here takes into consideration this possibility to construct an index that is more closely aligned with the policy in question. Note that this adjusted version can just be thought of as the product of the TPU index and the pre-period vs. post-period indicator variable that was discussed in the previous section.

Table 3.2 displays the results when using the adjusted TPU Index. Columns represent the same regression specifications as in Table 1 with the *Pre_t* indicator being replaced with the adjusted TPU index. The TPU index have been normalized to unit standard deviation over the time period covered in the regressions for ease of interpretation. For the mean NTR gap exposure firm (0.51 value), a one standard deviation change in the TPU index leads to a significant 5.11 thousand dollar increase in semi-annual trade-related lobbying expenditures which represents a 3% increase over the average positive lobbying expenditures. The log specification in column (2) represents a significant 4.59% increase in trade-related lobbying expenditures and is significant at standard levels. Again, in columns (3) and (4), the firm size weighting increases the magnitude of the coefficients by a sizable amount, 34.2% and 22.2% respectively. Table B4 displays results when considering the non-adjusted TPU index, and we see similar results.

12. The same newspapers and methodology as before are used to construct the resulting index: New York Times, Boston Globe, Wall Street Journal, Chicago Tribune, Los Angeles Times, and Washington Post.

Table 3.2: Trade Policy Uncertainty Induced Trade Lobbying - General TPU Index (1998-2015)

	(1) $l_{i,t}$	(2) $\log(1+l_{i,t})$	(3) $l_{i,t}$	(4) $\log(1+l_{i,t})$
$TPU_t * Pre_t * NTR_i$	10.02** (4.27)	0.09 (0.05)	13.45** (6.08)	0.11 (0.07)
Weights	None	None	Assets	Assets
R^2	0.59	0.69	0.59	0.70
Observations	21372	21372	21372	21372

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

One significant drawback of the adjusted TPU index is that it potentially conflates the second moment uncertainty effect with the first moment effect that there is something concrete to lobby on in the pre-period as opposed to the post-period. In order to control for this, I consider a full interaction specification of the triple interaction $TPU_t * Pre_t * NTR_i$ that essentially runs a horserace between the first and second moment effects.

$$y_{i,t} = \alpha_i + \delta_t + \theta_1 TPU_t * Pre_t * NTRGap_i + \theta_2 TPU_t * NTRGap_i + \theta_3 Pre_t * NTRGap_i + \epsilon_{i,t} \quad (3.2)$$

In this specification, θ_3 measures the impact of the direct first moment effect comparing the pre-period versus the post-period while the combined coefficient $\theta_1 + \theta_2$ tells us the effect that TPU has on trade-related lobbying in the pre-period. Table 3.3 presents the results from this specification again considering lobbying levels versus log lobbying in columns (1) and (2) and using a firm size weighting in columns (3) and (4). Across all specifications, we see that the first moment effect outweighs the second moment effect. In fact, $\theta_1 + \theta_2$ is consistently estimated to be near 0 as compared to the first moment effect θ_3 which for the average NTR gap firm leads to a 43 thousand dollar trade-related lobbying response. The magnitudes again increase when considering the firm size weighting.

One interpretation of this result is that lobbying induces a flat percent change in the possibility of a positive outcome for the lobbying firm. In this two-outcome policy setting, we can interpret trade policy uncertainty as the probability of either outcome being close to 50%. The closer to random the policy outcome is, the more uncertainty firms face. In this case, if lobbying expenditures move the probability of a positive outcome by 1% regardless of whether it currently stands at 50% or 90%, the incentive to lobby is the same across the lobbying spectrum. What matters more is whether or not there is a potential policy to lobby on in the first place. Thus, firms respond to the presence of policy proposals by increasing lobbying expenditures but not necessarily to changes in the uncertainty surrounding these proposals.

Table 3.3: Trade Policy Uncertainty Induced Trade Lobbying - Full Interaction (1998-2015)

	(1) $l_{i,t}$	(2) $\log(1+l_{i,t})$	(3) $l_{i,t}$	(4) $\log(1+l_{i,t})$
$TPU_t * Pre_t * NTR_i$	-18.18* (9.36)	-0.23** (0.09)	-23.32* (12.56)	-0.29** (0.12)
$TPU_t * NTR_i$	18.14** (9.16)	0.17** (0.08)	23.22* (12.25)	0.21** (0.10)
$Pre_t * NTR_i$	84.95** (36.57)	1.03*** (0.36)	110.8** (50.37)	1.29*** (0.46)
Weights	None	None	Assets	Assets
R^2	0.59	0.69	0.59	0.70
Observations	21372	21372	21372	21372

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B5 displays results for the full interaction as well as only including the adjusted TPU index for specifications that consider the change in the log of the TPU index as the right hand side regressor. I do this to compare with the investment results that come later. For the investment specifications, I consider this variant for how TPU enters the regression

as investment is measured as a percentage change (investment over capital stock multiplied by 100), and therefore the literature on uncertainty would tell us that changes in the level of uncertainty is the appropriate measure. This is as opposed to the lobbying specifications that consider the amount of lobbying expenditures in a given time period and not a percent change. In this case, the level of lobbying expenditures should respond to the level of uncertainty at that time.¹³ Regardless, this modified version leads to similar results as seen when using the level of the TPU index.

3.4 Lobbying Competition

3.4.1 *Input-Output Linkages: Upstream vs. Downstream Firms*

Everything up to this point has been focused on average responses not considering the potential for firm heterogeneity in responses. Even within the manufacturing sector that has been examined so far, there is the possibility of lobbying response heterogeneity.¹⁴ This heterogeneity in lobbying responses stems from the underlying lobbying competition at play. Given the two outcome policy scenario under consideration, there could be some firms in support of one of the sides while other firms are proponents of the other side.

In particular, input-output linkages may play a key role in understanding how firms respond to policy uncertainty through lobbying and investment channels. Especially for lobbying, one may expect firms to differentially respond to trade policy uncertainty depending on whether the uncertainty falls on their upstream suppliers or their downstream consumers. To examine this heterogeneity, I compute upstream and downstream NTR gap TPU measures using information from the BEA input-output tables.¹⁵ We can think of firms that

13. These specifications are consistent with what is used in Hassan et al. (2019) when considering lobbying and Baker et al. (2016) when considering investment.

14. Remember that the NTR gap can only be constructed for those firms that produce tradable goods and therefore have tariff rate data.

15. Figure A8 plots densities of the upstream and downstream NTR gaps. Both are unimodal symmetrical with the downstream density shifted to the right of the upstream density.

face high upstream NTR gap TPU as the potential winners of the policy as their upstream suppliers will be faced with higher import competition if the US trade policy changes, and therefore those firms can expect lower input costs. On the other side, firms that face high downstream NTR gap TPU along with those that face high own-industry NTR gap TPU can be considered the losers of the potential policy change. They will either have to directly compete with Chinese imports or provide to downstream firms that may be hurt from the increased import competition and therefore not be able to pay previous prices. The “upstream” firms would likely be in favor of the policy change while the “downstream” firms would likely be against it.

The regression of interest will be

$$y_{i,t} = \alpha_i + \delta_t + \gamma X_{i,t} + \sum_m \theta_m PrePNT R_t * NTRGap_i^m + \epsilon_{i,t} \quad (3.3)$$

where everything is defined as before but now with $m = \{Own, Upstream, Downstream\}$. I also consider versions of the specification that only include the upstream or downstream NTR gap exposure channels.

Table 3.4 presents the results of this expanded regression that includes upstream and downstream NTR gap exposure measures. I only present results for the adjusted newspaper-based TPU index for clarity. Columns (1)-(4) focus on lobbying in levels while columns (5)-(8) consider log lobbying. The first three columns in each group focus on the direct exposure, upstream exposure, and downstream exposure respectively while the final column in each group includes all three exposures simultaneously. Columns (2) and (6) provide evidence that upstream exposed firms do not really respond via lobbying to increases in trade policy uncertainty and if anything they respond negatively. Downstream exposed firms on the other hand increase trade-related lobbying by a significant amount even compared with the directly exposed firms as seen in columns (3) and (7). This appears to be true even in the joint regressions in columns (4) and (8) despite the decreased precision stemming from the fact that there is some collinearity in the various exposure measures. These results

coincide with the intuition previously stated as downstream exposed firms have more to lose while upstream exposed firms are hedged against negative outcomes because of the one-sided uncertainty in this specific policy scenario.

Table 3.4: Trade Policy Uncertainty Induced Trade Lobbying - General TPU Index - Upstream/Downstream (1998-2015)

	(1) $l_{i,t}$	(2) $l_{i,t}$	(3) $l_{i,t}$	(4) $l_{i,t}$	(5) $\log(1+l_{i,t})$	(6) $\log(1+l_{i,t})$	(7) $\log(1+l_{i,t})$	(8) $\log(1+l_{i,t})$
$TPU_t * Pre_t * NTR_i$	5.33* (3.12)			1.88 (3.01)	0.06 (0.06)			0.03 (0.07)
$TPU_t * Pre_t * NTR_i^{up}$		-12.46 (13.95)		-5.33 (15.49)		0.03 (0.27)		0.05 (0.30)
$TPU_t * Pre_t * NTR_i^{down}$			33.23** (13.08)	31.16** (13.54)			0.23 (0.17)	0.20 (0.20)
R^2	0.62	0.62	0.62	0.62	0.69	0.69	0.69	0.69
Observations	19530	19530	19530	19530	19530	19530	19530	19530

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.4.2 AAR Exposure: Goods vs. Services Firms

I next turn to the abnormal average return exposure measure presented earlier to expand the heterogeneity analysis to firms outside the manufacturing sectors. In particular, this exposure measure allows me to explore the effects for goods-producing and services-producing firms separately. As a generalization of the input-output linkage discussion, goods producing firms are those that directly have to compete with Chinese import competition and therefore are the firms that would benefit from increased tariffs. Services firms, on the other hand, are more ambivalent to the outcome of this particular policy, and for some firms, they would actually prefer trade liberalization to open up cheaper markets. Furthermore, goods-producing firms based off the definition used here are more active when it comes to trade-related lobbying due to the higher stakes. Over the time period examined, goods firms have average biannual trade-related lobbying expenditures of 20.5 thousand dollars compared to

7.4 thousand dollars for services firms.¹⁶

Table 3.5 presents results for the estimation of equation (1) using the AAR exposure measure in the place of the NTR gap exposure measure. Recall a few facts from the description of the AAR exposure measure in Section 3.1.2 to help in interpretation of the results: the AAR exposure measure has had its sign reversed so that increases in the measure represent a firm more negatively exposed to the policy, the standard deviation of the measure for all firms is 1.12 percent, the standard deviation for only goods firms is 1.09 percent, and the standard deviation for only services firms is 1.27 percent. Columns (1)-(3) display results for lobbying levels while columns (4)-(6) look at log lobbying. As seen in column (1), a one standard deviation increase in the AAR exposure measure leads to a 2.06 (1.84*1.12) thousand dollar increase in trade-related lobbying expenditures in the pre-period before the granting of PNTR to China as compared to the post-period.

This number actually masks some interesting heterogeneity when broken down between goods and services firms. In column (2), we see that the goods firm coefficient is approximately 2.6 times larger than for all firms and more significant. Interestingly, while not significant at standard levels, the services firms coefficient in column (3) is negative. Let's consider this coefficient in the context of a decline in the AAR exposure measure. Given the sign flip I employ, a decrease in the AAR exposure measure actually represents a more positive stock market response to the granting of PNTR to China. Thus, service firms that are more positively exposed to the policy lobby more. I interpret this as evidence of lobbying competition in this particular policy episode. The goods firms who are more negatively affected and the services firms that are more positively affected both increase their trade-related lobbying expenditures in response to the policy episode as they fight for opposing sides on the issue. The results are similar when considering log lobbying.

Turning to the adjusted TPU index in Table 3.6, I find similar results on the impact of

16. These average values are inclusive of all 0 trade-related lobbying expenditures for firms that have positive total lobbying expenditures but do not list one of the trade-related categories for that half-year period.

Table 3.5: Lobbying Responses by Goods vs Services Sectors - AAR Exposure

	(1) $l_{i,t}$ All Firms	(2) $l_{i,t}$ Goods	(3) $l_{i,t}$ Services	(4) $\log(1+l_{i,t})$ All Firms	(5) $\log(1+l_{i,t})$ Goods	(6) $\log(1+l_{i,t})$ Services
$\text{Pre}_t^* \text{AAR}_i$	1.84* (1.10)	4.79** (2.13)	-0.81 (0.67)	0.006 (0.02)	0.05** (0.03)	-0.04* (0.02)
R^2	0.57	0.60	0.45	0.66	0.69	0.55
Observations	39428	21718	16137	39428	21718	16137

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

uncertainty in particular on trade-related lobbying. In columns (1) and (4), there is a near 0 estimated impact for the entire universe of firms with AAR exposure measures, but again this masks the important heterogeneity. Goods firms that are more negatively exposed to the policy and services firms more positively exposed increase trade-related lobbying expenditures when faced with increases in trade policy uncertainty measured by my TPU index. In particular, looking at columns (5) and (6), a one standard deviation increase in the TPU index combined with a one standard deviation increase in the AAR exposure measure leads goods firms to increase lobbying expenditures by about 1.09 percent ($0.01*1.09$) while services firms respond to a one standard decline in the AAR exposure by increasing lobbying expenditures by 1.27 percent ($-0.01*-1*1.27$).

Table 3.6: Lobbying Responses by Goods vs Services Sectors - TPU Index - AAR Exposure

	(1) $l_{i,t}$ All Firms	(2) $l_{i,t}$ Goods	(3) $l_{i,t}$ Services	(4) $\log(1+l_{i,t})$ All Firms	(5) $\log(1+l_{i,t})$ Goods	(6) $\log(1+l_{i,t})$ Services
$\text{TPU}_t^* \text{Pre}_t^* \text{AAR}_i$	0.41 (0.27)	1.09** (0.52)	-0.21 (0.16)	-0.001 (0.004)	0.01* (0.006)	-0.01** (0.005)
R^2	0.57	0.60	0.45	0.66	0.69	0.55
Observations	39428	21718	16137	39428	21718	16137

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Now, I combine the two effects from the previous two tables into one regression specification as in equation (2) but now using the AAR exposure measure. The results from this specification can be seen in Table 3.7. While the significance of the coefficients is limited, the signs are similar to what was seen in the previous two tables. As in Table 3 when I considered the full interaction specification with the NTR gap exposure, the first moment effect seems to be stronger and more significant than the second moment effect for both goods and services firms as well as the sample of all pooled firms.

Table 3.7: Lobbying Responses by Goods vs Services Sectors - TPU Index - Full Interaction - AAR Exposure

	(1) $l_{i,t}$ All Firms	(2) $l_{i,t}$ Goods	(3) $l_{i,t}$ Services	(4) $\log(1+l_{i,t})$ All Firms	(5) $\log(1+l_{i,t})$ Goods	(6) $\log(1+l_{i,t})$ Services
$TPU_t * \text{Pre}_t * \text{AAR}_i$	0.26 (0.68)	-0.45 (1.21)	0.96* (0.55)	0.001 (0.008)	0.0008 (0.01)	0.001 (0.009)
$TPU_t * \text{AAR}_i$		-0.38 (0.67)	0.20 (1.17)	-1.003* (0.55)	-0.009 (0.008)	-0.01 (0.01)
$\text{Pre}_t * \text{AAR}_i$		1.30 (2.25)	5.98 (4.10)	-3.08* (1.66)	0.007 (0.03)	0.06 (0.05)
R^2	0.57	0.60	0.45	0.66	0.69	0.55
Observations	39428	21718	16137	39428	21718	16137

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.5 Investment

In this section, I explore the same regression models that were considered for lobbying, but now instead look at firm-level investment responses.

Investment is measured in the same way as in Baker et al. (2016). I/K will be the investment rate defined as $\text{CapEx}_t / (\text{Net Plant, Property, and Equipment})_{t-1}$ both taken

from Compustat. I winsorize investment rates at the 1% and 99% levels.¹⁷

Table 3.8 contains the baseline, TPU index, and full interaction results looking at firm-level investment rates measured as percents¹⁸ as the left-hand side variable of interest. The first three columns report results for the unweighted regressions while the final three columns consider firm size weighted regressions again using the log of lagged total assets as the measure of firm size. For columns (2) and (5) that consider the TPU index, as investment data goes further back in time, I estimate the regressions on the 1990-2001 sample for the pre-PNTR period instead of using the adjusted TPU index as I did with the lobbying regressions.

Table 3.8: Trade Policy Uncertainty and Investment

	(1) I/K	(2) I/K	(3) I/K	(4) I/K	(5) I/K	(6) I/K
$Pre_t^*NTR_i$	2.51*** (0.48)		2.52*** (0.48)	2.72*** (0.41)		2.73*** (0.41)
$\Delta Log(TPU_t)^*NTR_i$		-0.60*** (0.18)	-0.06 (0.19)		-0.49*** (0.13)	-0.05 (0.11)
$\Delta Log(TPU_t)^*Pre_t^*NTR_i$			-0.54** (0.26)			-0.44** (0.17)
Weights	None	None	None	Assets	Assets	Assets
R^2	0.18	0.22	0.18	0.23	0.27	0.23
Observations	206405	120249	206405	206405	120244	206405

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level. Investment rates are constructed from Compustat data as $CapEx_t/(Net\ Plant,\ Property,\ and\ Equipment)_{t-1}$ and are winsorized at the 1% and 99% levels. Columns (2) and (5) use data from 1990-2001 while other columns use the 1990-2015 time period.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Column 1 shows the result for the baseline specification that uses the interaction of the NTR gap TPU exposure measure and a simple indicator for pre and post China's WTO

17. Another option would be to perform a more extensive calculation such as in Hassan et al. (2019) using a perpetual inventory method to construct the capital stock.

18. This just means that I multiply the investment rate measures as calculated by 100 to help with clarity and interpretation when considering the tables.

entry. I find a highly significant and positive coefficient. Remember here that the pre and post indicator is 1 for the pre-period before 2002 and 0 after. Thus, the coefficient in column (1) says that the mean NTR gap TPU exposure firm had a 1.28 percentage point higher investment rate in the pre-period before China's WTO entry compared with the post-period. This result most likely is picking up the fact that in the post-period Chinese import competition increases leaving US manufacturing firms with higher competition and smaller profit margins if they remain profitable at all. Therefore, the returns to invest decrease substantially and US manufacturing firms reduce investment. This all is despite the fact that there was high uncertainty in the pre-period that may have pushed firms to adopt a wait-and-see investment strategy.

This is essentially the story in Pierce and Schott (2018). Pierce and Schott (2018) find significant declines in industry-level investment for those industries more exposed via the NTR gap while they find negative but imprecisely estimated coefficients when considering establishment-level investment. As I deal with large Compustat firms that are composed of many establishments, my results fall a bit more in line with their industry-level results and are better estimated than the establishment-level results in their paper. Interestingly, my estimate of a 1.28 percentage point investment rate decline is very similar to the baseline establishment-level estimate in Pierce and Schott (2018) as they find a 1.33 percentage point investment rate decline albeit it is not precisely estimated.

When I use the newspaper-based TPU measure to better identify changes in actual TPU, we see a different story. In column (2), there is a significant negative response of investment to log changes in the general TPU Index. Consider one of the large spikes in the index induced by congressional votes on the renewal of Chinese MFN status. From the beginning of the sample in 1990Q1 to the first large spike in 1993Q4, the general TPU Index increased by approximately 126.4 log points. For the mean NTR gap exposure firm, this implies a one-time drop in investment of 0.39% percentage points ($=1.264*0.60*0.51$). This is about one-eleventh (8.9%) of the median firm-level investment rate of 4.4% in the sample. These

numbers are remarkably similar to those found in the baseline specification in Baker et al. (2016) despite using a very different index and exposure measure.¹⁹ Also, as those authors note, this calculation rests on a large spike in trade policy uncertainty, but in the pre-PNTR period that is under consideration, there are a few of those including the one we consider, the run-up in the mid 1990s before a couple congressional votes on MFN renewal, and the large spike right before the US-China Relations Act gets passed.

Column (3) considers the horserace between these two effects: the first moment effect considered in column (1) and the second moment effect considered in column (2). Here, we see that both effects persist when considering them simultaneously and their magnitudes are largely unchanged. While in the case of lobbying in this particular policy episode, the two effects signs push in the same direction, they go in opposite directions for investment. Regardless, the investment response to trade policy uncertainty in this policy scenario is more robust than the lobbying response to uncertainty in particular.

Table 3.9 extends this investment analysis to consider the upstream and downstream sectors of a firm separately as I did for lobbying expenditures. I find little evidence of heterogeneity within the manufacturing firms based off input-output linkages. The direct effects are about the same as before when controlling for the upstream and downstream linkages.

Table 3.10 considers the AAR exposure measure in order to explore heterogeneity between goods and services firms. Goods and services firms respond to the first moment effect in a similar way while the second moment effects reduces investment for goods firms but seems to have a negligible effect for services firms. While goods and services firms may lie on different sides of the policy debate spectrum for this particular issue leading them to differential lobbying responses, the regime shift still hurts all firms that were more negatively exposed to the possibility of permanently granting PNTR status in the post-period after PNTR is

19. Those authors find a one-sixth drop in the median firm-level investment rate of 4.2 percent in their sample to a one time 85.6 log point increase in their EPU index for a firm that sells 25% of its output to the federal government.

Table 3.9: Trade Policy Uncertainty and Investment - Upstream/Downstream

	(1) I/K	(2) I/K	(3) I/K	(4) I/K	(5) I/K	(6) I/K	(7) I/K	(8) I/K
Pre _t *NTR _i	2.56*** (0.58)			2.84*** (0.63)				
Pre _t *NTR _i ^{up}		-0.55 (3.24)		-4.08 (3.48)				
Pre _t *NTR _i ^{down}			2.42 (2.10)	-0.63 (2.20)				
ΔLog(TPU _t)*NTR _i					-0.59*** (0.21)			-0.56** (0.22)
ΔLog(TPU _t)*NTR _i ^{up}						-1.11 (1.06)		-0.49 (1.11)
ΔLog(TPU _t)*NTR _i ^{down}							-0.59 (0.74)	-0.10 (0.76)
<i>R</i> ²	0.19	0.19	0.19	0.20	0.22	0.22	0.22	0.22
Observations	204842	204842	204842	204842	115278	115278	115278	115278

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level. Investment rates are constructed from Compustat data as CapExt_t/(Net Plant, Property, and Equipment)_{t-1} and are winsorized at the 1% and 99% levels. Columns (5)-(8) use data from 1990-2001 while other columns use the 1990-2015 time period.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

made permanent. This leads to the homogeneity in responses in the first three columns. If there are more services firms than goods firms who favor granting permanent PNTR status though, then there is more heterogeneity within the total services firms group leading to a muted response.

Table 3.10: Investment Responses by Goods vs Services Sectors - AAR Exposure

	(1) I/K All Firms	(2) I/K Goods	(3) I/K Services	(4) I/K All Firms	(5) I/K Goods	(6) I/K Services
$Pre_t^*AAR_i$	0.36*** (0.09)	0.31*** (0.12)	0.43*** (0.15)			
$\Delta Log(TPU_t)^*AAR_i$				-0.05 (0.03)	-0.10** (0.04)	-0.002 (0.05)
R^2	0.21	0.18	0.24	0.26	0.22	0.28
Observations	329492	177226	137303	160657	91530	69111

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level. Investment rates are constructed from Compustat data as $CapEx_t/(Net\ Plant,\ Property,\ and\ Equipment)_{t-1}$ and are winsorized at the 1% and 99% levels. Columns (4)-(6) use data from 1990-2001 while other columns use the 1990-2015 time period.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table 3.11, I combine the previous two tables effects into the horserace specification from equation (2). As in Table 3.8, both effects seem to play a part for goods firms and firms overall. Services firms have a negligible investment response to uncertainty in the pre-period whereas goods firms have a stronger total response albeit not significant. The first moment regime shift effect is as strong as it was on its own for both groups. In general, the evidence points towards little heterogeneity between goods and services firms with respect to investment responses.

Table 3.11: Investment Responses by Goods vs Services Sectors - Full Interaction - AAR Exposure

	(1) I/K All Firms	(2) I/K Goods	(3) I/K Services
$\Delta \text{Log}(\text{TPU}_t) * \text{Pre}_t * \text{AAR}_i$	-0.09* (0.05)	-0.10 (0.06)	-0.09 (0.08)
$\Delta \text{Log}(\text{TPU}_t) * \text{AAR}_i$	0.05 (0.04)	-0.0004 (0.05)	0.09* (0.06)
$\text{Pre}_t * \text{AAR}_i$	0.35*** (0.09)	0.33*** (0.12)	0.37** (0.14)
R^2	0.21	0.18	0.24
Observations	321122	173420	133419

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level. Investment rates are constructed from Compustat data as $\text{CapEx}_t / (\text{Net Plant, Property, and Equipment})_{t-1}$ and are winsorized at the 1% and 99% levels. All columns consider the 1990-2001 time period.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CHAPTER 4

CAN LOBBYING ALTER THE INVESTMENT RESPONSE TO TPU?

There are competing effects when it comes to the interaction between lobbying and investment in times of higher trade policy uncertainty. First off, lobbying requires resources and therefore potentially further limits investment opportunities as firms take a wait-and-see approach to the uncertainty. I call this the “crowding out” effect as lobbying expenditures can crowd out capital expenditures. Figure 4.1 plots the ratio of total lobbying expenditures to capital expenditures¹ averaged across firms at the quarterly time level. The blue line includes those firms that have zero lobbying expenditures whereas the red line restricts the analysis to only positive lobbying firms. For most quarters in the sample, lobbying expenditures are minuscule relative to capital expenditures as many firms do not choose to lobby. When restricting to positive lobbying firms, the ratio increases by a bit but still remains small, usually less than 10%. Thus, there may be some room for lobbying expenditures to crowd out capital expenditures, but the anticipated magnitude is likely to be small.

Furthermore, as the lobbying literature notes, there is the possibility for smaller firms to free ride on the lobbying expenditures of larger firms as many firms in the same sector benefit from larger policy changes. This is true for the policy episode under consideration here.² This “free-rider” effect would push lobbying and non-lobbying firms to similar investment responses to uncertainty changes as any lobbying benefits trickle down to the non-lobbying firms. There could be delays in information transmission or lower quality information in general for the non-lobbying firms as they are not on the front line of the lobbying efforts.

1. This is conditional on positive total lobbying and capital expenditures.

2. One interesting feature of the US-China trade policy uncertainty under President Trump is that individual firms can attempt to get tariff exemptions. As these are firm specific, there is less room for any free riding efforts as all firms would have to go through the process of getting their own exemptions. One possibility for future research is to utilize this setting to attempt to remove the free-riding effect from the analysis.

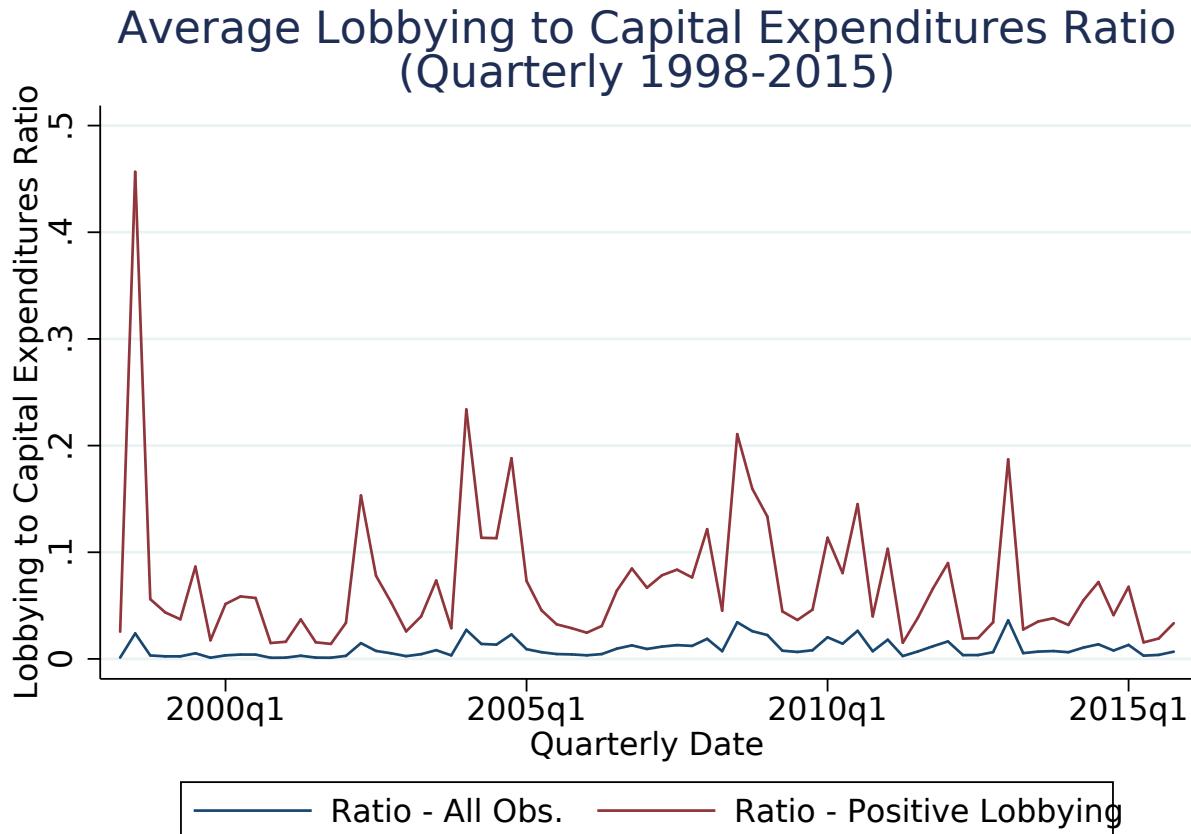


Figure 4.1: Average Lobbying to Capital Expenditures Ratio

On the other hand, lobbying can help push policy towards more favorable outcomes helping to clear up uncertainty and increase the return to investment in the present. Thus, one might expect lobbying firms to reduce investment by less than comparable non-lobbying firms. I consider these the “first moment” and “second moment” effects of lobbying on the investment response to trade policy uncertainty. Lobbying shifts the first moment of the outcome as it makes positive outcomes more likely while clearing up uncertainty and thus reducing the second moment impacts of uncertainty on investment.

Table 4.1 presents a simple table summarizing these four effects and the direction in which they push the investment response to uncertainty. Here, “+” means that it mitigates the negative investment effect of uncertainty while “-” means that it limits the potential mitigation or even possibly exacerbates the negative investment effect. As the free-rider effect

leads to similar investment responses between lobbying and non-lobbying firms, I mark it as having a “-” response as it pushes the interaction coefficient we will consider down to 0.

Table 4.1: Summary of Investment/Lobbying Complementarity Effects

(1)	(2)	(3)	(4)
First Moment	Second Moment	Crowding Out	Free-Rider
+	+	-	-

To explore the potential economic benefit of lobbying, I consider the following triple differences regression³

$$I/K_{i,t} = \alpha_i + \delta_t + \theta_1 LobInd_{it} + \theta_2 \Delta Log(TPU_t) * NTRGap_i + \\ \theta_3 \Delta Log(TPU_t) * LobInd_{it} + \varphi \Delta Log(TPU_t) * NTRGap_i * LobInd_{it} + \epsilon_{it}$$

where $\Delta Log(TPU_t)$ is the log change in the TPU Index as used in the previous investment regressions. $LobInd_{i,t}$ is an indicator that is equal to one if the firm is a lobbying firm and zero otherwise. $NTRGap_i$ is the NTR gap TPU exposure measure as defined before.

The coefficient φ that measures the differential impact of TPU on investment for lobbying versus non-lobbying firms is now the coefficient of interest. As shown in the previous section, the coefficient θ_2 is negative as more exposed firms see declines in investment as TPU increases. One would expect to see $\varphi > 0$ if lobbying has the economic benefit of mitigating some of the negative wait-and-see investment effects induced by TPU through the first and second moment effects. If instead the crowding out and free-rider effects outweigh those mitigation effects, we would see $\varphi \leq 0$. In the first case, it is unclear whether $\varphi \gtrless \theta_2$ and depends on the strength of lobbying’s mitigating effects.

3. Note that neither the TPU_t variable nor the NTR_i variables are included separately as they are absorbed by the time and firm fixed effects.

Table 4.2 presents the results from this regression specification.⁴ Column (1) reports the baseline results while column (2) looks at the firm size weighted specification. I define $LobInd_{it}$ as an indicator for whether or not a firm lobbied sometime in the pre-PNTR period before 2002. In this case, $LobInd_{it}$ is not actually a function of time and is instead $LobInd_i$.⁵ Both columns of the table then use data from this pre-period 1990-2001. Note that this lobbying indicator definition in a sense extrapolates the lobbying data to the period before 1997 when it is first available. This definition helps to increase the data available while still limiting to the pre-period where the NTR gap exposure identification strategy is sensible. The only cost is the assumption that a firm that was active in lobbying in the later part of the period was also active in lobbying in the earlier part of the period.

The baseline effect on investment is similar to before across both specifications. The triple interaction term is not statistically significant at standard levels and relatively close to zero in both cases. Thus, it seems that the positive first and second moment effects get counteracted by the negative crowding out and free-rider effects on average. Results are similar if the AAR exposure measure is used in place of the NTR gap measure.⁶

4. Results are similar if you consider two other variations of this specification: (1) focusing only on lobbying firms using the average trade-related lobbying as the lobbying indicator and (2) considering a propensity score matched sample that using total revenues in the propensity prediction.

5. Because of this, $LobInd_i$ is not included separately in the regression as it is absorbed by the time fixed effects.

6. The break down between goods and services is also similar. Services firms do not have much of an investment response normally and the lobbying designation does not make a difference.

Table 4.2: Trade Policy Uncertainty and Investment by Lobbying Status (1990-2001)

	(1)	(2)
	I/K	I/K
$\Delta \text{Log}(\text{TPU}_t) * \text{NTR}_i$	-0.98*** (0.37)	-0.74*** (0.28)
$\Delta \text{Log}(\text{TPU}_t) * \text{NTR}_i * \text{LobInd}_{it}$	-0.08 (0.58)	-0.27 (0.52)
$\Delta \text{Log}(\text{TPU}_t) * \text{LobInd}_{it}$	0.16 (0.28)	0.34 (0.25)
Weights	None	Assets
R^2	0.27	0.31
Observations	56565	56565

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level. Investment rates are constructed from Compustat data as $\text{CapEx}_t / (\text{Net Plant, Property, and Equipment})_{t-1}$ and are winsorized at the 1% and 99% levels. Both columns consider the 1990-2001 time period. The lobbying indicator Lob_{it} is defined as 1 if the firm lobbied at any point before 2002 and 0 otherwise.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

CHAPTER 5

SUMMARY AND DIRECTIONS FOR FURTHER RESEARCH

In this paper, I examine how trade policy uncertainty affects firms' decisions to invest and lobby. Importantly, I am interested in the joint investment and lobbying decision and how the choice to lobby could potentially interact with the level of investment when firms respond to trade policy uncertainty. As the literature has shown in other contexts, we would expect policy uncertainty to decrease investment as firms choose to wait-and-see how things resolve before they make investment decisions. We also would expect firms to lobby the government to try and obtain more favorable outcomes. There are potentially multiple conflicting effects governing the complementarity between the lobbying and investment response to uncertainty in general and trade policy uncertainty in particular including the first and second moment, crowding out, and free-rider effects discussed in this paper.

Using China's entry to the WTO as a case study, I find that firms lobby more in the highly uncertain pre-period before China's entry into the WTO. We can think of this as the regime shift effect where firms more exposed to the policy change lobby more during the debate and discussion of the policy proposal. Using a newspaper-based index of trade policy uncertainty to isolate uncertainty effects, I find that firms more exposed to trade policy uncertainty increase trade-related lobbying expenditures when trade policy uncertainty increases. We can think of this as the second moment effect where firms respond within the current regime to changes in uncertainty over the policy proposal. Considering both of these forces simultaneously, I find that the regime shift effect wins out, and the lobbying response by more exposed firms is due almost entirely to whether or not there is a concrete proposal and not whether there are shifts in uncertainty about this proposal. In evidence of response heterogeneity and lobbying competition, this effect is stronger for firms where the uncertainty primarily falls on their downstream consumers and weaker for firms where the uncertainty falls on their upstream producers.

I extend this analysis to consider a stock market based measure of exposure to trade policy

uncertainty in this case study. This extends the analysis outside of the manufacturing sectors to explore the effects in services producing sectors. I find more evidence for lobbying response heterogeneity and lobbying competition. Goods producing firms more negatively exposed to the policy increase lobbying while services producing firms more positively exposed to the policy increase lobbying. These firms arguably fall on opposite sides of the policy debate leading to the heterogeneity we see as they compete in the lobbying domain.

I find significant decreases in investment associated with log increases in my TPU Index. In addition, I corroborate the finding in Pierce and Schott (2018) that on average investment levels were higher for more exposed firms in the pre-period before China's entry to the WTO despite the higher levels of uncertainty at this time. When considering both of these effects simultaneously, they are both as strong and statistically significant as when considered separately. There isn't much evidence of investment response heterogeneity between goods-producing and services-producing firms. This highlights the ways in which first moment and second moment shocks could lead to different effects depending on the composition of firms. Each of the groups in this study have similar investment responses reflecting the direct effects of uncertainty whereas the first moment effects lead to lobbying response heterogeneity.

Lastly, I show that lobbying does not have a strong mitigating effect on the negative investment response firms have to uncertainty. Instead, it seems that the various effects governing the complementarity between lobbying and investment cancel each other out leading to little to no mitigation.

Trade policy and trade policy uncertainty may very well be unique. One limitation of this project is the inability to generalize the result. More work considering other particular case studies and other types of lobbying needs to be considered. The results here though do shed light on a few big picture ideas that need further exploration. Lobbying competition and the complementarity between lobbying and investment responses in the face of policy uncertainty are important questions to pursue further. Most policy decisions induce winners and losers depending on the outcome. Better understanding how uncertainty affects these

groups differently and whether lobbying can help mitigate negative uncertainty effects will help better inform future policy.

More theory is necessary to help disentangle the various forces governing the complementarity between investment and lobbying. Theory can also provide more guidance in understanding the relationship between lobbying and policy uncertainty to determine whether uncertainty is important or just the exposure to an issue currently being debated as I find here.

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APPENDIX A

ADDITIONAL FIGURES

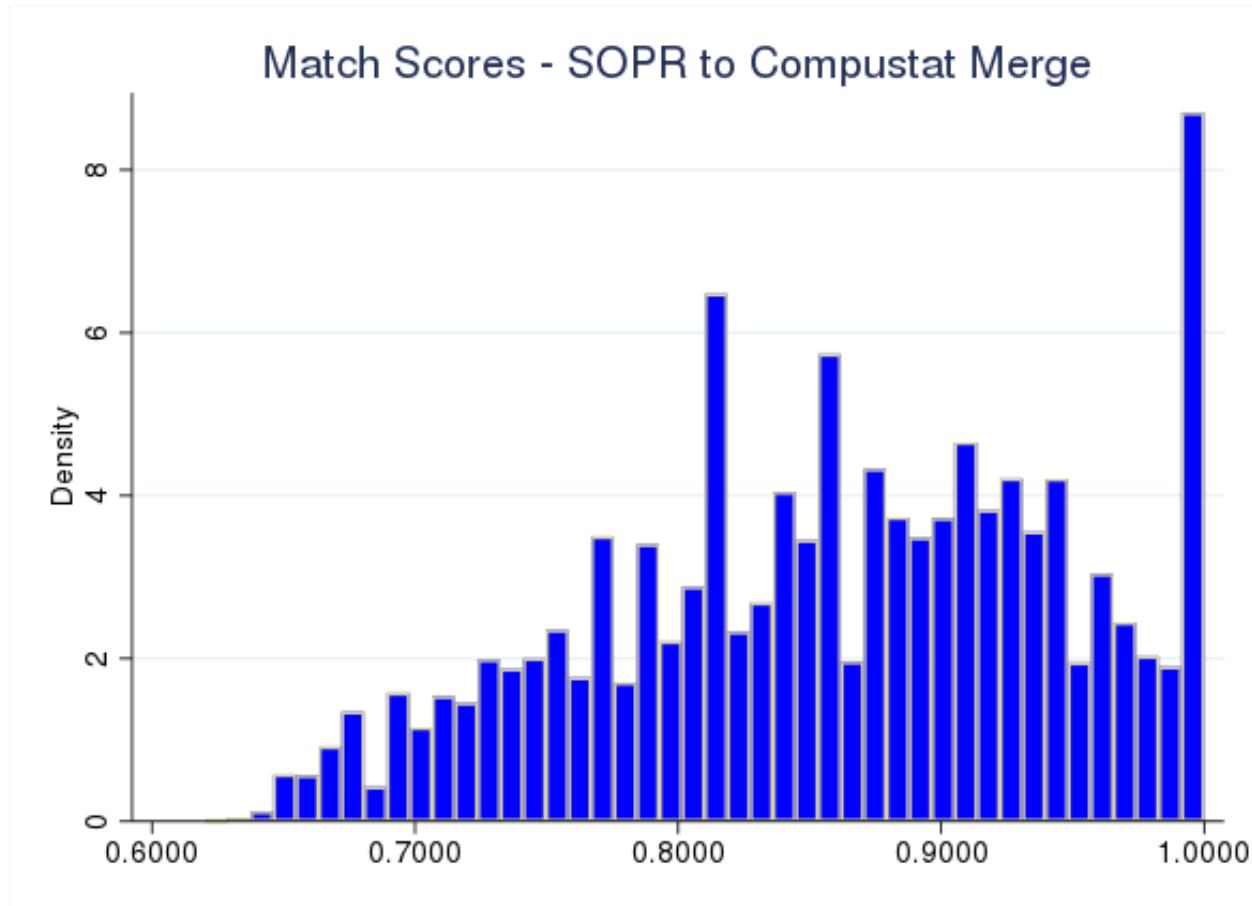


Figure A1: CRP/SOPR Lobbying and Compustat Fuzzy Merge Matchscores

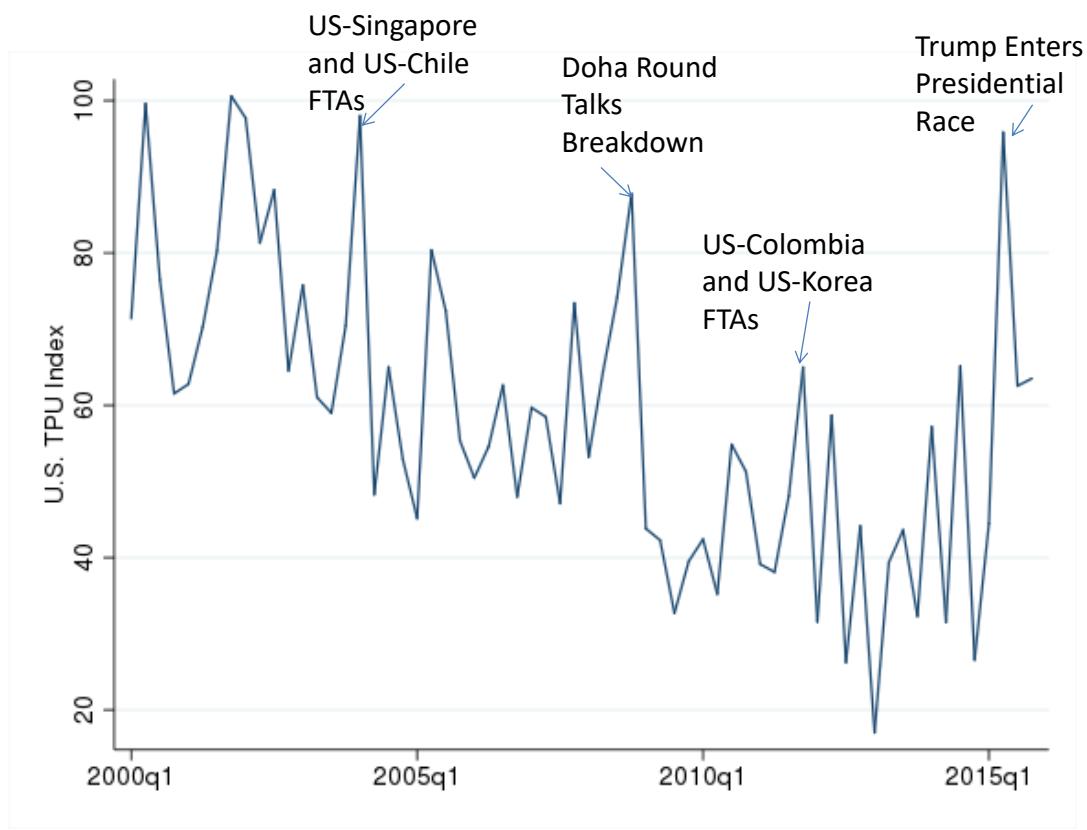


Figure A2: U.S. TPU Index (1990Q1-2015Q4)

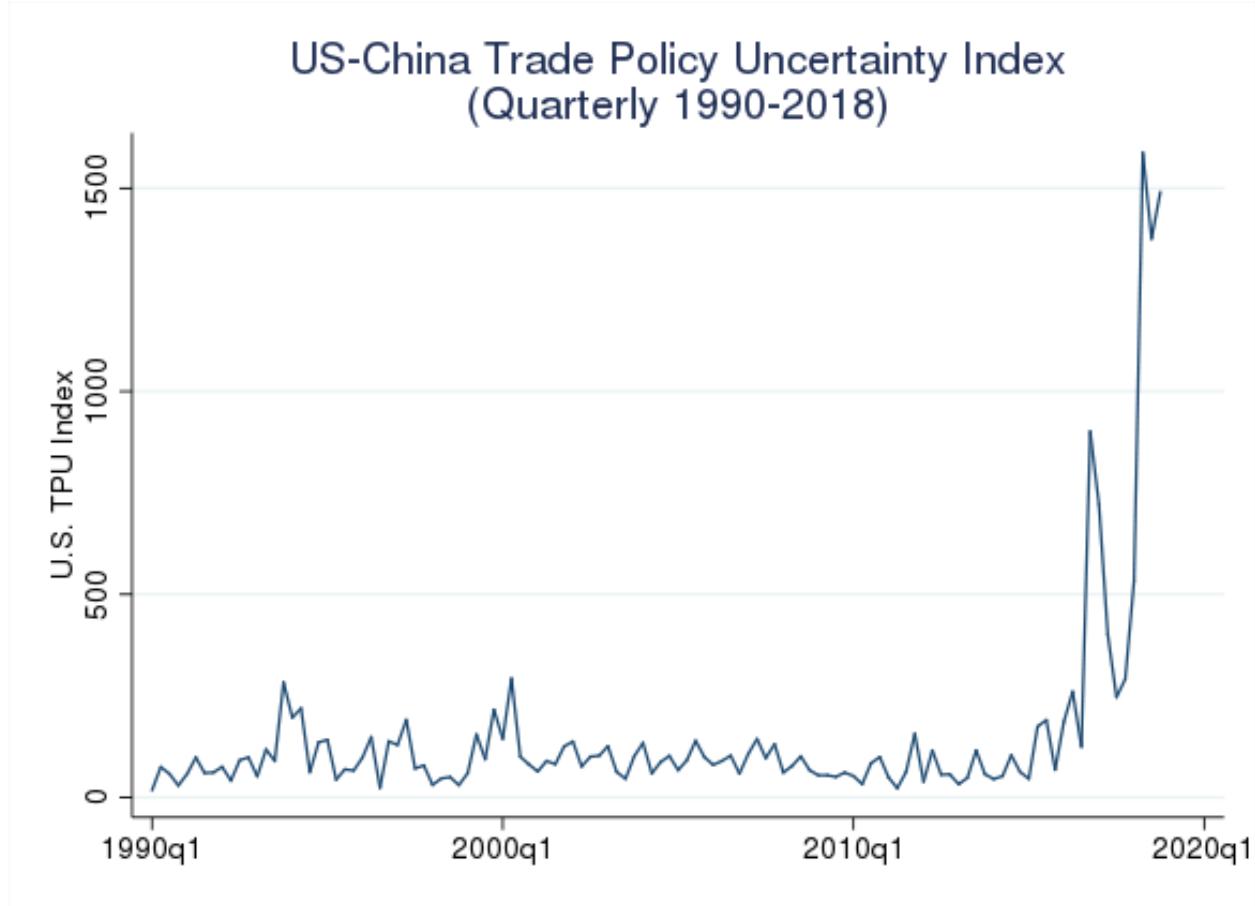


Figure A3: General US-China TPU Index (1990Q1-2018Q4)

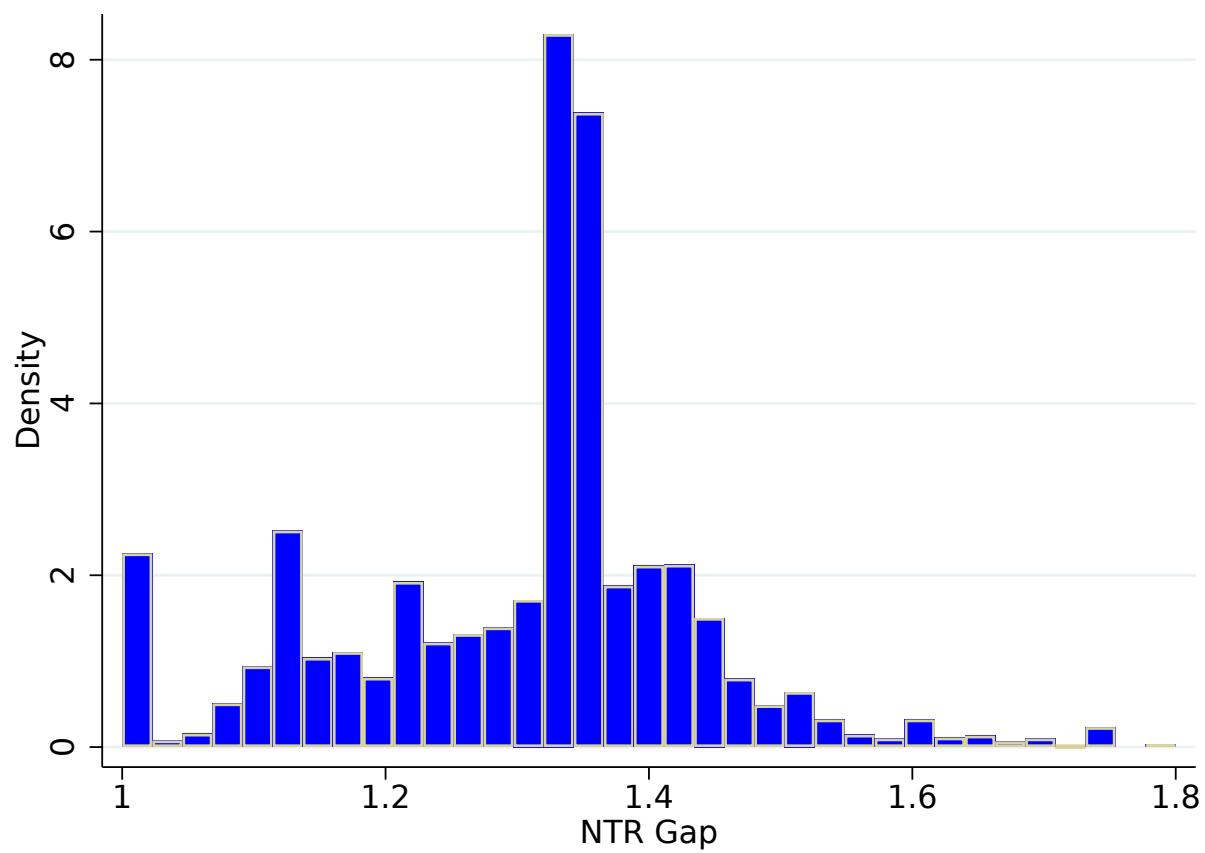


Figure A4: Firm Level NTR Gap for 1996

Year	Disapproval Res.	Final Status	Alternate bills	Final Status	
1989	None	—	None	—	
1990	H.J.Res. 647	Passed House 10/18 (247-174)	H.R. 4939	Passed House 10/28 (384-30)	
1991	H.J.Res. 263	Passed House 7/10 (223-204) Senate Postponed 7/18, Unanimous Consent	H.R. 2212	Passed House 7/10 (313-112)	Conference Report H.Rept. 102-392 passed House 11/27 (409-21)
	S.J.Res. 153	Senate Postponed 7/18, Unanimous Consent	S. 1367	Passed H.R. 2212 in lieu 7/18 (55-44)	
1992	H.J.Res. 502	Passed House 7/21 (258-135)	H.R. 2212	Conference Report H.Rept. 102-392 passed Senate 2/25 (59-39) Vetoed by President 3/2 House override vote 3/11 (357-61) Senate override vote 3/18 (60-38) - veto sustained	H.R. 5318 vetoed by President, 9/28 House override vote 9/30 (345-74) Senate override vote 10/1 (59-40) - veto sustained
			H.R. 5318	Passed House 7/21 (339-62) Senate amended with text of S. 2808, passed by voice vote, 9/14	
			S. 2808	House passed Senate version 9/22, voice vote	
1993	H.J.Res. 208	House rejected 6/8 (105-318)	H.R. 1835 S. 806	No action	
1994	H.J.Res. 373	House rejected 8/9 (75-356)	H.R. 4590	Amended to impose no conditions, then passed House 6/8 (280-152)	
1995	H.J.Res. 96	House tabled 7/20 (321-107)	H.R. 2058	Passed House 7/20 (416-10)	
	S.J.Res. 37	—			
1996	H.J.Res. 182	House rejected 6/27 (141-286)	H.Res. 461	Passed House 6/27 (411-7)	
	S.J.Res. 56	—			
1997	H.J.Res. 79	House rejected 6/24 (173-259)	—	—	*(S.Amdt. 890 expressed the sense of the Senate that China's MFN status should be revoked. It was offered as non-binding language to S. 955, the FY1998 Foreign Operations Appropriations bill.)
	S.J.Res. 31 S.Amdt. 890*	— Senate rejected 7/16 (22-77)		—	
1998	H.J.Res. 121	House rejected 7/22 (166-264)	—	—	
1999	H.J.Res. 57	House rejected 7/27 (170-260)	—	—	
	S.J.Res. 27	Senate rejected motion to discharge committee 7/20 (12-87)	—	—	
2000	H.J.Res. 103	House rejected 7/18 (147-281)	H.R. 4444	House passed 5/24 (237-197)	Signed by President on October 10, 2000, as P.L. 106-286, giving China Permanent NTR upon accession to WTO
	—	—	S. 2277	Senate passed H.R. 4444 on 9/19 (85-13)	

Figure A5: Congressional Consideration of MFN for China: 1989-2000

Source: Congressional Research Service, Report for Congress, "Voting on NTR for China Again in 2001, and Past Congressional Decisions".

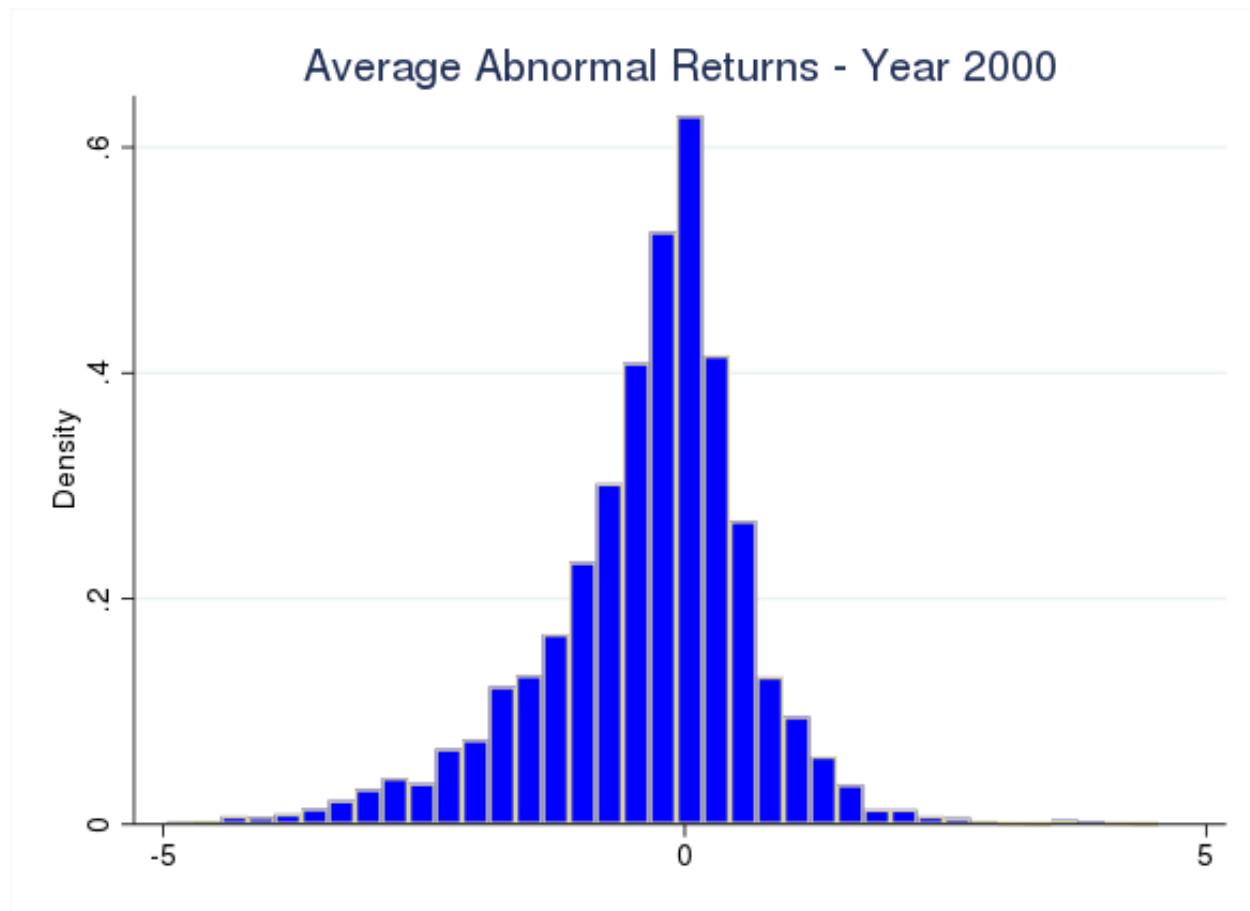


Figure A6: Year 2000 AAR Exposures

Note: Values below -5% and above 5% are excluded to improve readability.

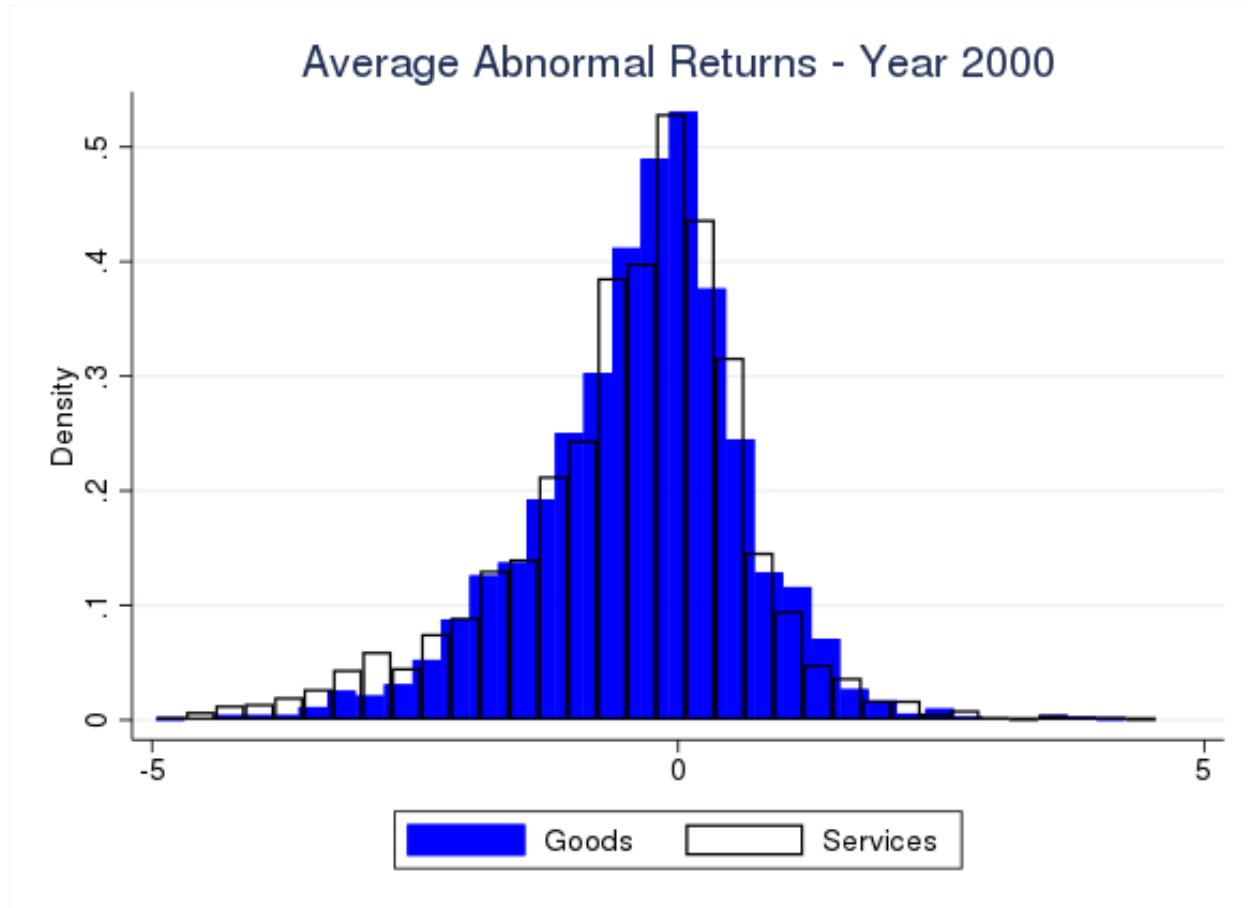


Figure A7: Year 2000 AAR Exposures by Goods and Services Classes
Note: Values below -5% and above 5% are excluded to improve readability.

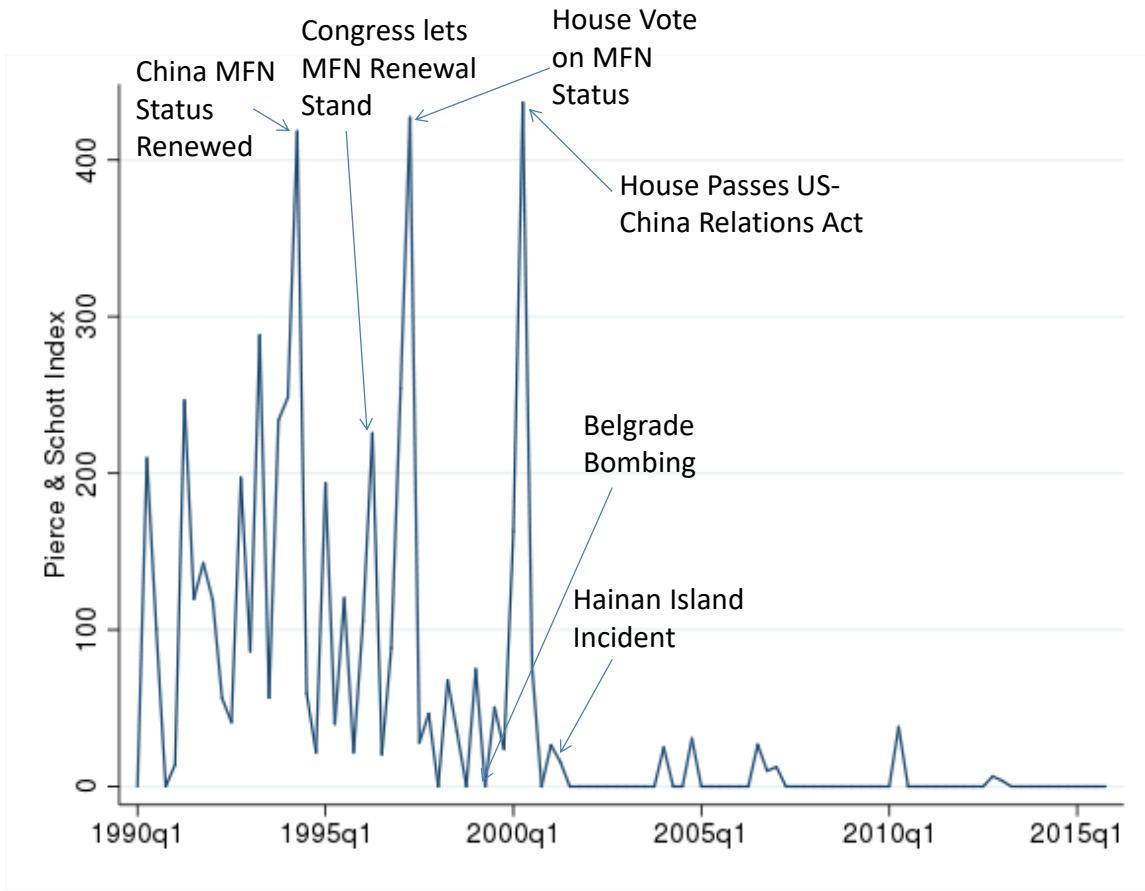


Figure A8: Pierce and Schott (2016) Trade Policy Uncertainty Index

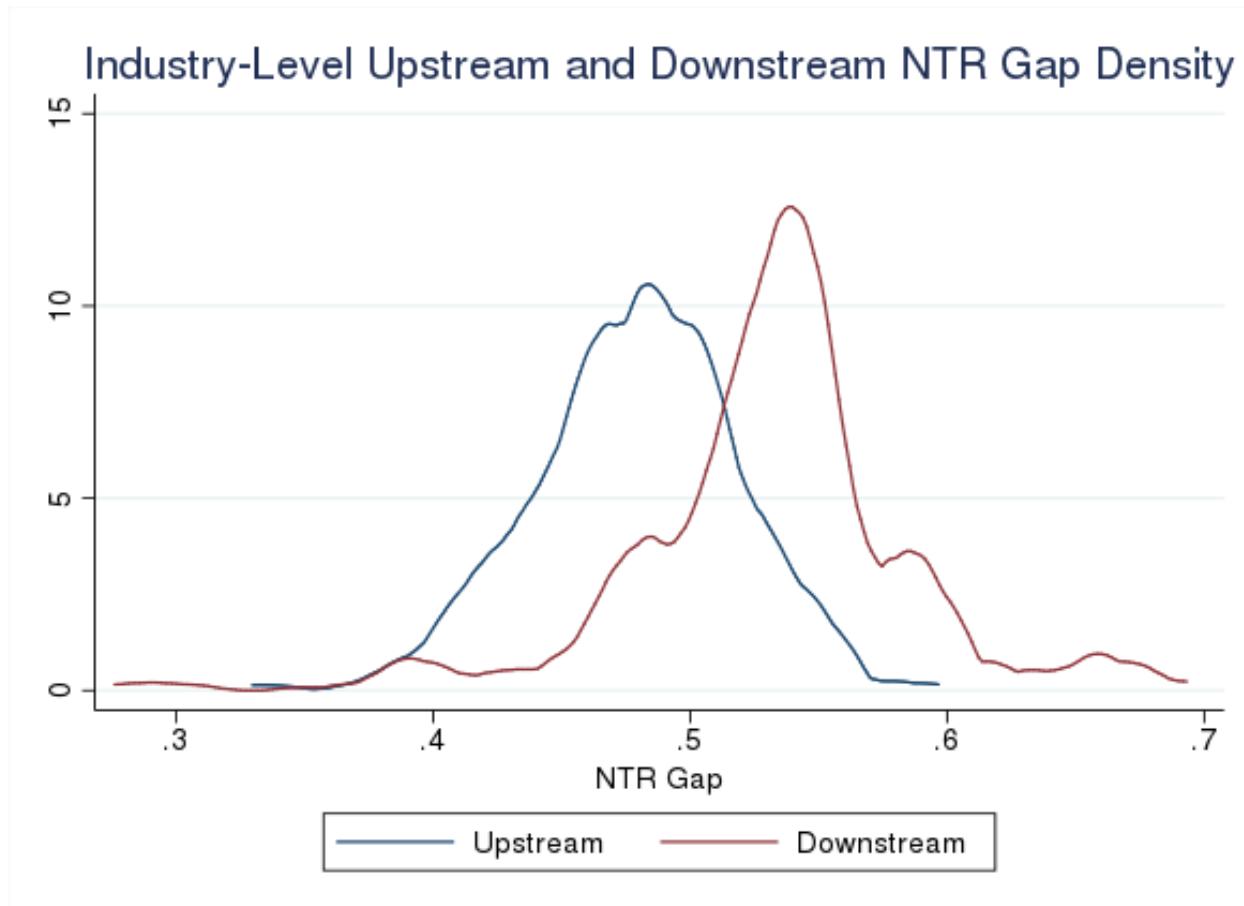


Figure A9: Industry-level Upstream and Downstream NTR Gap TPU Exposure

APPENDIX B

ADDITIONAL TABLES

Table B1: TPU Summary Statistics - Unique HS6

	count	mean	p50	sd	min	max
TPU	2399	.526	.570	.188	0	.879

Table B2: TPU Summary Statistics - Unique NAICS

	count	mean	p50	sd	min	max
TPU	224	.505	.565	.170	0	.807

Table B3: TPU Summary Statistics - Unique Firm

	count	mean	p50	sd	min	max
TPU	3959	.509	.581	.173	0	.829

Table B4: Trade Policy Uncertainty Induced Trade Lobbying - TPU Index (Non-Adjusted) (1998-2015)

	(1)	(2)	(3)	(4)
	$l_{i,t}$	$\log(1+l_{i,t})$	$l_{i,t}$	$\log(1+l_{i,t})$
$TPU_t^*NTR_i$	9.38** (4.12)	0.05 (0.04)	12.90** (6.07)	0.08 (0.06)
R^2	0.59	0.69	0.59	0.70
Observations	22108	22108	21372	21372

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table B5: Trade Policy Uncertainty Induced Trade Lobbying - TPU Index - Log Change Specifications (1998-2015)

	(1)	(2)	(3)	(4)
	$l_{i,t}$	$l_{i,t}$	$\log(1+l_{i,t})$	$\log(1+l_{i,t})$
$\Delta \text{Log}(TPU_t)^* \text{Pre}_t^* NTR_i$	26.03*** (7.96)	-1.84 (13.84)	0.27* (0.14)	0.19 (0.17)
$\Delta \text{Log}(TPU_t)^* NTR_i$		12.48 (11.26)		-0.08 (0.11)
$\text{Pre}_t^* NTR_i$		39.13** (17.72)		0.40* (0.22)
R^2	0.60	0.60	0.70	0.70
Observations	21369	21369	21369	21369

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

APPENDIX C

DATA APPENDIX

NTR Gap Trade Exposure Measure¹

The construction of the NTR gap trade policy uncertainty exposure measure follows aspects of both Handley and Limão (2017), Pierce and Schott (2016), and Pierce and Schott (2018). I first construct the uncertainty pre-WTO measure

$$1 - (\tau_{2V}/\tau_{1V})^{-\sigma}$$

using year 2000 column 2 (τ_{2V}) and MFN tariff rates (τ_{1V}). These are the logs of 1 plus the tariff rate computed at the HS-6 level. For this analysis, as in Handley and Limão (2017), I am using the 1996 HS classification. For all of the analysis in this paper, I use the baseline parameter setting from Handley and Limão (2017) $\sigma = 3$.

Then, I link this NTR gap measure at the HS-6 level to 6 digit NAICS industries in Compustat using the HS-NAICS concordance developed by Pierce and Schott (2009). For this merge, I make sure that all NAICS codes in both the Pierce/Schott crosswalk and in Compustat are the 2002 versions using Census Bureau crosswalks. I also concord the HS-6 codes in the Pierce/Schott data to their 1996 versions to match the version used in Handley and Limão (2017). Lastly, I take the weighted average of the HS-6 level NTR gap measures within an industry using Chinese imports to the US as weights.

To go from the industry-level to the firm-level, I utilize Compustat's Historical Business Segments database that provides firm-level yearly sales breakdowns by 6 digit NAICS industry. I construct the firm-level NTR gap TPU exposure measure as the sales-weighted

1. Pierce and Schott (2016) and Pierce and Schott (2018) actually have a different NAICS level construction of NTR gaps that I could use to see if it is any different than what I am currently doing. They use a HS concordance from Pierce and Schott (2009) to match all HS import codes used by the US from 1989 to 2001 to a time-invariant set of HS codes. They do this at the HS-8 level instead of HS-6 as I am currently doing. Then, they match these HS codes to NAICS industries using a concordance from the US Bureau of Economic Analysis. They finish by taking a simple average across all of the HS codes matched to that industry.

average across listed 6 digit NAICS business segments. I use the 1996 historical business segments for this construction. It is possible to construct these NTR gap TPU exposure measures for other years since the historical sales breakdowns cover a long time period, but these sales breakdowns are endogenous. Firms can choose the products they produce and therefore industries where the sales fall and can change these industries especially in response to something like import competition.² Figure C1 shows the NTR Gap TPU exposure densities for firms in the year 1997 and the year 2007, and we see that firms seem to have shifted sales to industries with lower NTR Gap TPU exposure by the year 2007. Table C1 reports the coefficient of a regression of this NTR Gap TPU exposure measure (varying by both year and firm this time) on the interaction between the firm's initial NTR Gap TPU exposure and a dummy PostPNTR_t that is 1 for the period 2001 and after and 0 before. We see that there is a statistically significant negative relationship between the initial exposure and future ones that is stronger for firms with higher initial exposures. Thus, I fix the firm level exposure measure at its 1996 values to avoid this endogeneity concern.

Table C1: NTR Gap (1990-2007)

	(1)
	NTRGap _{i,t}
PostPNTR _t *NTRGap _{i,1996}	-0.0336*** (0.00880)
<i>R</i> ²	0.963
Observations	44775

Notes: Standard errors in parentheses. All regressions contain firm fixed effects and time fixed effects. Standard errors are clustered at the firm level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

I follow Pierce and Schott (2016) in constructing the upstream and downstream versions

2. I do not do this at the moment but could consider averaging the sales breakdowns for a few years around 1996 to smooth out the measure and limit possible outliers for that year.

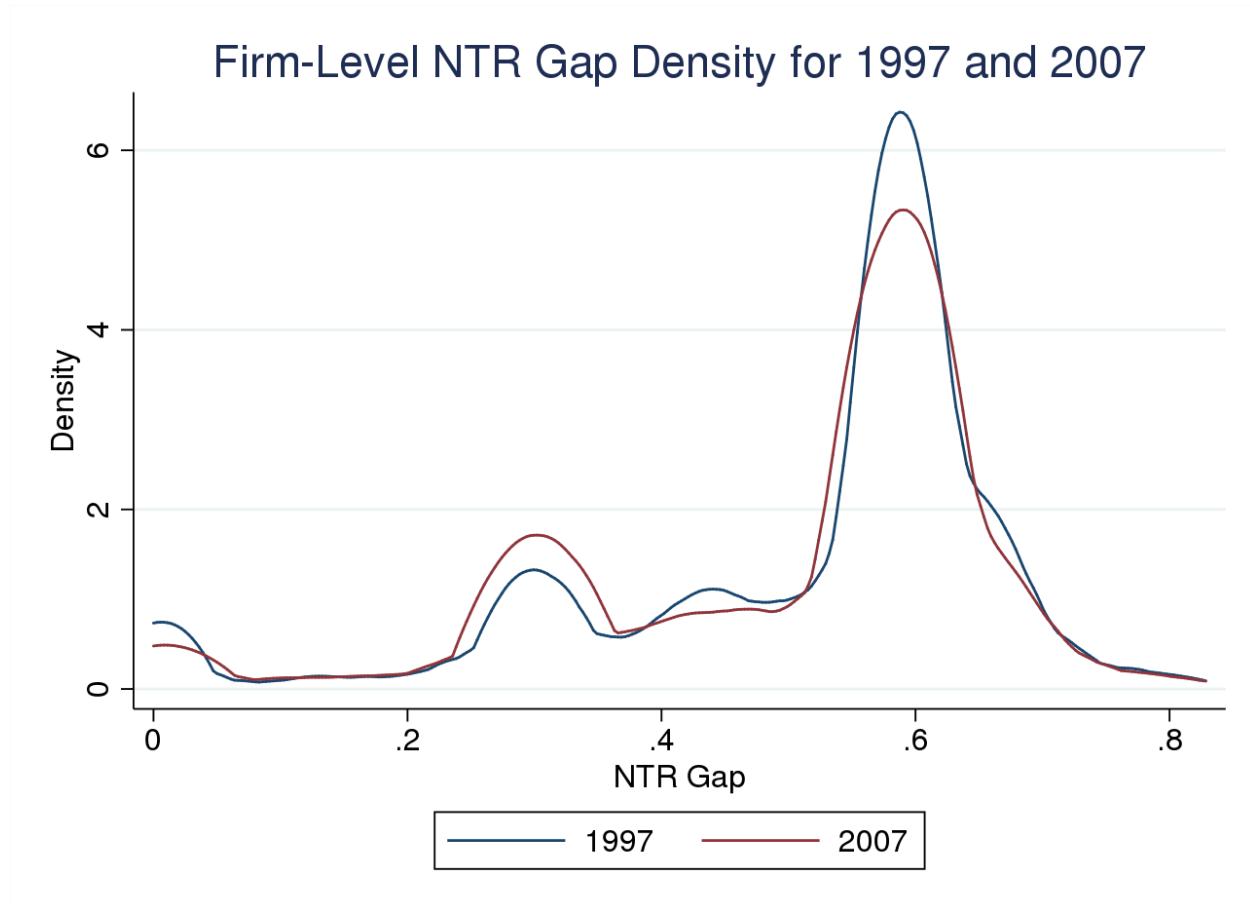


Figure C1: Firm-level NTR Gap TPU Exposure for 1997 and 2007

of the NTR gap TPU exposure measure. The upstream measure for NAICS industry i is calculated as the weighted average NTR gap measure across all industries used to produce i , using the coefficients from the BEA's 1997 industry-by-industry total requirements input-output matrix as weights.³ Similarly, the downstream measure for NAICS industry i is the weighted average NTR gap measure of all industries supplied by industry i , again using the same weights. For both of these weighted averages, I set the IO weights to zero for up and downstream industries within industry i 's three-digit NAICS sector. This is the same as in Pierce and Schott (2016) because as they note “US manufacturing establishments often produce clusters of products within the same three-digit NAICS sector (Bernard et al.

3. The industry-by-industry total requirements input-output matrix is contained in the file “ndn0310.zip” available at <https://www.bea.gov/industry/historical-benchmark-input-output-tables>.

(2010))”.

APPENDIX D

LOBBYING DISCLOSURE FORM INSTRUCTIONS

Instructions for Form LD-2, Lobbying Report

The Lobbying Disclosure Act of 1995, as amended (2 U.S.C. □ 1601 et. seq.), requires lobbying firms and organizations to register and file reports of their lobbying activities with the Secretary of the Senate and the Clerk of the House of Representatives.

Form LD-2 is used for complying with the semiannual reporting requirements of Section 5 of the Act (2 U.S.C. □ 1604). Form LD-1 is used for initial registration under Section 4 of the Act (2 U.S.C. □ 1603).

WHO MUST REPORT. A registrant must file a report for the semiannual period for which it initially registered and for each semiannual period thereafter, including the reporting period during which it terminates. **LOBBYING FIRMS**, i.e., entities with one or more lobbyists, including self-employed individuals who act as lobbyists for outside clients, are required to file a separate report for each client covered by a registration. **ORGANIZATIONS** employing in-house lobbyists file a single report for each semiannual period.

WHEN TO FILE. The semiannual report is required no later than 45 days after the end of a semiannual period beginning on the first day of January and the first day of July of every year in which a registrant is registered.

WHERE TO FILE. Prepare two originals of Form LD-2 and file one with each office listed below:

Secretary of the Senate Office of Public Records 232 Hart Senate Office Building Washington, DC 20510	AND	Clerk of the House of Representatives Legislative Resource Center B-106 Cannon House Office Building Washington, DC 20515
--	------------	--

PUBLIC AVAILABILITY. The Act requires the Secretary of the Senate and the Clerk of the House of Representatives to make all registrations and reports available to the public as soon as practicable after they are received.

TERMINATION REPORT. A registrant terminates by submitting a completed LD-2 report, indicating termination, no later than 45 days after the end of the reporting period in which it terminates.

REVIEW AND COMPLIANCE. The Secretary of the Senate (Office of Public Records) and the Clerk of the House (Legislative Resource Center) must review, verify, and request corrections in writing to ensure the accuracy, completeness, and timeliness of registrations filed under the Act.

ADDENDUM. If the space on Form LD-2 is insufficient for any required information, attach additional pages as needed, clearly stating the name of the registrant and client and identifying the line number(s) to which the information pertains.

AMENDMENTS. A registrant must **immediately** file an amended Form LD-2: (1) if notified of a defect in the original filing by the Secretary of the Senate or the Clerk of the House of Representatives; or (2) if erroneously reported information is discovered by the registrant. Once registered, updated information (name and address changes, new lobbyists, new issue area codes, etc.) must be disclosed in the registrant's **semiannual report**.

PENALTIES. Whoever knowingly fails: (1) to correct a defective filing within 60 days after notice of such a defect by the Secretary of the Senate or the Clerk of the House; or (2) to comply with any other provision of the Act, may be subject to a civil fine of not more than \$50,000.

FOR FURTHER INFORMATION. Contact the Senate Office of Public Records, 232 Hart Senate Office Building, Washington, DC 20510, (202) 224-0758, or the House Legislative Resource Center, B-106 Cannon House Office Building, Washington, DC 20515, (202) 226-5200.

LINE-BY-LINE INSTRUCTIONS

ALL FILERS ARE REQUIRED TO COMPLETE THE FIRST PAGE.

LINE 1. REGISTRANT NAME. Indicate the registrant's full legal name and any trade name(s). The name must be either the name of the lobbying firm or the name of the organization employing in-house lobbyists. Individual lobbyists do not register unless they are self-employed, in which case they register as firms and indicate their own names and any trade or business names.

LINE 2. REGISTRANT ADDRESS. Enter the mailing address for correspondence. Mark the box if the address is different than previously reported.

LINE 3. PRINCIPAL PLACE OF BUSINESS. Indicate the city and state or country (if outside the United States) of the registrant's principal place of business, if different from the address on line 2.

LINE 4. TELEPHONE NUMBER AND CONTACT NAME. Indicate the telephone number and the name of the person to contact for any questions concerning the registration. Enter optional e-mail address if you wish to receive electronic correspondence.

LINE 5. SENATE IDENTIFICATION NUMBER. This number, assigned by the Public Records Office, is unique to each registrant-client relationship. Enter the number and use it in all correspondence pertaining to this relationship.

LINE 6. HOUSE IDENTIFICATION NUMBER. This number, assigned by the Legislative Resource Center, is unique to each registrant-client relationship. Enter the number and use it in all correspondence pertaining to this relationship.

LINE 7. CLIENT NAME. Enter the name of the client. An organization lobbying on its own behalf marks the box labeled "Self."

LINE 8. YEAR. Enter the year and mark the appropriate box to indicate which semiannual reporting period is being covered by this report. **Check only one: a separate report is required for each filing period.**

LINE 9. AMENDED REPORT. If amending a previously filed version of this report, place a mark in the box. Otherwise, leave blank.

LINE 10. TERMINATION REPORT. If lobbying for the client has ended and the registrant wishes to terminate this registration, mark the box and enter the date that lobbying activities ceased.

LINE 11. NO ACTIVITY BOX. If there was no reportable **lobbying** activity, mark the box. Otherwise, file a complete report detailing the lobbying activity.

INCOME OR EXPENSE SUMMARY (ANSWER LINE 12 OR LINE 13 AS INSTRUCTED).

LINE 12. LOBBYING FIRMS (INCOME). Indicate whether income relating to lobbying activities on behalf of the client identified on line 7 was less than \$10,000, or was \$10,000 or more, during this reporting period by placing a mark in the appropriate box. If income was \$10,000 or more, provide a good faith estimate of all lobbying related income from the client (include all payments to the registrant by any other entity for lobbying activities on behalf of the client). Round estimates to the **nearest \$20,000**.

LINE 13. ORGANIZATIONS (EXPENSES). Indicate whether expenses related to lobbying activities were less than \$10,000, or were \$10,000 or more, during the reporting period by placing a mark in the appropriate box. If expenses were \$10,000 or more, provide a good faith estimate of all lobbying expenses (include all payments to third parties for lobbying activities) and round estimates to the **nearest \$20,000**.

LINE 14. REPORTING METHODS. Mark the appropriate box to indicate the expense accounting method used to determine expenses:

Method A. Reporting amounts using LDA definitions only. This method is available to all organizations.

Method B. Reporting amounts using Internal Revenue Code definitions as defined under Section 4911(d) of the IRC. This method is only available to a NON-PROFIT registrant that is **required to report and does report** under Section 6033(b)(8) of the IRC. The amount disclosed must pertain to the semiannual period covered by this report.

Method C. Reporting amounts using Internal Revenue Code definitions of lobbying activities, of which the cost is not deductible pursuant to Section 162(e) of the IRC. This method is available to any registrant that is subject to Section 162(e) of the IRC. The amount disclosed must pertain to the semiannual period covered by this report. Grass-roots and state lobbying expenses **may not be subtracted** from this amount.

FIRST PAGE SIGNATURE. If this is a report containing no lobbying activity, sign and date this page of the report and type or print the signer's name and title. Otherwise, sign only the last page of the report. Form LD-2 must be signed and dated by the officer or employee of the registrant who is responsible for the accuracy of the information contained in the report.

LINE 15. GENERAL LOBBYING ISSUE AREA. Select the applicable code(s) from the list below which accurately reflect all general areas in which the registrant engaged in lobbying during the reporting period, whether or not the issue area was previously disclosed. **Use a separate page for each code selected.** Attach additional photocopied pages as necessary to report all codes selected. Do not leave line blank.

ACC Accounting	HCR Health Issues
ADV Advertising	HOU Housing
AER Aerospace	IMM Immigration
AGR Agriculture	IND Indian/Native American Affairs
ALC Alcohol & Drug Abuse	INS Insurance
ANI Animals	LBR Labor Issues/Antitrust/ Workplace
APP Apparel/Clothing Industry/Textiles	LAW Law Enforcement/Crime/ Criminal Justice

ART	Arts/Entertainment	MAN	Manufacturing
AUT	Automotive Industry	MAR	Marine/Maritime/ Boating/Fisheries
AVI	Aviation/Aircraft/ Airlines	MIA	Media (Information/ Publishing)
BAN	Banking	MED	Medical/Disease Research/ Clinical Labs
BNK	Bankruptcy	MMM	Medicare/Medicaid
BEV	Beverage Industry	MON	Minting/Money/ Gold Standard
BUD	Budget/Appropriations	NAT	Natural Resources
CHM	Chemicals/Chemical Industry	PHA	Pharmacy
CIV	Civil Rights/Civil Liberties	POS	Postal
CAW	Clean Air & Water (Quality)	RRR	Railroads
CDT	Commodities (Big Ticket)	RES	Real Estate/Land Use/Conservation
COM	Communications/ Broadcasting/ Radio/TV	REL	Religion
CPI	Computer Industry	RET	Retirement
CSP	Consumer Issues/Safety/ Protection	ROD	Roads/Highway
CON	Constitution	SCI	Science/Technology
CPT	Copyright/Patent/ Trademark	SMB	Small Business
DEF	Defense	SPO	Sports/Athletics
DOC	District of Columbia	TAX	Taxation/Internal Revenue Code
DIS	Disaster Planning/Emergencies	TEC	Telecommunications
ECN	Economics/Economic Development	TOB	Tobacco
EDU	Education	TOR	Torts
ENG	Energy/Nuclear	TRD	Trade (Domestic & Foreign)
ENV	Environmental/Superfund	TRA	Transportation
FAM	Family Issues/Abortion/ Adoption	TOU	Travel/Tourism
FIR	Firearms/Guns/ Ammunition	TRU	Trucking/Shipping
FIN	Financial Institutions/Investments/ Securities	URB	Urban Development/ Municipalities
FOO	Food Industry (Safety, Labeling, etc.)	UNM	Unemployment
FOR	Foreign Relations	UTI	Utilities
FUE	Fuel/Gas/Oil	VET	Veterans
GAM	Gaming/Gambling/ Casino	WAS	Waste (hazardous/ solid/ interstate/ nuclear)
GOV	Government Issues	WEL	Welfare

LINE 16. SPECIFIC LOBBYING ISSUES. For each general lobbying area, list the specific issues which were actually lobbied during the semiannual period. Include, for example, specific bills before Congress or specific executive branch actions. **BE SPECIFIC. Bill numbers alone do not satisfy the requirements for reporting on this line and restatement of the general issue code is insufficient.** Use the following format to describe legislation: BILL NO., BILL TITLE, AND DESCRIPTION OF THE SPECIFIC SECTION(S) OF INTEREST.

i.e., "H.R. 3610, Department of Defense Appropriations Act of 1996, Title 2, all provisions relating to environmental restoration."

For specific issues other than legislation, provide detailed descriptions of lobbying efforts. Do not leave line blank.

LINE 17. CONTACTS. Identify the Houses of Congress and Federal agencies contacted by the registrant in connection with the general issue area during the reporting period. Disclose only the houses or agencies, such as "Senate," "House of Representatives," "Department of Agriculture," or "Executive Office of the President," rather than the individual office. **If there were no contacts during the period, mark the box labeled "none." Do not leave line blank.**

LINE 18. LOBBYISTS. List the name of each **lobbyist** who had **any activity** in this general issue area. If there are lobbyists not previously disclosed, enter the names of the new lobbyist(s) under each pertinent issue code. If any person listed in this section has served as a "covered executive branch official" or "covered legislative branch official" within two years of first acting as a lobbyist for the client, identify that person as a "covered official," state the executive and/or legislative position in which the person served, and mark the box labeled "New." **NOTE: The 20% threshold does not apply to this line and is only used for determining who may be considered a "lobbyist" for registration/updating purposes.**

LINE 19. FOREIGN INTEREST. Describe the interest of each foreign entity in the specific issues listed on line 16. **If there are no foreign entity interests in this issue, check the box marked "none." Do not leave blank.**

SIGNATURE. If this is the last page of the report, sign and date this page and type or print the signer's name and title. Only the last page of the report need be signed. Form LD-2 must be signed and dated by the officer or employee of the registrant who is responsible for the accuracy of the information contained in the report.

INFORMATION UPDATE PAGE

COMPLETE ONLY WHERE REGISTRATION INFORMATION HAS CHANGED.

LINE 20. CLIENT NEW ADDRESS. Enter complete address of the client if different than previously reported.

LINE 21. CLIENT NEW PRINCIPAL PLACE OF BUSINESS. Indicate the client's new principal place of business (city and state, or country, if outside the United States), if different from line 20.

LINE 22. NEW DESCRIPTION OF CLIENT'S BUSINESS OR ACTIVITIES. Provide a general description of the new business or activities of the client.

LINE 23. LOBBYIST DELETE. Enter the name of each individual who **no longer** acts as a lobbyist for the client identified on line 7. If there are no names to remove, skip to line 24.

LINE 24. GENERAL ISSUE AREA DELETE. Select the codes from the list on page 2 of the instructions of all previously reported issue areas that **no longer** apply and enter them on line 24. If there are no codes to be deleted, skip to line 25.

LINE 25. AFFILIATED ENTITY ADD. Identify the name, address, and principal place of business of any entity other than the client that contributes in excess of \$10,000 toward the registrant's lobbying activities in a six-month period, **and** in whole or in major part plans, supervises, or controls such lobbying activities.

LINE 26. AFFILIATED ENTITY DELETE. List the names of all previously reported organizations that **no longer** meet the disclosure requirement. If there are no organizations to remove, skip to line 27.

LINE 27. FOREIGN ENTITY ADD. Identify the name, address, principal place of business, amount of any contribution in excess of \$10,000, and the approximate percentage of equitable ownership in the client of any foreign entity that:

- a) holds at least 20% equitable ownership in the client or any organization identified on line 15; **or**
- b) directly or indirectly, in whole or in major part, plans, supervises, controls directs, finances or subsidizes activities of the client or any organization identified on line 15; **or**
- c) is an affiliate of the client or any organization identified on line 15 and has direct interest in the outcome the lobbying activity.

LINE 28. FOREIGN ENTITY DELETE. List the names of all previously reported foreign entities that **no longer** meet the disclosure requirement. Leave this line blank if there are no deletions.

SIGNATURE. If this is the last page of the report, sign and date this page and type or print the signer's name and title. Only the last page of the report need be signed. Form LD-2 must be signed and dated by the officer or employee of the registrant who is responsible for the accuracy of the information contained in the report.