# Trade policy uncertainty and corporate policy

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**Abstract**

We use China's accession to the WTO to investigate the impact of trade policy uncertainty on U.S. corporate policy. In response to the resulting reduction in tariff uncertainty for imported goods from China, U.S. manufacturing firms implemented more conservative capital structures, relying less on debt financing and holding more cash than before. We find support for both the nature of offshoring activities and the intensity of product market competition as important mechanisms behind these observed changes in corporate policy. Further, the relation between investment and financing on the one hand and employment on the other changed significantly. Firms in industries with relatively higher ex ante exposure to trade policy uncertainty displayed a decrease in the ex post sensitivity of employment intensity to both leverage and investment, compared to industries with lower exposure. This shift in policy where firms that chose to remain relatively more labor intensive also chose to have lower leverage and invest less, demonstrates that firms actively used their *joint* labor, investment and financing policies to face the new production- and product market environments. We provide several analyses investigating the robustness of our results.

Keywords: *Corporate policy, trade policy uncertainty, leverage, cash holdings, employment.*

# 1 Introduction

We investigate the importance of trade policy uncertainty for corporate policy. The regulations governing international trade are determined by ongoing political processes, whose outcomes can be characterized by significant uncertainty. From the perspective of a single firm facing foreign competitors in domestic markets or exporting goods or services, the resulting conditions for trade form a significant determinant of its production- and product market environments. In this paper we analyze the impact of China's accession to the WTO on corporate decision making of manufacturing firms in the United States in order to understand if and how trade policy uncertainty is a determinant of corporate policy. This setting is well suited to analyze the importance of trade policy uncertainty. With China's accession to the WTO in 2001, the annual renewal process necessary for Chinese goods to continue being subject to the favorable tariff rates associated with Normal Trade Relations (NTR) status was replaced by a permanent arrangement at otherwise existing terms. Since it was the dependence on annual renewals that was eliminated while the level of the tariff rates did not change, this event isolates uncertainty as the channel through which relevant mechanisms impact corporate policy. In particular, competitive strategies targeted at the U.S. market would be relatively more valuable from the perspective of Chinese manufacturers, while outsourcing activities by U.S. firms would be similarly facilitated, fundamentally changing the level of foreign competition and tradeoffs in production decisions facing U.S. manufacturing firms (Pierce and Schott, 2016).

Furthermore, the relevance of China's permanent NTR status was not constant across all goods. The threat of a failed renewal was only of significance to the extent that the relevant tariff rate absent Normal Trade Relations was sufficiently high compared to the tariff rate associated with Normal Trade Relations. Thus, variation in the difference between non-NTR tariff rates and NTR tariff rates - the NTR gap - represents cross-sectional variation in the relevance of China's accession to the WTO, i.e., in the extent to which a reduction in trade policy uncertainty should matter to the firm.

Although there are proxies measuring both the general level of political uncertainty (Baker, Bloom, and Davis, 2016) and, recently, trade policy uncertainty (Caldara, Iacoviello, Molligo, Prestipino, and Raffo, 2019), we deliberately choose to focus on one single event - China's accession to the WTO - and investigate the resulting impact on corporate policy. Our choice of the WTO event as the foundation of our identification strategy is motivated by the combination of the exogenous nature of the event and the significant cross-sectional variation in its impact, since the presence of both features jointly is important in identifying the effects of changes in trade policy uncertainty.

In our first set of tests we study how changes in investment and financing policies following China's accession to the WTO align with the pre-event NTR gap to isolate the part of observed changes that is due to the reduction in trade policy uncertainty. We further investigate how the relations between firm employment on the on hand and investment and financing on the other were impacted. Facing the new environment after the significant reduction in trade policy uncertainty, firms evaluate what are the new optimal solutions for the actions under their control, and any change in the relation between these different actions can therefore further illuminate the significance of the event and potentially the importance of the mechanisms at work. For example, observing higher cash holdings, lower employment, and a higher (lower) sensitivity of employment to cash (leverage) would be consistent with firms hedging their labor policies with financial structure, where firms that reduced the number of employees relatively less hedge the risk by having more cash relative to before the event.

We find that U.S. manufacturing firms lowered their leverage and increased their cash holdings in response to China's accession to the WTO, thus choosing to implement more conservative capital structures. The magnitude of the effects are of economic importance. Considering, for example, market leverage, our results imply that introducing an NTR gap equal to its sample average would induce a reduction in industry leverage of 3.6 percentage points, or approximately 14% of the sample average leverage. Cash holdings would similarly increase by 2.6 percentage points, constituting approximately 21% of average cash holdings. These findings also provide a new perspective on the increase in corporate cash holdings (Bates, Kahle, and Stulz, 2009) documented following early work on cash holdings (Opler, Pinkowitz, Stulz, and Williamson, 1999; Harford, 1999). The observed negative effect on leverage is concentrated in U.S. manufacturing industries with lower levels of competition, consistent with decreased barriers to foreign entry resulting in the largest increased competitive threats where the benefits of entry are largest, namely in industries where the current level of competition is relatively lower. The negative impact on financial leverage is dampened in industries where it is relatively more common to purchase inputs from China and at the same time own assets in China, while the positive effect on cash are dampened in industries where it is relatively more common to purchase inputs from China without owning assets in China. Our results remain significant in a series of robustness tests, including interactive fixed effects estimations, following Bai (2009), that relax the parallel trend assumption.

We also document an impact on the relation between investment and financing on the one hand and employment on the other. In particular, we see a decrease in the sensitivity of employment intensity to both investment and leverage following the WTO event. Though there was a general decline in both employment and the employees-to-asset ratio, firms that chose to have a relatively higher labor intensity of their operations also invested less in physical capital and relied less on debt financing following China's accession to the WTO. This result shows that firms actively used their joint labor, investment, and financing policies to face the new environment.

China's accession to the WTO has so far received limited attention in the finance literature.[1] Chen, Harford, and Kamara (2019) use China's accession to the WTO as exogenous variation in operating leverage to identify the the effects of operating leverage on financial leverage and profitability, and show that these relations contribute to the observed negative relation between profitability and financial leverage. We focus instead on the impact of trade policy uncertainty on corporate policy more broadly, and exploit the cross-sectional variation in the impact of the WTO event that stems from variation in the NTR gap. Furthermore, our sample period covers a relatively long post-event period, which is helpful in capturing the dynamic effects of the event. Consistent with Chen, Harford, and Kamara (2019) we find that operating leverage increased following China's accession to the WTO. We also find a significant negative effect on financial leverage when we focus on variation in financial leverage that is not driven by operating leverage. Morellec and Zhdanov (2019) provide empirical evidence for their theoretical prediction, based on a real options model with product

[1] See, e.g., Dasgupta, Li, and Wang (2017) for an example of research recognising the importance of the WTO without explicit focus on China's accession in 2001.

market competition, of a negative impact of product market competition on option-implied stock price density skewness, and use China's accession to the WTO to complement their analysis with a natural experiment generating exogenous variation in the level of competition. Our analysis is distinct from that of Morellec and Zhdanov (2019) in that they focus on how competition determines properties of the pricing of firms' securities in financial markets, while we focus on corporate real and financial decisions. Barrot, Loualiche, and Sauvagnat (2019) document a risk premium associated with globalization, and use China's accession to the WTO to establish the link between shipping cost - their measure of globalization - and trade flows. Qian, Strahan, and Yang (2015) study the implications of bank reforms delegating authority to individual loan officers following China's accession to the WTO. Recently, Lie and Yang (2018) show that increased Chinese import competition impacted the structure of US executive compensation through dampened agency problems and increased benefits of innovation.

More broadly, competiton has been shown to impact several aspects related to firm capital structure, including, e.g., leverage (MacKay and Phillips, 2005), cash holdings (Haushalter, Klasa, and Maxwell, 2007; Morellec, Nikolov, and Zucchi, 2013; Hoberg, Phillips, and Prabhala, 2014), and the cost of debt Valta (2012). Though our results support competition as an important mechanism underlying the effects we uncover, our focus is on the level of trade policy uncertainty as a determinant of corporate policy and how the level of competition in an industry interacts with the impact a change in trade policy uncertainty has on optimal financial leverage. Similarly, our results also show that industry offshoring status is important for how firms respond to the event, contributing to the literature on corporate policy of multinational firms (Jang, 2017; Hoberg and Moon, 2017; Desai, Foley, and Hines Jr., 2008, 2004). This emphasis on the impact of China's accession to the WTO in our results investigating the impact on the relation between labor intensity and investment and financing policies contributes to recent related literature on the interaction between finance and labor (see, e.g., Chodorow-Reich, 2013; Simintzi, Vig, and Volpin, 2014; Michaels, Page, and Whited, 2018; Benmelech, Frydman, and Papanikolaou, 2019)[2] by using the exogenous event and the cross-sectional variation in the NTR gap to identify the shift in the policy relation.

Pierce and Schott (2016) introduce a generalized difference-in-differences estimator to identify how China's accession to the WTO impacted employment in U.S. manufacturing industries, where the intuition is that changes in employment, after China's accession to the WTO, in industries with high NTR gaps in excess of the corresponding changes in industries with low NTR gaps arise because of China's accession to the WTO. Pierce and Schott (2016) find a significant effect on employment where the reduction in employment is higher for industries with higher NTR gaps, and further dissect the mechanism underlying the effect on employment using U.S. and Chinese microdata. Autor, Dorn, and Hanson (2013) analyze the impact of import competition from China on unemployment, labor force participation, and wages in local labor markets in the United States, while Caliendo, Dvorkin, and Parro (2019) calibrate a general equilibrium trade model to quantify the impact of China's increased trade on U.S. manufacturing employment and associated welfare consequences. The mechanisms through which the reduction in manufacturing employment came about, e.g., competition from Chinese exporters and offshoring, have parallel implications for the optimal financial policies, and corporate policy more generally, of U.S. firms. First, we complement the above mentioned literature by demonstrating that the reduction in employment was accompanied

[2] See Matsa (2018) for a review of research on labor and capital structure.

by a significant delevering of U.S. manufacturing firms. Second, we also find that the results on employment analyzed in previous literature have important interaction effects with firm investment and financing policies, namely in terms of an decreased correlation between firm employment and both capital investment and leverage following China's accession to the WTO.

Our analysis is also related to existing literature investigating the implications of political uncertainty. Previous studies have found that political uncertainty impacts firm investment (Jens, 2017; Gulen and Ion, 2015; Julio and Yook, 2012), R&D (Atanassov, Julio, and Leng, 2015), and M&A activity (Cao, Li, and Liu, 2017; Chen, Cihan, Jens, and Page, 2018; Bonaime, Gulen, and Ion, 2018). There is also evidence linking political uncertainty to asset prices (Pastor and Veronesi, 2013; Kelly, Pastor, and Veronesi, 2016; Liu, Shu, and Wei, 2017). We focus on a different aspect of uncertainty, related to trade policy, that likely affects firms through different mechanisms than political uncertainty stemming from other facets of government policy.

# 2 Data and Empirical Methods

## 2.1 Sample

The firm accounting data are from Compustat, and historical SIC codes from CRSP. Data on the NTR tariff gap (Pierce and Schott, 2016; Feenstra, Romalis, and Schott, 2002) is obtained from Peter Schott's webpage[3]. In order to merge the NTR gap data with our

[3]"Schott's International Economics Resource Page", available at http://faculty.som.yale.edu/peterschott/sub_international.htm. We are grateful to Peter Schott for making the data publicly available.

firm data, we rely on the industry classification and associated link to SIC codes, as well as a mapping between Harmonized System (HS), for which the NTR gap of the highest granularity is available, and SIC codes, both of which are available from the same source. See Pierce and Schott (2012) for a description of these mappings.

The NTR tariff rate ($NTRrate$) is calculated as the average of the NTR rate for each industry-year. That is, for every industry-year, $NTRrate$ is the average NTR rate across all HS codes associated with the given industry in the given year. The non-NTR rate is calculated analogously. The main regression specification utilizes variation in the differences between non-NTR rates and NTR rates before China's accession to the WTO to identify the associated impact on U.S. corporate policy. In particular, $NTRgap$ is calculated as the average NTR gap for each industry in 1999. We further calculate several firm-level variables of interest based on Compustat data. $MLeverage$ is market leverage; $BLeverage$ is book leverage; $Cash$ is cash holdings; $Div$ is dividends; $SR$ is share repurchases; $EI$ is equity issuance; $Inv$ is investment; $Profitability$ is profitability; $MB$ is the ratio of market value of assets to book value of assets; $lnSales$ is the natural logarithm of sales; $Empl$ is the number of employees in thousands; $After$ is a post-event indicator variable for China's accession to the WTO. Appendix I contains a list of all variable definitions, including Compustat data item references where relevant.

We focus on U.S. manufacturing firms, where $NTRgap$ data is available. Due to availability of data in Compustat we further restrict attention to the time period from 1970 to 2017. We also trim the data at the 2% and 98% percentiles of $MLeverage$, $BLeverage$, $Cash$ and our main firm-level independent variables.

Data on firm offshoring activities is obtained from the Hoberg and Moon text-based offshoring database[4]. A detailed description of the data can be found in Hoberg and Moon (2019, 2017). We calculate $InputAO$ as the 1999 industry-level average number of mentions of inputs purchased from China in cases where firms also mention owning assets in China and $InputNAO$ as the 1999 industry-level average number of mentions of inputs purchased from China in cases where firms also do not mention owning assets in China, calculated based on data from Hoberg and Moon (2019, 2017).

## 2.2 Summary Statistics

Summary statistics for the variables used in our study are provided in Table 1. From Panel A, we find that the distributions of firm characteristics are in line with existing literature, with an average book value of assets of \$1.5B and average annual sales of \$1.4B. Firms are on average financed with 26% debt measured using market values and 22% measured using book values. Firms' cash balances are on average 12% of book assets, with a right skewed distribution, resulting in an average net leverage (book values) of 9.8%.

Among the industry-level variables in panels B and C, our main variable of interest and key source of identification is $NTRgap$, the difference between non-NTR and NTR tariff rates in 1999. The average NTR gap is 0.32 with a standard deviation of 0.14, while the NTR tariff rate itself has an average value of 0.04 with a standard deviation of 0.05. Hence, the NTR gap represents a substantial threat, both in relative and absolute terms, in the pre-WTO area

[4]"The Hoberg-Moon Offshoring Repository", available at https://faculty.marshall.usc.edu/Gerard-Hoberg/HobergMoonDataSite/index.html. We are grateful to Gerard Hoberg and S. Katie Moon for making the data publicly available.

where the NTR rates were subject to annual renewal. In Figure 1 we show the histogram of the NTR gap in order to further illuminate the variation between industries in the 1999 level of the NTR gap. In addition to lack of renewal of NTR status posing a substantial threat for the average industry, $NTRgap$ also displays considerable variation across industries, which allows for identification of the impact of the WTO event.

## 2.3 Empirical Methods

### 2.3.1 Baseline Difference-in-Differences Estimator

Our baseline difference-in-differences framework follows Pierce and Schott (2016), where we analyze the impact on China's accession to the WTO through our main coefficient of interest $\theta$ in the regression

$$\begin{aligned}\overline{(\text{Corp. Pol.})}_{it} =& \theta After_t \times NTRGap_i + After_t \times \mathbf{X}_i'\gamma \\ &+ \mathbf{Z}_{it}'\lambda + \delta_t + \delta_i + \epsilon_{it},\end{aligned} \tag{1}$$

where $\overline{(\text{Corp. Pol.})}_{it}$ is the average of the respective outcome variable in industry $i$ at time $t$, $After_t$ is a post-event indicator variable for China's accession to the WTO, $\mathbf{X}$ are time-invariant characteristics, $\mathbf{Z}$ are time-varying characteristics, $\delta_t$ is a time fixed effect, $\delta_i$ is an industry fixed effect, and $\epsilon_{it}$ is the residual. Our main dependent variables of interest are firm leverage ($MLeverage$, $BLeverage$) and cash holdings ($Cash$), though we also stress the importance of jointly evaluating firm actions and also investigate other prominent firm decisions.

The key variable, in this generalized difference-in-differences framework, that allows us to identify the effect of the WTO event is $NTRGap_i$. Since $NTRGap_i$ measures the additional tariffs that would apply if the NTR status would not be renewed, variation in $NTRGap_i$ is variation in the extent to which industries are affected by the permanent NTR status given to China after the accession to the WTO, and hence the coefficient $\theta$ on the interaction between $After_t$ and $\times NTRGap_i$ captures the effect of the WTO event on the outcome $\overline{(\text{Corp. Pol.})}_{it}$ under study.

### 2.3.2 Interactive Fixed Effects

In order to address the underlying assumtion of parallel trends, and more generally control for unobserved shocks that are not captured in our baseline difference-in-difference estimator given in equation 1 above, we follow the approach in Bai (2009) and allow for interactive fixed effects. In particular, we use the following regression specification:

$$\overline{(\text{Corp. Pol.})}_{it} = \theta After_t \times NTRGap_i + \mathbf{F}_t' \Psi_i + \alpha + \epsilon_{it}, \tag{2}$$

where $\mathbf{F}_t$ is a vector of common factors and $\Psi_i$ are industry-specific factor loadings. Both factors and factor loading are considered unobserved parameters to be estimated in order to be able to do inference for $\theta$. We refer to Bai (2009) for a detailed description of the estimator and its properties. In order to maintain the interpretation of $\theta$ as a treatment effect, we restrict two factors to capture time and industry fixed effects as in our main difference-in-differences estimator, and use the following specification in our analysis: $\mathbf{F}_i = \begin{bmatrix} 1 & \delta_t & f_t \end{bmatrix}'$ and $\mathbf{\Psi}_i = \begin{bmatrix} \delta_i & 1 & \psi_i \end{bmatrix}'$. where $\delta_t$ and $\delta_i$ are additive time and industry fixed effects, and $f_t$ is a common factor with industry-specific loading $\psi_i$. The presence of $f_t$ allows for common unobservable shocks that can impact industries heterogenously, and relaxes the common trend assumption inherit in the differences-in-differences estimator presented in section 2.3.1. We also note that consistency of the estimator still holds when $f_t$ and $\psi_i$, in our setting, are correlated with the timing of China's accession to the WTO and the NTR gap. Estimation follows section 3.2 of Bai (2009), where estimates $\{\widehat{\theta}, \widehat{\mathbf{F}_t}, \widehat{\Psi_i}\}$ are obtained by minimizing the least squares objective function associated with equation (2) in an iteration algorithm where conditional on $\{\widehat{\mathbf{F}_t}^k, \widehat{\Psi_i}^k\}$ in iteration $k$, $\{\widehat{\theta}\}^k$ can be obtained by a standard least squares objective function, which again feeds into the pure factor structure $\overline{(\text{Inv/Fin Pol})}_{it} - \theta After_t \times NTRGap_i = \mathbf{F}_t' \Psi_i + \epsilon_{it}$ used to calculate $\{\widehat{\mathbf{F}_t}^{k+1}, \widehat{\Psi_i}^{k+1}\}$ in iteration $k+1$. This process is continued until parameter estimates converge.

### 2.3.3 The Interaction Between Labor and Corporate Policy

In our second set of results, we investigate how China's accession to the WTO impacted the relation between employment on the one hand and investment and financing on the other. In particular, we capture the association between employee intensity and corporate policy by a regression with employee intensity as the dependent variable and the respective corporate policy as the independent variable, and then study how the coefficient on the independent variable changed as a consequence of the event. The intuition of this approach can be understood by an example where we observe a reduction in the coefficient on leverage in a regression with employment intensity as the dependent variable. Such a reduction means that firms who after the event chose to retain relatively more employees per unit of assets, also tend to have even lower leverage as compared to before the event, and also lower leverage than what would be expected from the observed change in leverage alone. We estimate the following hierarchical model by maximum likelihood:

$$\begin{aligned}(\text{Empl. int.})_{i,j,t} &= \beta_0 + \beta_1\,(\text{Corp. Pol.})_{i,j,t} + \epsilon^I_{i,t} + \epsilon^J_{i,j,t}\\ \beta_1 &= \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon^{\beta_1}_{i,t}\end{aligned} \tag{3}$$

where $\epsilon^I_{i,t}$ and $\epsilon^{\beta_1}_{i,t}$ are industry-level random effects and $\epsilon^J_{i,j,t}$ is a firm-level random effect. Our main interest is in the coefficient $\beta_1$ that characterizes the mapping from $(\text{Corp. Pol.})_{i,j,t}$ to the employee intensity $(\text{Empl. int.})_{i,j,t}$, and the hierarchical setup allows us to let this regression coefficient be a function of observable characteristics, and in particular the post-event indicator variable $After_t$, the pre-event NTR gap $NTRGap_i$, and their interaction, forming a difference-in-differences specification for the regression coefficient $\beta_1$.

# 3 The effect on firm financial policy

## 3.1 Main Results

Table 2 contains results for the effect of China's accession to the WTO on leverage. The main coefficient of interest is the coefficient $\theta$ on the variable $After_t \times NTRGap_i$, measuring how the response to the WTO event depends on the tariff increases that would result from a failure to maintain NTR status. A negative effect ($\theta$) is consistent with the notion that a decrease in trade policy uncertainty that intensifies competition and makes offshoring easier induces firms to choose more conservative financial policies. Columns (1) through (5) show estimated coefficients from OLS regressions where the average market leverage in a given industry-year is the dependent variable, while columns (6) through (10) contain corresponding results for average book leverage. For each dependent variable we show different specifications adding standard control variables, year fixed effects and industry fixed effects to the baseline difference-in-differences terms. The specification in column (1) uses the post-event indicator variable and the NTR gap instead of time and industry fixed effects, which are successively introduced in subsequent columns after adding industry-level control variables, resulting in the main difference-in-differences specification in column (4). We also show results for a subsample that span the years 1990 to 2010. In Section 3.5 we further explore the robustness of our results.

We consistently find a significant negative effect on industry leverage. Based on the specification in column (4), which includes control variables as well as industry and year fixed effects, introducing an NTR gap equal to its average value is associated with a 3.6 percentage point decrease in market leverage, which is of economic importance, corresponding to 14% of the average market leverage and 11% of the interquartile range of market leverage. The book level results in columns (6) through (10) are in line with the market leverage results, where the difference-in-differences effect associated with an introduction of an NTR gap at its average represents a 18% decrease compared to the sample average book leverage. Overall, we conclude that the change in trade policy uncertainty from China's accession to the WTO resulted in a significant delevering of U.S. manufacturing firms.

Among the industry-level control variables, we find a negative association between leverage and both profitability and the market-to-book ratio, and a positive association between leverage and both sales and the fraction of physical assets. The results are robust across specifications and sample periods.

As an informal check of the validity of our results, we plot average firm characteristics over time in Figure 2, calculated separately for observations with above (High) and below (Low) mean values of $NTRgap$. Considering for example book leverage, we see that there is a significant increase in the gap between average leverage for the high and low $NTRgap$ groups at the time of the event (identified by a vertical line in the subplots). However, we also see that there is a pattern in which a smaller difference in average firm characteristics between high and low $NTRgap$ groups is established in the early 1980's. This corresponds to major efforts in expanding China's foreign trade, potentially influencing U.S. manufacturing firms through similar mechanisms as the WTO event under study. In the current framework, though we note an otherwise very similar time series pattern in the average firm characteristics for the high and low $NTRgap$ groups, this could potentially raise issues regarding the parallel trends assumption required for our interpretation of the results. Therefore, throughout our analyses we also include results using the shorter 1990 - 2010 sample period. From columns (5) and (10) in Table 2 we see that the results from the extended 1970 - 2017 sample also hold with similar economic implications for the 1990 - 2010 sample period as well.

Our results in Table 2 demonstrate a significant impact on firm leverage consistent with increased competition that results from the reduction in trade policy uncertainty following China's accession to the WTO. While firms on average found it optimal to finance their operation with lower leverage, it is important to evaluate this change in capital structure in light of concurrent changes in cash holdings, which is another vehicle through which firms can adjust their financial risk in light of the changes in the product market. In Table 3, we show the impact on firm cash holdings. In columns (1) - (5) we report OLS estimates of equation 1 with cash holdings as the dependent variable. Based on the estimate in column (4), we find, by multiplying the average NTR gap with the estimated coefficient on the product of the NTR gap and the post-event indicator variable, that going from a situation with no additional tariffs associated with non-NTR status to a situation in which the additional tariffs are equal to the average NTR gap will increase cash holdings by 2.6 percentage points, which is about 21% of the sample average cash holdings. Together with the significant reduction in firm leverage, we find that the overall financial structure of U.S. manufacturing firms became much more conservative as a consequence of the permanent NTR status obtained following China's accession to the WTO. In columns (6) - (10), we show this net effect directly in regressions with net leverage as the dependent variable. The average NTR gap is associated with a 6.6 percentage points reduction in net leverage, clearly illustrating the significant impact on financial policies of U.S. manufacturing firms.

We consistently find a negative association between cash holdings and both profitability, tangibility, and sales, while the market-to-book ratio is positively related to cash holdings.

We also emphasize the benefit of considering several firm policies jointly, and further analyze the effects on other firm characteristics in Table 4. In columns (1) through (8) of Panel A we conduct analyses of industry investment, dividends, share repurchases and equity issuance, using the full sample. In Panel B, we conduct corresponding analyses on the 1990 - 2010 subsample. Overall, we find no evidence of firms changing equity repurchase or issuance activities following the WTO event. Though there is some evidence of incresed investment when considering the 1997 - 2017 period, this result does not hold for the 1990 - 2010 period. Similarly for dividends, the evidence in favor of increased dividends as found in the full sample is weaker in the 1990-2010 subsample. Moreover, in section 3.5 we further investigate the robustness of our results, and find that while our initial results of firms lowering their leverage and increasing their cash holdings are robust to the inclusion of other explanatory variables used by Pierce and Schott (2016) in analyzing labor outcomes, which are relevant in capturing potential mechanisms underlying the observed outcomes, we do not find consistent evidence in favor of an impact on dividends or investment for the sample where additional control variables are available. Next, we analyze the importance of the relation between operating leverage and financial leverage for our results relating to financial leverage, before investigating how our main results interact with the level of offshoring and competition at the time of China's accession to the WTO in sections 3.3 and 3.4.

## 3.2 Operating Leverage

Given the established relation between operating leverage and financial leverage (e.g., Ferri and Jones, 1979), operating flexibility and leverage (Gu, Hackbarth, and Li, 2019; Reinartz and Schmid, 2016), and recent evidence utilizing the WTO event as a shock to operating leverage in studying how the negative relation between operating leverage and financial leverage helps explain the observed negative relation between financial leverage and profitability (Chen, Harford, and Kamara, 2019), we analyze both the impact of the WTO event on operating leverage in our sample and the importance of this effect for our main results on financial leverage.

Our results relating to operating leverage are given in Table 5. In columns (1) and (2) we show results from the main difference-in-differences estimator presented in section 2.3.1, for the full sample and the sample restricted to the 1990 - 2010 period, respectively. In both cases we find that there is a positive and statistically significant impact on operating leverage from China's accession to the WTO. Focusing on column (1) for the full sample, the introduction of the average NTG gap would result in an increase in operating leverage of 0.035, corresponding to approximately 12.5% of the sample average operating leverage. Thus, there is both a statistically and economically significant effect on operating leverage, corroberating the results of Chen, Harford, and Kamara (2019).

We next turn to the implications for our earlier results, and in particular for the impact of China's accession to the WTO on U.S. financial leverage policy. Since operating leverage and financial leverage are jointly determined by the firm with an objective in mind, and this decision making process results in an empirically observed negative relation between operating leverage and financial leverage, it is interesting to investigate the importance of the operating leverage results for our above documented effect on market and book leverage. In columns (3) to (6) of Table 5 we show results from regressions addressing this issue. In particular, we regress industry market and book financial leverage on industry operating leverage, and use the residuals from these regressions as the dependent variables in the main difference-in-differences estimator. In this way, we study the variation in financial leverage that is not driven by operating leverage. We denote the residuals from the regression of market leverage on operating leverage $MLeverage^{*}$, and the corresponding book leverage residuals $BLeverage^{*}$. The results for market leverage are give in columns (3) and (4), showing results for the full sample and the sample restricted to the 1990-2010 period, respectively, while the corresponding book leverage results are given in columns (5) and (6). Using the full sample results for market leverage in column (3) as an example, we find that the introduction an NTR gap equal to the sample average would reduce market leverage by approximately 0.03, or 11.7% of the sample average, illuminating the importance of the WTO event for financial leverage, also when compared to the corresponding specification with market leverage as the dependent variable, where the estimated decrease was 14% of market leverage. In columns (4) - (6) we consistently find a similar pattern with statistically and economically significant effects. Overall, even though the results are - as expected - slightly attenuated compared to the main results in Table 2, both the statistical and economic significance still strongly support trade policy uncertainty as an important determinant of financial policy in a vein very much similar to the main results on financial leverage.

### 3.3 Offshoring

Motivated by the potential impact of China's accession to the WTO on the conditions at which Chinese manufacturing firms can export to the U.S. and the offshoring decisions of U.S. manufacturing firms, we investigate how our main results relate to the level of offshoring in a given industry. In the next section, we complement these results by an analogous analysis of the importance of competition for the impact of trade policy uncertainty on corporate policy. We conduct these analyses using a triple-difference version of the baseline difference-in-differences estimator presented in section 2.3.1 with proxies for the 1999 level of offshoring and competition forming the bases for the triple-difference specifications.

In Table 6 we show how the impact of China's accession to the WTO relate to the offshoring status in 1999, calculated based on offshoring data from Hoberg and Moon (2019, 2017). In Panel A of Table 6 the offshoring variable ($InputAO$) is calculated as average, in any given industry, number of mentions of inputs purchased from China in cases where firms also mention owning assets in China, while in Panel B the offshoring variable is based on the corresponding number of cases where there is no mentioning of firms owning assets in China. From Panel A we see that our baseline results of a negative effect on financial leverage and a positive effect on operating leverage are dampened for industries where - at the time of China's accession to the WTO - firms bought more inputs from China while at the same time also owning assets in China. In industries where firms do not jointly buy inputs from China and own assets in China, the difference-in-differences effect is -0.117 for market leverage and -0.138 for book leverage, which is very close to our baseline results in Table 2. However, at the median level of $InputAO$ for observations with positive values of $InputAO$, the difference-in-differences effect for market leverage is reduced, in absolute value, by 0.041, which represents a 35% reduction compared to the case where firms do not own assets and buy inputs from China. The corresponding dampening of the baseline effects are 44% for book leverage and 35% for operating leverage. We further find that there is no interaction between offshoring status and the effect on cash holdings.

When considering the effect of offshoring status in terms of purchasing inputs without jointly mentioning owning assets, we similarly find a significant reduction in the baseline effect on operating leverage for industries where input purchase from China is more prevalent. However, we find no significant interaction with the difference-in-difference effect on financial leverage. Interestingly, for this measure of offshoring status we do find that the baseline effect on cash holdings is dampened, with a 20% reduction in the difference-in-differences effect for industries with a median level of $InputNAO$ for observations with positive values of $InputNAO$, compared to the corresponding effect for an industry where firms do not purchase inputs from China without owning assets. Overall, these results establish offshoring as important for understanding the response by U.S. manufacturing firms in light of the change in trade policy uncertainty following China's accession to the WTO, highlighting the importance of evaluating the joint response along several policy dimensions available to firms.

### 3.4 Competition

In Table 7 we investigate the effect of competition in U.S. manufacturing industries, measured as the average ratio of operating income to sales in an industry. This proxy is based on the intuitive notion that more competitive industries have less profitable firms, which is a common basis for proxies used in the literature, see, e.g., Morellec, Nikolov, and Zucchi (2013). It is important to highlight that we are investigating the level of competition in U.S. industries, which influences the benefits of entry for these industries, where it is more beneficial for foreign manufacturers to enter when the level of competition is low. From columns (1) and (2) of Table 7 we see that the lower the level of competition in an industry is, i.e., the higher the value of $PMC$, the more negative is the impact of China's accession to the WTO on financial leverage in U.S. manufacturing industries. Focusing on market leverage, at the 25th percentile of $PMC$, the difference-in-differences effect is -0.041, while at the 75th percentile of $PMC$ it is -0.103, illustrating the economic significance of the interaction effect with competition. Further, we find a significantly positive interaction effect for investment but no statistically significant interaction effect for neither cash nor operating leverage. Competition is therefore important in explaining our main results relating to financial leverage, but we do not see a direct impact on our other main results. In interpreting these results, we also note that the fact that the level of competition can give altered incentives for domestic firms to reorganize their own business in light of new conditions characterizing international trade, and hence, although the results document the importance of competition for understanding the observed change in financial leverage, we can not single out rival entry as the only possible channel. Furthermore, the lack of significance for both cash holdings and operating leverage is consistent with our above finding of an baseline effect on financial leverage that cannot be explained by the corresponding effect on operating leverage, and further support asymmetries in the use of financial leverage and cash holdings as instruments used to tackle the change in trade policy uncertainty.

## 3.5 Further Analysis

In this section we provide supplemental analyses to investigate the robustness of our main results.

### 3.5.1 Relaxing the Assumption of Parallel Trends

Identification of treatment effects in our main analyses relies on a parallel trend assumption, where a set of time and industry fixed effects captures the non-idiosyncratic variation in outcomes of interest in the absence of China's accession to the WTO, in addition to the set of other control variables where relevant. A common potential issue in studies using natural experiments is whether there could potentially be differences in the change in behavior around the event that is correlated with the degree of treatment but not caused by the event itself, in which case the impact of such factors will be ascribed to the natural experiment under study if they are not accounted for. Examples include macroeconomics shocks that drive corporate policy and have industry-specific impacts, though the concern is of a more general nature. The fact that our analyses uses cross-sectional variation in the NTR gap alleviates many such potential concerns, but the assumption of parallel trends for different levels of treatment is not testable. To further investigate the robustness of our results we therefore relax this assumption in a setting where we allow for common shocks that can influence our outcome variables of interest heterogeneously across industries, following Bai (2009). This setting is general in the sense that it places very few restrictions on the time-series behavior of the common shocks, and is therefor well suited as an extension of our previous analyses.

The results are given in table 8. In Panel A we consider a specification with the treatment effect estimated from the interaction of the post-event indicator variable and the NTR gap, similar to the specifications applied in previous analyses, with the exception that we do not consider other explanatory variables. We note from previous findings that conclusions drawn from the estimated treatment effects are not sensitive to the inclusion of other explanatory variables. Consistent with our main results we find a significant negative effect on (net) leverage and a significant positive effect on cash holdings. From column (2) we find that the introduction of an NTR gap at its average value is associated with a 3 percentage points decrease in market leverage. Based on clolumn (3) we further find that the corresponding impact on industry cash holdings is 2.7 percentage points. Our overall inference about the importance of trade policy uncertainty for corporate policy based on China's accession to the WTO is robust to the inclusion of interactive fixed effects that capture the potentially heterogenous impact of common shocks on different industries, yielding similar economic implications as our main analysis.

To provide further intuition about the estimated factors and their importance for our analysis, we show, in figure 3, examples of the evolution of estimated factors $f_t$ over time and the histogram of estimated factor loadings $\psi_i$. For a complete quantitative understanding of how the estimated unobserved factors $f_t$ impact our dependent variables of interest, we note that they have to be considered in light of the jointly estimated time fixed effects $\delta_t$ and industry fixed effects $\delta_i$. Since our main interest is in the estimated treatment effect and not the fixed effects per se, the emphasis here is on illuminating the properties of the interactive fixed effects in order to understand how they contribute to our analysis beyond the fixed effects already considered in the main analyses. The upper left subfigure shows the estimated $f_t$ over time for market leverage. There are significant differences in $f_t$ over time, for example with a negative trend initiated around the time of the WTO event, supporting the importance of this robustness test complementing our main analyses. Given that $f_t$ enters equation 2 multiplicative with the industry-specific loadings $\psi_i$, we also show the histogram of these loading for market leverage in the upper right subfigure. To illustrate the effect of the interactive fixed effects, we note that the difference in the average factor in the 5 years following China's accession to the WTO compared to the 5 years leading up to the event were -0.37. At the 75th percentile of factor ladings, this would result in a 1.1% reduction in leverage over this 10-year period.

Figure 3 further contains estimated factors and loadings for book leverage, cash, and investment. It is interesting to note a similar pattern for $f_t$ in the leverage and cash regressions. The regressions are estimated independently, so this similarity in the estimated factors is not imposed by the structure of the estimator but rather indicate a similarity in common shocks important for corporate debt and cash policy.

As a further robustness analysis, we also consider a specification where the treatment effect is estimated based on an interaction of the post-event indicator variable and an indicator variable for observations with $NTRgap$ above median, imposing a comparison of the differences in outcomes between the high (above median) NTR gap-group and the low (below median) NTR gap-group. In Panel B we apply the same interactive fixed effects estimator as in Panel A, while in Panel C we show results from the same specification estimated using the generalized difference-in-difference estimator with additive fixed effects described in section 2.3.1. The results in Panel B support our above results, where the group with the highest NTR gap experience, relative to the group the lowest, a 1.7 percentage points reduction in market leverage, 1.8 percentage points reduction in book leverage, 3.7 percentage points increase in cash holdings, and a 5.2 percentage points reduction in net leverage following China's accession to the WTO. All effects are statistically significant. The results in Panel C are qualitatively similar, with corresponding statistically significant effects of -1.7 percentage points for market leverage, -2.4 percentage points for book leverage, 2.1 percentage points for cash holdings, and -4.5 percentage points for net leverage.

### 3.5.2 Firm-level Analysis

We further conduct our main analyses at the firm level, with results given in Table 9. In Panel A we provide firm-level regression estimates from the main difference-in-differences estimator applied on the full 1970 - 2017 sample, while in Panel B we restrict the sample period to 1990 - 2010 where the potential confounding impact of China's trade policy shift in the early 1980's should not be a concern. Focusing on the 1990 - 2010 sample period, our main inference from the firm-level analysis is consistent with the previous results from the industry-level analysis. In particular, we find that China's accession to the WTO induced a significant reduction in firm leverage, albeit with an only marginally significant effect on book leverage with a t-statistic of -1.95, and a significant increase in firm cash holdings. The economic significance is similar to our industry-level results. Introducing an NTR gap equal to its average value is associated with a 2.9 percentage points decrease in market leverage and a 2.5 percentage points decrease in book leverage, establishing an economically significant effect also for the firm-level analysis. We do not find robust evidence in favor of an impact on other firm characteristics.

#### 3.5.3 Regression Specification

In table 10 we extend our baseline analysis in tables 2 and 4 by adding more control variables, following Pierce and Schott (2016), that could potentially be counfounding factors with the WTO event. In Panel A we replicate our main results using only the sample for which we have available data on the additional control variables to be included in the baseline regression. The results are similar to our main findings, with a significant decrease in leverage and increase in cash holdings and dividends, the latter of a somewhat larger magnitude for the sample for which additional control variables are available. Introducing the average NTR gap to an industry is associated with a 11% decrease in market leverage compared to the full-sample average, and similarly a 12% decrease in book leverage and a 24% increase in cash holdings.

In panels B and C we introduce additional control variables. In Panel B we also include as control variables $\Delta CIT$, the change in Chinese import tariffs; $MFAexp$, Multi Fiber Arrangement quota rates; and $NTR$, the tariff rate applicable under Normal Trade Relations status. In Panel C we further include $ATP$, an indicator for advanced technology products; the contractability measure $Contract$ from Nunn (2007); $Union$, the unionization rate; and skill intensity $NPEMP$. In addition, we follow Pierce and Schott (2016) and include $capInt$, an industry's capital intensity, among these control variables. The overall interpretation of our results is that we find results in panels B and C that are similar to that of Panel A and in line with our main findings.

Having established how average investment and financing policy changed following the reduction in trade policy uncertainty stemming from China's accession to the WTO, we now turn to the question of the effect on the interrelations between investment and financing policy on the on hand and labor policy on the other.

# 4 The Interaction between Labor and Firm Investment and Financing

Our results on the impact of China's accession to the WTO on corporate investment and financing policy complement those of Pierce and Schott (2016) on the impact on employment. In this section, we investigate the interaction between these effects. We first document that the employment effect is present in our data, too. Specifically, since we use Compustat, and measure employment by the number of employees in a firm as reported there, whereas Pierce and Schott (2016) use Census data, we follow their approach and establish the employment impact in our data, before turning to the analysis of the interaction with the impact on the investment and financing variables.

In Panel A of Table 11 we show results for industry-level employment using the generalized difference-in-differences estimator described in section 2.3. In columns (1) - (3), the dependent variable is the natural logarithm of the industry-year average value of employment, while in columns (4) - (6) the dependent variable is the ratio of employees to the book values of assets. We find a significant negative impact on firm employment. Based on the full-sample estimates from column (2), the introduction of the average NTR gap would be associated with an approximately 14% decrease in employment. Similarly, based on column (5) we find a similar 21% decrease in the ratio of employees to assets, establishing that firms also became more capital intensive following China's accession to the WTO.

In Panel B of Table 11 we perform the same analysis at the firm level. Unlike the industry-level analysis, we only find a significant effect on the employee-to-asset ratio. The estimated coefficients imply effects of similar magnitude as the industry level results.

In addition to investigating firm investment and financing decisions, our second contribution is to analyze the interrelations between investment and financing decisions on the one hand and employment on the other, and in particular how these relations change as a consequence of China's accession to the WTO. In particular, we test whether the correlation between firm employment and investment and financing also changed in light of the reduced policy uncertainty following the WTO event. In Panel A of Table 12 we show full-sample estimates of how the correlation between the employee-to-asset ratio and other firm characteristics changed following the WTO event, while in Panel B we restrict the sample to the 1990 - 2010 period. In particular, we estimate hierarchical models, as described in Section 2.3.3, where we include a difference-in-differences term capturing the impact of China's accession to the WTO on the coefficient characterizing the mapping between firm characteristics and employee intensity measured as the number of employees ($Empl$) to the book value of total assets ($TA$). In columns (1) and (2) of Panel A of Table 12 we investigate the impact of the WTO event on the relation between firm leverage and employee intensity. The main estimated difference-in-differences effect of interest is given by $\alpha_1$. For market leverage we find a significant effect of -0.052 on the associated coefficient in a regression with the employee intensity as the dependent variable, meaning that at the average NTR gap, the regression coefficient would be reduced by about 0.017. This is not only statistically significant but of economic importance, representing a 90% reduction compared to the associated pre-event coefficient. We also find a robust negative effect when using book values to measure leverage, as well as significant effects on the relation between both market and book leverage and employee intensity when restricting the sample to the 1990 - 2010 period, and conclude that firms who chose to reduce their employee-intensity relatively less following China's accession to the WTO at the same time to a larger degree chose to have lower leverage, i.e., managing the potential risk of a larger employee intensity with lower financial leverage. Though we do not have a model framework through which we can quantify the implications of these findings, these effects support an interpretation of the event where investment and financing policies give rise to hedging opportunities in their joint implementation with labor decisions.

In column 3 of Panel A of Table 12 we present results with cash holdings as the dependent variable. The difference-in-differences effect on the regression coefficient characterizing the mapping from cash holdings to employee intensity is 0.053 and statistically significant, representing a a substantial increase in the sensitivity of the employee intensity to cash holdings. However, when using the restricted 1990 - 2010 sample for estimation, we do not find any such effect.

We also find that the relation between investment and the employee intensity was impacted by China's accession to the WTO. From column 5 of Panel A of Table 12 we find a statistically significant coefficient of -0.236 on the interaction between the post-event indicator variable and the NTR gap. The higher the NTR gap, the stronger was the tendency for firms that chose to reduce the number of employees relatively less compared to the total assets of the firm to also invest less. At the mean NTR gap, the reduction in the regression coefficient is equal to 94% of its pre-event value. Again, we investigate the sensitivity of this finding to the sample period in Panel B of Table 12, and find that the impact on the sensitivity of employment intensity to investment is also negative and significant when using the 1990 - 2010 period.

Overall, we find that there are significant changes in the relations between investment and financing on the one hand and employment on the other following China's accession to the WTO. Using a hierarchical model, we find that there is a significant negative difference-in-differences effect on the coefficients mapping both investment and leverage to employee intensity.

## 5 Conclusion

We find that trade policy uncertainty is a significant determinant of corporate policy. We apply a generalized difference-in-differences estimator based on variation in how China's accession to the WTO lowered uncertainty about trade policy in terms of tariffs rates applicable to goods imported from China to the U.S. Manufacturing firms in industries where China's accession to the WTO had a more significant impact on trade policy uncertainty responded by lowering their leverage and increasing their cash holdings compared to industries that experienced a less significant change in trade policy uncertainty. The nature of offshoring activities and the intensity of product market competition are both important mechanisms underlying these corporate policy responses. We also find a decreased sensitivity of employment intensity to both investment and leverage, where firms that remained relatively more labor intensive, after the overall decline in both employment and labor intensity, at the same time invested comparatively less and chose lower leverage ratios. This effect on the relation between investment and financing on the one hand and employment on the other demonstrates that firms actively used their joint labor, investment, and financing policies to face the new environment.

## Appendix I: Variable Definitions

| **Variable** | **Definition** |
|---|---|
| $MLeverage$ | Market leverage: $(dlc + dltt)/(dlc + dltt + csho * prcc\_f)$ |
| $BLeverage$ | Book leverage: $(dlc + dltt)/at$ |
| $Cash$ | Cash holding: $che/at$ |
| $NetLev$ | Net leverage: $(dlc + dltt - che)/at$ |
| $Div$ | Dividend:$(dvc + dvp)/at$ |
| $SR$ | Share repurchase: $prstkc/at$ |
| $EI$ | Equity issuance: $(sstk)/at$ |
| $Inv$ | Investment: $capx/at$ |
| $After$ | Dummy variable for post-event period. |
| $Profitability$ | Profitability: $ebitda/at$ |
| $MB$ | Market-to-book ratio: $(csho * prcc_f + at - (seq + txditc - pstk)/at$, $pstkrv$ replaces missing $pstk$ and $pstkl$ replaces missing $pstkrv$. |
| $lnSales$ | Natural logarithm of sales ($sale$). |
| $Empl$ | The number of employees in a firm in thousands ($emp$). |
| $NTR$ | Import tariff rate associated with Normal Trade Relations status. |
| $NTRgap$ | Industry-average NTR gap (Differencte in tariff rate without versus with Normal Trade Relations status). |
| $\Delta CIT$ | Industry-level change in Chinese import tariffs. |
| $ATP$ | Industry indicator variable for advanced technology products. |
| $MFAexp$ | Industry import-weighted Multi Fiber Arrangement quota rates. |
| $Contract$ | Contractability, see Nunn (2007). |
| $Union$ | Industry unionization rate. |
| $NPEMP$ | Industry skill intensity. |
| $capInt$ | Industry capital intensity. |
| $InputAO$ | The 1999 industry-level average number of mentions of inputs purchased from China in cases where firms also mention owning assets in China, calculated based on data from Hoberg and Moon (2019, 2017). |
| $InputNAO$ | The 1999 industry-level average number of mentions of inputs purchased from China in cases where firms also do not mention owning assets in China, calculated based on data from Hoberg and Moon (2019, 2017). |

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**Table 1: Summary Statistics**

This table contains summary statistics for the main sample used in our study. The data and sample selection are described in section 2.1, while variable definitions are given in Appendix I. S.D., p25, p50, and p75 represents the standard deviation, 25th percentile, 50th percentile, and 75th percentile, respectively. Panel A contains summary statistics for variables whose least abstract level of variation is at the firm-year level, while panels B and C contain summary statistics for corresponding variation at the industry and industry-year, respectively.

| **Panel A: Firm-year** | Obs. | Mean | S.D. | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| Assets | 43088 | 1523 | 3845 | 51 | 217 | 1138 |
| Sales | 43088 | 1404 | 2852 | 64 | 270 | 1257 |
| $Empl$ | 37173 | 76.863 | 82.624 | 25.3 | 52.7 | 100 |
| Market Leverage | 43088 | .257 | .211 | .077 | .217 | .399 |
| Book Leverage | 43088 | .223 | .155 | .098 | .219 | .326 |
| Cash | 43088 | .124 | .15 | .026 | .067 | .163 |
| Dividends | 43022 | .015 | .028 | 0 | .009 | .023 |
| Profitability | 43088 | .116 | .136 | .081 | .133 | .182 |
| Tangibility | 43088 | .274 | .15 | .16 | .256 | .367 |
| MB | 43088 | 1.491 | .948 | .94 | 1.211 | 1.693 |
| Investment | 42792 | .055 | .045 | .025 | .044 | .072 |
| $Empl/at$ | 42355 | .017 | .018 | .004 | .01 | .023 |

| **Panel B: Industry** | Obs. | Mean | S.D. | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| $NTRgap$ | 369 | .324 | .143 | .229 | .337 | .4 |
| $\Delta CIT$ | 95 | -.179 | .149 | -.26 | -.14 | -.069 |
| $ATP$ | 369 | .041 | .198 | 0 | 0 | 0 |
| $Contract$ | 369 | .511 | .217 | .346 | .503 | .693 |
| $InputAO$ | 226 | .397 | .673 | 0 | 0 | .6 |
| $InputNAO$ | 226 | .07 | .194 | 0 | 0 | 0 |

| **Panel C: Industry-year** | Obs. | Mean | S.D. | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| $NTRrate$ | 4233 | .044 | .049 | .016 | .034 | .054 |
| $MFAexp$ | 4356 | 0 | 0 | 0 | 0 | 0 |
| $Union$ | 5922 | 18.98 | 11.41 | 10.3 | 17.1 | 24.7 |
| $NPEMP$ | 9240 | -1.32 | .41 | -1.59 | -1.32 | -1.03 |
| $CapInt$ | 9241 | 4.17 | .90 | 3.55 | 4.08 | 4.71 |

## Table 2: Industry Leverage

This table contains estimates of the effect of China's accession to the WTO on average leverage in U.S. manufacturing industries, using the estimator presented in section 2.3.1 and the sample described in section 2.1. Column headers define the dependent variable and sample period used for the estimation. The dependent variable is the average market leverage ($MLeverage$) for an industry-year in columns (1) through (5), and the average book ($BLeverage$) leverage for an industry-year in columns (6) through (10). Columns (5) and (10) show results estimated for a shorter sample period (1990 - 2010) compared to the main sample (1970 - 2018) used in the other specifications. The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{MLeverage}_{j,t}$ is the average market leverage ($MLeverage$) for industry $j$ at the end of year $t$. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| | (1) Market Leverage (1970-2017) | (2) Market Leverage (1970-2017) | (3) Market Leverage (1970-2017) | (4) Market Leverage (1970-2017) | (5) Market Leverage (1990-2010) | (6) Book Leverage (1970-2017) | (7) Book Leverage (1970-2017) | (8) Book Leverage (1970-2017) | (9) Book Leverage (1970-2017) | (10) Book Leverage (1990-2010) |
|---|---|---|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.096*** | -0.105*** | -0.121*** | -0.111*** | -0.096*** | -0.118*** | -0.131*** | -0.132*** | -0.126*** | -0.093*** |
| | (-4.05) | (-4.86) | (-5.79) | (-5.66) | (-3.45) | (-6.14) | (-7.07) | (-7.17) | (-7.48) | (-4.10) |
| $After$ | -0.054*** | -0.027*** | | | | 0.019*** | 0.012* | | | |
| | (-6.54) | (-3.59) | | | | (2.82) | (1.78) | | | |
| $NTRgap$ | -0.090*** | 0.015 | 0.029** | | | -0.049*** | 0.040*** | 0.041*** | | |
| | (-6.49) | (1.16) | (2.36) | | | (-5.19) | (4.14) | (4.32) | | |
| $\overline{Profitability}$ | | -0.399*** | -0.530*** | -0.514*** | -0.409*** | | -0.205*** | -0.213*** | -0.255*** | -0.223*** |
| | | (-15.44) | (-18.75) | (-17.45) | (-9.76) | | (-9.43) | (-9.13) | (-9.90) | (-5.49) |
| $\overline{Tangibility}$ | | 0.191*** | 0.186*** | 0.104*** | 0.073** | | 0.149*** | 0.148*** | 0.069*** | 0.060** |
| | | (14.15) | (14.04) | (4.96) | (2.17) | | (13.29) | (13.18) | (3.89) | (2.12) |
| $\overline{MB}$ | | -0.111*** | -0.099*** | -0.077*** | -0.072*** | | -0.016*** | -0.018*** | -0.011*** | -0.021*** |
| | | (-36.54) | (-30.95) | (-24.15) | (-15.46) | | (-7.07) | (-7.21) | (-3.75) | (-5.17) |
| $\overline{log(Sales)}$ | | 0.012*** | 0.018*** | 0.020*** | 0.022*** | | 0.018*** | 0.018*** | 0.018*** | 0.022*** |
| | | (11.49) | (16.00) | (12.18) | (8.89) | | (20.08) | (18.43) | (12.77) | (10.46) |
| Year FE | No | No | Yes | Yes | Yes | No | No | Yes | Yes | Yes |
| Industry FE | No | No | No | Yes | Yes | No | No | No | Yes | Yes |
| Observations | 10781 | 10781 | 10781 | 10781 | 4664 | 10781 | 10781 | 10781 | 10781 | 4664 |
| $R^2$ | 0.067 | 0.291 | 0.355 | 0.545 | 0.596 | 0.019 | 0.103 | 0.120 | 0.401 | 0.565 |

**Table 3: Industry Cash and Net Leverage**

This table contains estimates of the effect of China's accession to the WTO on average cash and net leverage in U.S. manufacturing industries, using the estimator presented in section 2.3.1 and the sample described in section 2.1. Column headers define the dependent variable and sample period used for the estimation. The dependent variable is the average cash holdings for an industry-year in columns (1) through (5), and the average (book) net debt for an industry-year in columns (6) through (10). Columns (5) and (10) show results estimated for a shorter sample period (1990 - 2010) compared to the main sample (1970 - 2018) used in the other specifications. The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{MLeverage}_{j,t}$ is the average market leverage ($MLeverage$) for industry $j$ at the end of year $t$. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| | (1) Cash Holdings (1970-2017) | (2) Cash Holdings (1970-2017) | (3) Cash Holdings (1970-2017) | (4) Cash Holdings (1970-2017) | (5) Cash Holdings (1990-2010) | (6) Net Leverage (1970-2017) | (7) Net Leverage (1970-2017) | (8) Net Leverage (1970-2017) | (9) Net Leverage (1970-2017) | (10) Net Leverage (1990-2010) |
|---|---|---|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | 0.101*** | 0.086*** | 0.087*** | 0.079*** | 0.122*** | -0.220*** | -0.217*** | -0.218*** | -0.205*** | -0.215*** |
| | (7.50) | (6.83) | (6.90) | (6.60) | (7.05) | (-7.89) | (-8.34) | (-8.44) | (-8.64) | (-6.44) |
| $After$ | 0.014*** | 0.005 | | | | 0.006 | 0.007 | | | |
| | (3.07) | (1.23) | | | | (0.58) | (0.71) | | | |
| $NTRgap$ | 0.012* | -0.071*** | -0.071*** | | | -0.060*** | 0.111*** | 0.113*** | | |
| | (1.86) | (-10.89) | (-11.01) | | | (-4.52) | (8.03) | (8.24) | | |
| $NTRgap$ | | | 0.000 | | | | | | | |
| | | | (.) | | | | | | | |
| $\overline{Profitability}$ | | -0.200*** | -0.198*** | -0.059*** | -0.076** | | -0.005 | -0.014 | -0.196*** | -0.147** |
| | | (-10.78) | (-9.97) | (-2.81) | (-2.43) | | (-0.15) | (-0.40) | (-4.91) | (-2.43) |
| $\overline{Tangibility}$ | | -0.151*** | -0.144*** | -0.141*** | -0.143*** | | 0.300*** | 0.292*** | 0.210*** | 0.203*** |
| | | (-19.60) | (-18.63) | (-11.06) | (-6.76) | | (19.04) | (18.58) | (8.26) | (4.88) |
| $\overline{MB}$ | | 0.032*** | 0.036*** | 0.024*** | 0.022*** | | -0.048*** | -0.054*** | -0.035*** | -0.043*** |
| | | (14.07) | (14.02) | (9.20) | (6.28) | | (-13.09) | (-13.15) | (-7.77) | (-6.98) |
| $\overline{log(Sales)}$ | | -0.012*** | -0.012*** | -0.016*** | -0.016*** | | 0.030*** | 0.030*** | 0.034*** | 0.039*** |
| | | (-18.68) | (-17.74) | (-14.11) | (-8.51) | | (23.20) | (21.51) | (16.02) | (11.55) |
| Year FE | No | No | Yes | Yes | Yes | No | No | Yes | Yes | Yes |
| Industry FE | No | No | No | Yes | Yes | No | No | No | Yes | Yes |
| Observations | 10781 | 10781 | 10781 | 10781 | 4664 | 10781 | 10781 | 10781 | 10781 | 4664 |
| $R^2$ | 0.064 | 0.231 | 0.255 | 0.472 | 0.612 | 0.043 | 0.180 | 0.202 | 0.471 | 0.632 |

**Table 4: Other Industry-Level Policies: Investment, Dividends, Stock Repurchases, and Equity Issuance**

This table contains estimates of the effect of China's accession to the WTO on average firm policies in U.S. manufacturing industries, using the estimator presented in section 2.3.1 and the 1970-2017 sample described in section 2.1. The dependent variable is the average investment ($Inv$) for an industry-year in columns (1) and (2), the average dividends paid ($Div$) for an industry-year in columns (3) and (4), the average stock repurchases ($SP$) for an industry-year in columns (5) and (6), and the average equity issuance ($EI$) for an industry-year in columns (7) and (8). The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{MLeverage}_{j,t}$ is the average market leverage ($MLeverage$) for industry $j$ at the end of year $t$. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| **Panel A - Full sample** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | $Inv$ | $Inv$ | $Div$ | $Div$ | $SP$ | $SP$ | $EI$ | $EI$ |
| $After \times NTRgap$ | 0.009** | 0.012*** | 0.013** | 0.014** | 0.005 | 0.007 | -0.005 | -0.009 |
| | (1.99) | (3.15) | (2.09) | (2.19) | (1.07) | (1.48) | (-0.48) | (-0.96) |
| $\overline{Profitability}$ | | 0.100*** | | 0.027*** | | 0.048*** | | -0.126*** |
| | | (16.34) | | (4.38) | | (8.90) | | (-5.42) |
| $\overline{Tangibility}$ | | 0.095*** | | -0.002 | | -0.008 | | 0.028 |
| | | (19.33) | | (-0.57) | | (-1.53) | | (1.52) |
| $\overline{MB}$ | | 0.008*** | | 0.003*** | | 0.009*** | | 0.025*** |
| | | (10.40) | | (7.49) | | (9.31) | | (8.42) |
| $\overline{log(Sales)}$ | | -0.002*** | | 0.002*** | | 0.001*** | | -0.004*** |
| | | (-5.81) | | (5.24) | | (3.37) | | (-4.05) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 10744 | 10744 | 10775 | 10775 | 10422 | 10422 | 10427 | 10427 |
| $R^2$ | 0.386 | 0.475 | 0.204 | 0.221 | 0.179 | 0.222 | 0.127 | 0.164 |

| **Panel B - Sample restricted to the 1990 - 2010 period** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | $Inv$ | $Inv$ | $Div$ | $Div$ | $SP$ | $SP$ | $EI$ | $EI$ |
| $After \times NTRgap$ | 0.002 | 0.003 | 0.018* | 0.018* | 0.003 | 0.007 | 0.008 | -0.000 |
| | (0.31) | (0.48) | (1.78) | (1.82) | (0.40) | (1.15) | (0.47) | (-0.01) |
| Control variables | No | Yes | No | Yes | No | Yes | No | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 4648 | 4648 | 4658 | 4658 | 4574 | 4574 | 4611 | 4611 |
| $R^2$ | 0.429 | 0.528 | 0.205 | 0.209 | 0.226 | 0.260 | 0.147 | 0.177 |

## Table 5: Operating Leverage

This table contains estimates of the effect of China's accession to the WTO on average firm operating leverage in U.S. manufacturing industries, using the estimator presented in section 2.3.1 and the sample described in section 2.1. Column headers define the dependent variable and sample period used for the estimation. The dependent variable is the average operating leverage ($OpLev$) for an industry-year in columns (1) and (2), the residuals ($MLeverage^{*}$) from a regression of average market leverage on average operating leverage in columns (3) and (4), and the the residuals ($BLeverage^{*}$) from a regression of average book leverage on average operating leverage in columns (5) and (6). Columns (1), (3), and (5) show results estimated using the full 1970 - 2017 sample period, while columns (2), (4), and (6) show results estimated using the shorter 1990 - 2010 sample period. The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{MLeverage}_{j,t}$ is the average market leverage ($MLeverage$) for industry $j$ at the end of year $t$. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | $\overline{OpLev}$ | $\overline{OpLev}$ | $\overline{MLeverage}^{*}$ | $\overline{MLeverage}^{*}$ | $\overline{BLeverage}^{*}$ | $\overline{BLeverage}^{*}$ |
| | (1970-2017) | (1990-2010) | (1970-2017) | (1990-2010) | (1970-2017) | (1990-2010) |
| $After \times NTRgap$ | 0.109*** | 0.083*** | -0.090*** | -0.077*** | -0.111*** | -0.081*** |
| | (6.40) | (3.45) | (-4.51) | (-2.72) | (-6.62) | (-3.52) |
| $\overline{Profitability}$ | -0.167*** | -0.158*** | -0.554*** | -0.456*** | -0.285*** | -0.257*** |
| | (-5.09) | (-3.69) | (-18.91) | (-10.66) | (-10.99) | (-6.25) |
| $\overline{Tangibility}$ | -0.110*** | -0.047 | 0.072*** | 0.064* | 0.044** | 0.054* |
| | (-6.02) | (-1.64) | (3.40) | (1.86) | (2.52) | (1.87) |
| $\overline{MB}$ | 0.017*** | 0.012*** | -0.073*** | -0.070*** | -0.007** | -0.019*** |
| | (5.77) | (2.78) | (-22.81) | (-15.50) | (-2.37) | (-4.60) |
| $\overline{log(Sales)}$ | -0.019*** | -0.024*** | 0.015*** | 0.016*** | 0.015*** | 0.019*** |
| | (-12.86) | (-10.21) | (9.03) | (6.30) | (10.29) | (8.33) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 10716 | 4630 | 10716 | 4630 | 10716 | 4630 |
| $R^2$ | 0.643 | 0.715 | 0.527 | 0.567 | 0.386 | 0.540 |

**Table 6: Offshoring**

This table contains estimates of the effect of China's accession to the WTO on firm policies for U.S. manufacturing firms, using the full 1970-2017 sample and the estimator presented in section 2.3.1 implemented as a generalized triple-difference estimator where interaction terms between proxies for offshoring ($InputAO/InputNAO$) and both the post-event indicator variable and the product of the post-event indicator variable and the NTR gap are added. In Panel A, the offshoring variable is calculated as the average number of mentions of inputs purchased from China in cases where firms also mention owning assets in China, while in Panel B the offshoring variable is calculated analogously for cases where there is no mentioning of firms owning assets in China. The dependent variable is the average market leverage for an industry-year in column (1), the average book leverage for an industry-year in column (2), the average cash holdings for an industry-year in column (3), the average operating leverage ($OpLev$) for an industry-year in column (4), the average investment ($Inv$) for an industry-year in column (5), the average dividends paid ($Div$) for an industry-year in columns (6), the average stock repurchases ($SP$) for an industry-year in columns (7), the average equity issuance ($EI$) for an industry-year in columns (8). The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I. Standard errors are clustered at the industry level. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

**Panel A: Average number of mentions of inputs purchased from China when also mentioning owning assets in China**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $OpLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.117*** | -0.138*** | 0.104*** | 0.133*** | 0.010** | 0.009 | 0.012* | -0.010 |
| | (-4.70) | (-6.76) | (6.92) | (5.80) | (2.25) | (0.94) | (1.91) | (-0.83) |
| $After \times NTRgap \times InputAO$ | 0.063** | 0.093*** | -0.011 | -0.071*** | -0.003 | 0.015* | -0.002 | 0.009 |
| | (2.21) | (3.83) | (-0.64) | (-3.03) | (-0.49) | (1.85) | (-0.37) | (0.91) |
| $After \times InputAO$ | -0.030 | -0.011 | -0.027** | 0.020 | 0.004 | -0.000 | 0.001 | -0.007 |
| | (-1.32) | (-0.67) | (-2.21) | (1.20) | (1.42) | (-0.01) | (0.31) | (-0.55) |
| $\overline{Profitability}$ | -0.508*** | -0.238*** | -0.074*** | -0.131*** | 0.104*** | 0.025*** | 0.049*** | -0.125*** |
| | (-15.46) | (-8.92) | (-3.47) | (-3.98) | (17.21) | (3.41) | (7.93) | (-5.35) |
| $\overline{Tangibility}$ | 0.114*** | 0.090*** | -0.149*** | -0.121*** | 0.099*** | -0.003 | -0.009 | 0.033 |
| | (5.11) | (4.85) | (-11.61) | (-6.24) | (19.82) | (-0.89) | (-1.63) | (1.62) |
| $\overline{MB}$ | -0.076*** | -0.010*** | 0.023*** | 0.019*** | 0.007*** | 0.004*** | 0.010*** | 0.026*** |
| | (-23.22) | (-3.24) | (8.81) | (5.66) | (9.37) | (8.39) | (9.98) | (7.84) |
| $\overline{log(Sales)}$ | 0.020*** | 0.017*** | -0.015*** | -0.020*** | -0.002*** | 0.002*** | 0.001*** | -0.003*** |
| | (11.51) | (11.69) | (-12.33) | (-13.14) | (-5.06) | (4.38) | (3.16) | (-3.21) |
| Constant | 0.341*** | 0.231*** | 0.234*** | 0.359*** | 0.008* | -0.015*** | -0.021*** | -0.010 |
| | (11.67) | (9.77) | (14.49) | (16.04) | (1.67) | (-5.03) | (-3.69) | (-1.12) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE$\times InputA$ | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 9227 | 9227 | 9227 | 9173 | 9198 | 9221 | 8948 | 8943 |
| $R^2$ | 0.523 | 0.378 | 0.487 | 0.665 | 0.496 | 0.217 | 0.223 | 0.173 |

## Table 6 continued

| Panel B: Average number of mentions of inputs purchased from China with no mentions of owning assets in China | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $OpLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
| $After \times NTRgap$ | -0.111*** | -0.104*** | 0.113*** | 0.167*** | 0.010** | 0.016* | 0.008 | -0.014 |
| | (-4.66) | (-5.21) | (8.28) | (7.89) | (2.37) | (1.92) | (1.45) | (-1.35) |
| $After \times NTRgap \times InputNAO$ | 0.174* | 0.073 | -0.092** | -0.487*** | -0.007 | -0.002 | 0.023* | 0.053** |
| | (1.71) | (1.17) | (-2.09) | (-7.78) | (-0.59) | (-0.09) | (1.70) | (2.20) |
| $After \times InputNAO$ | -0.079** | -0.050** | 0.025 | 0.186*** | 0.004 | 0.001 | -0.013** | -0.021** |
| | (-2.46) | (-2.16) | (1.40) | (6.75) | (0.93) | (0.27) | (-2.44) | (-2.38) |
| $\overline{Profitability}$ | -0.511*** | -0.242*** | -0.073*** | -0.122*** | 0.105*** | 0.025*** | 0.049*** | -0.125*** |
| | (-15.66) | (-9.07) | (-3.40) | (-3.75) | (17.34) | (3.45) | (7.83) | (-5.34) |
| $\overline{Tangibility}$ | 0.114*** | 0.089*** | -0.149*** | -0.127*** | 0.099*** | -0.002 | -0.009 | 0.034* |
| | (5.15) | (4.83) | (-11.62) | (-6.54) | (19.77) | (-0.57) | (-1.63) | (1.66) |
| $\overline{MB}$ | -0.076*** | -0.009*** | 0.023*** | 0.017*** | 0.007*** | 0.004*** | 0.010*** | 0.026*** |
| | (-23.07) | (-3.03) | (8.57) | (5.12) | (9.25) | (8.02) | (9.89) | (7.91) |
| $\overline{log(Sales)}$ | 0.020*** | 0.017*** | -0.015*** | -0.021*** | -0.002*** | 0.002*** | 0.002*** | -0.003*** |
| | (11.80) | (11.76) | (-12.55) | (-13.73) | (-5.11) | (4.03) | (3.32) | (-3.09) |
| Constant | 0.339*** | 0.227*** | 0.225*** | 0.353*** | 0.007 | -0.015*** | -0.022*** | -0.007 |
| | (11.92) | (10.09) | (14.56) | (17.21) | (1.60) | (-4.92) | (-3.82) | (-0.82) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE$\times Input$ | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 9227 | 9227 | 9227 | 9173 | 9198 | 9221 | 8948 | 8943 |
| $R^2$ | 0.522 | 0.376 | 0.483 | 0.667 | 0.493 | 0.212 | 0.221 | 0.168 |

**Table 7: Competition**

This table contains estimates of the effect of China's accession to the WTO on firm policies for U.S. manufacturing firms, using the full 1970-2017 sample and the estimator presented in section 2.3.1 implemented as a generalized triple-difference estimator where interaction terms between our proxy for competition ($PMC$) - the average ratio of operating income to sales in an industry - and both the post-event indicator variable and the product of the post-event indicator variable and the NTR gap are added. The dependent variable is the average market leverage for an industry-year in column (1), the average book leverage for an industry-year in column (2), the average cash holdings for an industry-year in column (3), the average operating leverage ($OpLev$) for an industry-year in column (4), the average investment ($Inv$) for an industry-year in column (5), the average dividends paid ($Div$) for an industry-year in columns (6), the average stock repurchases ($SP$) for an industry-year in columns (7), the average equity issuance ($EI$) for an industry-year in columns (8). The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I. Standard errors are clustered at the industry level. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $OpLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | 0.032 | 0.058 | 0.058** | 0.164*** | -0.012 | 0.013 | 0.042*** | -0.032 |
| | (0.66) | (1.41) | (2.03) | (3.41) | (-1.29) | (1.11) | (3.66) | (-1.13) |
| $After \times NTRgap \times$ PMC | -0.852** | -1.150*** | 0.370* | -0.506 | 0.177** | 0.020 | -0.243*** | 0.246 |
| | (-2.32) | (-3.63) | (1.68) | (-1.50) | (2.38) | (0.31) | (-2.80) | (1.21) |
| $After \times$ PMC | 0.529** | 0.307 | -0.325* | 0.199 | -0.048 | -0.031 | 0.130** | 0.212 |
| | (1.99) | (1.29) | (-1.79) | (0.80) | (-0.99) | (-1.10) | (2.07) | (1.15) |
| $\overline{Profitability}$ | -0.511*** | -0.246*** | -0.060*** | -0.123*** | 0.107*** | 0.034*** | 0.049*** | -0.122*** |
| | (-15.38) | (-9.16) | (-2.91) | (-3.60) | (16.66) | (9.60) | (7.53) | (-5.08) |
| $\overline{Tangibility}$ | 0.153*** | 0.119*** | -0.167*** | -0.110*** | 0.094*** | -0.001 | -0.010* | 0.035 |
| | (6.46) | (6.12) | (-11.88) | (-5.06) | (17.18) | (-0.24) | (-1.65) | (1.49) |
| $\overline{MB}$ | -0.079*** | -0.014*** | 0.025*** | 0.015*** | 0.007*** | 0.004*** | 0.009*** | 0.026*** |
| | (-23.59) | (-4.63) | (9.04) | (4.54) | (8.84) | (8.22) | (8.92) | (7.27) |
| $\overline{log(Sales)}$ | 0.020*** | 0.017*** | -0.015*** | -0.019*** | -0.002*** | 0.001*** | 0.001*** | -0.003*** |
| | (11.79) | (11.87) | (-12.20) | (-11.58) | (-4.40) | (4.15) | (2.71) | (-3.00) |
| Constant | -0.234 | -0.849*** | 0.545*** | 0.922*** | 0.104* | 0.039 | 0.081 | 0.324 |
| | (-0.71) | (-3.12) | (2.63) | (3.05) | (1.87) | (1.39) | (0.91) | (1.17) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE$\times PMC$ | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 8627 | 8627 | 8627 | 8592 | 8600 | 8622 | 8376 | 8371 |
| $R^2$ | 0.535 | 0.396 | 0.494 | 0.677 | 0.495 | 0.269 | 0.227 | 0.183 |

### Table 8: Interactive Fixed Effects

This table contains estimates of the effect of China's accession to the WTO on firm policies for U.S. manufacturing firms, using the full 1970-2017 sample. In panels (A) and (C) we show estimates obtained using the interactive fixed effects estimator presented in section 2.3.2, while in Panel C we show results from the estimator presented in section 2.3.1. The dependent variable is the average market leverage for an industry-year in column (1), the average book leverage for an industry-year in column (2), the average cash holdings for an industry-year in column (3), the average operating leverage ($OpLev$) for an industry-year in column (4), the average investment ($Inv$) for an industry-year in column (5), the average dividends paid ($Div$) for an industry-year in columns (6), the average stock repurchases ($SP$) for an industry-year in columns (7), the average equity issuance ($EI$) for an industry-year in columns (8). In Panel A, the key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry, while in panels (B) and (C) we consider a similar specification where the $NTRgap$ is replaced by an indicator variable identifying observations with $NTRgap$ above the sample median value. Variable definitions are given in Appendix I. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

**Panel A - Treatment Interaction Based on** $NTRgap$

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $NetLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.093*** | -0.114*** | 0.084*** | -0.182*** | -0.020*** | 0.015*** | 0.007 | 0.007 |
| | (-4.90) | (-4.79) | (4.87) | (-5.41) | (-3.17) | (5.71) | (1.63) | (1.00) |
| Observations | 10254 | 10254 | 10254 | 10254 | 10218 | 10250 | 9936 | 9923 |

**Panel B - Treatment Interaction Based on Indicator Variable for** $NTRgap$ **above median**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $NetLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $After \times HighNTRgap$ | -0.017*** | -0.018** | 0.037*** | -0.052*** | -0.005*** | 0.002*** | 0.001 | 0.005** |
| | (-3.11) | (-2.54) | (7.63) | (-5.44) | (-2.65) | (2.70) | (0.81) | (2.47) |
| Observations 10254 | 10254 | 10254 | 10254 | 10218 | 10250 | 9936 | 9923 | |

**Panel C - Additive Fixed Effects,**
**Treatment Interaction Based on Indicator Variable for** $NTRgap$ **above median**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $NetLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $After \times HighNTRgap$ | -0.017*** | -0.024*** | 0.021*** | -0.045*** | 0.004*** | 0.002* | 0.001 | 0.000 |
| | (-2.98) | (-5.03) | (5.73) | (-6.41) | (3.50) | (1.90) | (0.58) | (0.03) |
| Observations | 10254 | 10254 | 10254 | 10254 | 10218 | 10250 | 9936 | 9923 |
| $R^2$ | 0.443 | 0.352 | 0.417 | 0.416 | 0.386 | 0.227 | 0.176 | 0.127 |

**Table 9: Firm-Level Results**

This table contains estimates of the effect of China's accession to the WTO on firm policies for U.S. manufacturing firms, using a firm-level implementation of the estimator presented in section 2.3.1. Estimates for the 1970-2017 sample, described in section 2.1, are shown in Panel A, while results for the 1990-2010 period are shown in Panel B. The dependent variable is the average market leverage for an industry-year in column (1), the average book leverage for an industry-year in column (2), the average cash holdings for an industry-year in column (3), the average investment ($Inv$) for an industry-year in column (4), the average dividends paid ($Div$) for an industry-year in columns (5), the average stock repurchases ($SP$) for an industry-year in columns (6), the average equity issuance ($EI$) for an industry-year in columns (7). The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I. Standard errors are clustered at the industry level. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

**Panel A - Full sample**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $Inv$ | (5) $Div$ | (6) $SP$ | (7) $EI$ |
|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.089* | -0.096* | 0.160*** | 0.017*** | 0.014* | 0.013** | 0.005 |
| | (-1.85) | (-1.85) | (4.08) | (2.70) | (1.79) | (2.36) | (0.35) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 43088 | 43088 | 43088 | 42792 | 43022 | 40790 | 41300 |
| $R^2$ | 0.363 | 0.191 | 0.391 | 0.329 | 0.122 | 0.111 | 0.162 |

**Panel B - Sample restricted to the 1990 - 2010 period**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $Inv$ | (5) $Div$ | (6) $SP$ | (7) $EI$ |
|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.089** | -0.078* | 0.158*** | 0.009 | 0.013 | 0.013* | 0.011 |
| | (-2.46) | (-1.95) | (4.50) | (1.41) | (1.38) | (1.73) | (0.69) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 17618 | 17618 | 17618 | 17434 | 17560 | 16614 | 17186 |
| $R^2$ | 0.375 | 0.285 | 0.469 | 0.342 | 0.095 | 0.139 | 0.174 |

## Table 10: Additional Control Variables

This table contains estimates of the effect of China's accession to the WTO on average firm policies in U.S. manufacturing industries, using the estimator presented in section 2.3.1 and the 1990-2007 sample for which additional control variables are available. The dependent variable is average market leverage ($MLeverage$) for an industry-year in column (1), average book ($BLeverage$) leverage for an industry-year in column (2), the average cash holdings ($Cash$) for an industry-year in column (3), the average dividends paid ($Div$) for an industry-year in column (4), the average stock repurchases ($SR$) for an industry-year in column (5), the average equity issuance ($EI$) for an industry-year in column (6), and the average investment ($Inv$) for an industry-year in column (7). The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{MLeverage}_{j,t}$ is the average market leverage ($MLeverage$) for industry $j$ at the end of year $t$. Controls refer to inclusion of $\overline{Profitability}$, $\overline{Tangibility}$ ,$\overline{MB}$, and $\overline{lnSales}$ as explanatory variables. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| **Panel A - Main Specification on Robustness Sample** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $Inv$ | (5) $Div$ | (6) $SP$ | (7) $EI$ |
| $After \times NTRgap$ | -0.076** | -0.091*** | 0.113*** | 0.003 | 0.016 | 0.004 | 0.006 |
| | (-2.38) | (-3.53) | (5.32) | (0.54) | (1.15) | (0.59) | (0.27) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3591 | 3591 | 3591 | 3575 | 3585 | 3510 | 3543 |
| $R^2$ | 0.621 | 0.588 | 0.612 | 0.531 | 0.218 | 0.271 | 0.159 |

**Table 10 continued**

| **Panel B - Additional Controls I** | | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | $MLeverage$ | $BLeverage$ | $Cash$ | $Inv$ | $Div$ | $SP$ | $EI$ |
| $After \times NTRgap$ | -0.091*** | -0.080*** | 0.108*** | 0.002 | 0.021* | 0.001 | 0.008 |
| | (-2.90) | (-3.05) | (5.07) | (0.28) | (1.67) | (0.17) | (0.39) |
| $After \times \Delta CIT$ | -0.122*** | -0.131*** | 0.040** | -0.009 | -0.004 | -0.033*** | -0.012 |
| | (-4.22) | (-4.98) | (1.96) | (-1.47) | (-0.32) | (-3.40) | (-0.60) |
| $MFAexp$ | 79.421 | 129.740* | -108.957* | 30.272** | -62.857* | 46.067 | -10.619 |
| | (0.83) | (1.82) | (-1.83) | (1.99) | (-1.84) | (1.22) | (-0.29) |
| $NTRrate$ | -0.239** | -0.032 | -0.020 | -0.001 | 0.020 | -0.008 | 0.014 |
| | (-2.05) | (-0.34) | (-0.30) | (-0.07) | (0.97) | (-0.70) | (0.45) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3712 | 3712 | 3712 | 3696 | 3706 | 3629 | 3664 |
| $R^2$ | 0.624 | 0.584 | 0.612 | 0.536 | 0.220 | 0.267 | 0.159 |

## Table 10 continued

**Panel C - Additional Controls II**

| | (1) *MLeverage* | (2) *BLeverage* | (3) *Cash* | (4) *Inv* | (5) *Div* | (6) *SP* | (7) *EI* |
|---|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.079** | -0.093*** | 0.084*** | 0.003 | 0.030* | 0.000 | 0.021 |
| | (-2.24) | (-3.35) | (3.42) | (0.53) | (1.79) | (0.03) | (0.97) |
| $After \times \Delta CIT$ | -0.090** | -0.079** | -0.018 | -0.020** | -0.011 | -0.029*** | -0.005 |
| | (-2.49) | (-2.50) | (-0.70) | (-2.57) | (-0.59) | (-3.11) | (-0.20) |
| $MFAexp$ | 71.774 | 138.890* | -126.002** | 41.443** | -67.570* | 29.304 | -7.056 |
| | (0.70) | (1.81) | (-2.02) | (2.46) | (-1.93) | (0.77) | (-0.14) |
| $NTRrate$ | 0.189 | 0.258** | -0.099 | 0.028 | 0.062 | 0.027 | 0.127 |
| | (1.17) | (2.22) | (-1.29) | (0.97) | (1.02) | (0.82) | (1.02) |
| $After \times ATP$ | -0.025** | -0.029*** | 0.065*** | 0.009*** | 0.001 | 0.000 | -0.012 |
| | (-2.41) | (-3.17) | (7.91) | (4.16) | (0.20) | (0.05) | (-0.89) |
| $After \times Contract$ | 0.039* | 0.047*** | -0.019 | -0.007 | -0.018 | 0.001 | -0.004 |
| | (1.75) | (2.60) | (-1.26) | (-1.57) | (-1.61) | (0.26) | (-0.15) |
| $Union$ | -0.001 | -0.001 | -0.000 | 0.000 | -0.000 | -0.000** | 0.000 |
| | (-0.77) | (-1.09) | (-1.31) | (1.41) | (-0.87) | (-1.97) | (1.02) |
| $NPEMP$ | 0.011 | -0.009 | -0.008 | 0.005 | -0.008 | -0.010* | 0.002 |
| | (0.57) | (-0.60) | (-0.65) | (1.37) | (-1.26) | (-1.86) | (0.17) |
| $capInt$ | -0.010 | -0.005 | 0.023*** | -0.005** | 0.004 | 0.010** | -0.007 |
| | (-0.92) | (-0.48) | (3.27) | (-2.03) | (0.87) | (2.28) | (-0.77) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3590 | 3590 | 3590 | 3574 | 3584 | 3509 | 3542 |
| $R^2$ | 0.624 | 0.594 | 0.626 | 0.536 | 0.223 | 0.279 | 0.161 |

## Table 11: Employment

This table contains estimates of the effect of China's accession to the WTO on the number of employees in U.S. manufacturing firms, using the estimator presented in section 2.3.1 and the sample described in section 2.1. Panel A contains results for industry-level employment characteristics (based on industry-level averages), while Panel B contains corresponding results at the firm level. Column headers define the dependent variable and sample period used for the estimation. The dependent variable is the natural logarithm of the number of employees in columns (1) - (3), and the number of employees scaled by the book values of assets in columns (4) - (6). Columns (1), (2), (4), and (5) show estimates for the full 1970-2017 sample, while columns (3) and (6) show estimates for the 1990 - 2010 sample period. The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I, and the overline operator denotes industry-year averages, i.e. $\overline{emp/at}_{j,t}$ is the average ratio of employees to assets for industry $j$ at the end of year $t$. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

**Panel A - Industry level**

| | (1)<br>$ln(\overline{emp})$<br>(1970-2017) | (2)<br>$ln(\overline{emp})$<br>(1970-2017) | (3)<br>$ln(\overline{emp})$<br>(1990-2010) | (4)<br>$\overline{emp/at}$<br>(1970-2017) | (5)<br>$\overline{emp/at}$<br>(1970-2017) | (6)<br>$\overline{emp/at}$<br>(1990-2010) |
|---|---|---|---|---|---|---|
| $After \times NTRgap$ | -0.414*** | -0.422*** | -0.542*** | -0.012*** | -0.011*** | -0.003*** |
| | (-4.94) | (-5.02) | (-9.39) | (-10.03) | (-9.98) | (-4.17) |
| $\overline{Profitability}$ | | -0.087 | -0.243*** | | 0.006** | 0.004*** |
| | | (-1.33) | (-2.97) | | (2.51) | (3.47) |
| $\overline{Tangibility}$ | | 0.295*** | 0.287*** | | 0.005*** | 0.005*** |
| | | (5.78) | (4.85) | | (3.55) | (4.21) |
| $\overline{MB}$ | | 0.037*** | 0.021** | | -0.001*** | -0.000** |
| | | (4.46) | (2.55) | | (-3.60) | (-2.10) |
| $\overline{log(Sales)}$ | | 0.015*** | 0.011** | | -0.001*** | -0.001*** |
| | | (3.28) | (2.22) | | (-14.06) | (-13.85) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 9244 | 9244 | 4456 | 10732 | 10732 | 4644 |
| $R^2$ | 0.916 | 0.916 | 0.962 | 0.822 | 0.827 | 0.690 |

## Table 11 continued

**Panel B - Firm level**

| | (1) $ln(emp)$ (1970-2017) | (2) $ln(emp)$ (1970-2017) | (3) $ln(emp)$ (1970-2017) | (4) $emp/at$ (1990-2010) | (5) $emp/at$ (1990-2010) | (6) $emp/at$ (1990-2010) |
|---|---|---|---|---|---|---|
| $After \times NTRgap$ | 0.053 | -0.223 | -0.122 | -0.013** | -0.012** | -0.003** |
| | (0.08) | (-0.97) | (-0.62) | (-2.54) | (-2.46) | (-2.08) |
| $Profitability$ | | -0.564*** | -0.630*** | | 0.004*** | 0.003*** |
| | | (-5.83) | (-5.12) | | (3.30) | (4.62) |
| $Tangibility$ | | 0.769*** | 0.900*** | | 0.004** | 0.006*** |
| | | (7.25) | (6.61) | | (2.55) | (6.09) |
| $MB$ | | 0.018** | 0.012 | | -0.001*** | -0.001*** |
| | | (1.98) | (1.21) | | (-6.18) | (-5.25) |
| $log(Sales)$ | | 0.937*** | 0.916*** | | -0.001*** | -0.001*** |
| | | (171.18) | (111.16) | | (-9.03) | (-9.84) |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 42346 | 42346 | 17352 | 42355 | 42355 | 17357 |
| $R^2$ | 0.241 | 0.925 | 0.917 | 0.690 | 0.696 | 0.373 |

**Table 12: Interactions with Employment**

This table contains estimates of the effect of China's accession to the WTO on the relation between corporate policies and the ratio of the number employees to the book value of assets in U.S. manufacturing industries, using the estimator presented in section 2.3.3 and the sample described in section 2.1. Column headers define the independent variable $(\text{Inv/Fin Pol})_{i,j,t}$ in the following equation

$$\begin{aligned} (Empl/TA)_{i,j,t} &= \beta_0 + \beta_1 \, (\text{Corp. Pol.})_{i,j,t} + \epsilon^I_{i,t} + \epsilon^J_{i,j,t} \\ \beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i &+ \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon^{\beta_1}_{i,t} \end{aligned} \tag{4}$$

The key explanatory variable of interest is the interaction between the post-event indicator variable $After$ and $NTRgap$, the latter measuring the 1999 spread between average tariffs for countries with Normal Trade Relations (NTR) status and non-NTR status in an industry. Variable definitions are given in Appendix I. Standard errors are corrected for heteroskedasticity. $t$-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

**Panel A - Full sample**

| | (1) *MLeverage* | (2) *BLeverage* | (3) *Cash* | (4) *NetLev* | (5) *Inv* | (6) *Div* | (7) *SP* | (8) *EI* |
|---|---|---|---|---|---|---|---|---|
| $\beta_0$ | 0.015*** | 0.018*** | 0.019*** | 0.017*** | 0.016*** | 0.016*** | 0.018*** | 0.017*** |
| | (32.26) | (32.68) | (33.98) | (32.25) | (31.20) | (29.29) | ( 34.17) | (33.27) |
| $\beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon^{\beta_1}_{i,t}$ | | | | | | | | |
| $\alpha_0$ | 0.012*** | 0.003 | 0.011** | 0.005 | 0.064*** | 0.197*** | -0.007 | -0.001 |
| | (4.55) | (0.97) | (2.05) | (1.63) | (4.74) | (4.70) | (-0.55) | (-0.13) |
| $\alpha_1$ | -0.052*** | -0.048*** | 0.053*** | 0.010* | -0.236*** | 0.085* | 0.021 | 0.059*** |
| | (-11.47) | (-9.88) | (5.45) | (1.77) | (-9.62) | (1.93) | (0.57) | (3.46) |
| $\alpha_2$ | -0.027*** | -0.033*** | -0.064*** | -0.027*** | -0.126*** | -0.384*** | -0.100*** | -0.039*** |
| | (-18.09) | (-19.98) | (-18.12) | (-14.43) | (-15.44) | (-23.31) | (-7.48) | (-5.89) |
| $\alpha_3$ | 0.021*** | 0.034*** | -0.030* | 0.021** | 0.054 | -0.006 | -0.041 | -0.004 |
| | (2.74) | (3.24) | (-1.90) | (2.46) | (1.38) | (-0.05) | (-1.10) | (-0.27) |
| Observations | 42355 | 42355 | 42355 | 42355 | 42070 | 42306 | 40169 | 40684 |

## Table 12 continued

**Panel B - Sample restricted to the 1990 - 2010 period**

| | (1) $MLeverage$ | (2) $BLeverage$ | (3) $Cash$ | (4) $NetLev$ | (5) $Inv$ | (6) $Div$ | (7) $SP$ | (8) $EI$ |
|---|---|---|---|---|---|---|---|---|
| $\beta_0$ | 0.008*** | 0.008*** | 0.009*** | 0.008*** | 0.007*** | 0.008*** | 0.08*** | 0.008*** |
| | (30.95) | (29.27) | (34.33) | (32.11) | (29.62) | ( 31.61) | (33.60) | (33.79) |
| $\beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon_{i,t}^{\beta_1}$ | | | | | | | | |
| $\alpha_0$ | 0.002 | 0.001 | 0.000 | 0.002 | 0.018** | 0.006 | 0.002 | -0.004 |
| | (1.35) | (0.50) | (0.01) | (1.32) | (2.40) | (0.30) | (0.34) | (-1.56) |
| $\alpha_1$ | -0.013*** | -0.013*** | 0.000 | 0.007** | -0.069*** | -0.003 | -0.020 | -0.016 |
| | (-4.89) | (-4.71) | (0.06) | (2.26) | (-5.05) | (-0.09) | (-0.91) | (-1.64) |
| $\alpha_2$ | -0.006*** | -0.007*** | -0.012*** | -0.007*** | -0.023*** | -0.068*** | -0.027*** | -0.001 |
| | (-6.54) | (-7.74) | (-5.77) | (-6.62) | (-5.04) | (-5.80) | (-3.39) | (-0.32) |
| $\alpha_3$ | 0.010** | 0.012** | 0.000 | 0.006 | 0.071*** | 0.061 | 0.025 | 0.018** |
| | (2.53) | (2.39) | (0.03) | (1.41) | (3.25) | (1.14) | (1.23) | (2.26) |
| Observations | 17357 | 17357 | 17357 | 17357 | 17181 | 17313 | 16358 | 16927 |

**Figure 1:** Histogram of NTR Gap

This figure shows a histogram of the variable *NTRGap*. See Section 2.1 for a description of our sample.

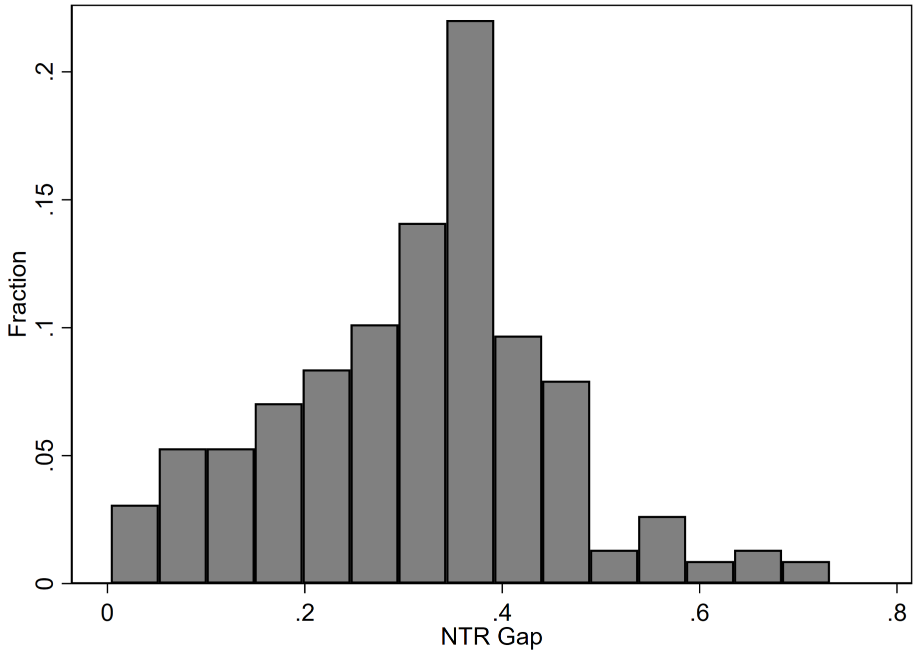

**Figure 2:** Average Firm Characteristics Over Time

This figure shows plots of average levels of firm characteristics over time for observation with above (High) and below (Low) average values of $NTRgap$. The vertical line in each figure identifies the year 2001.

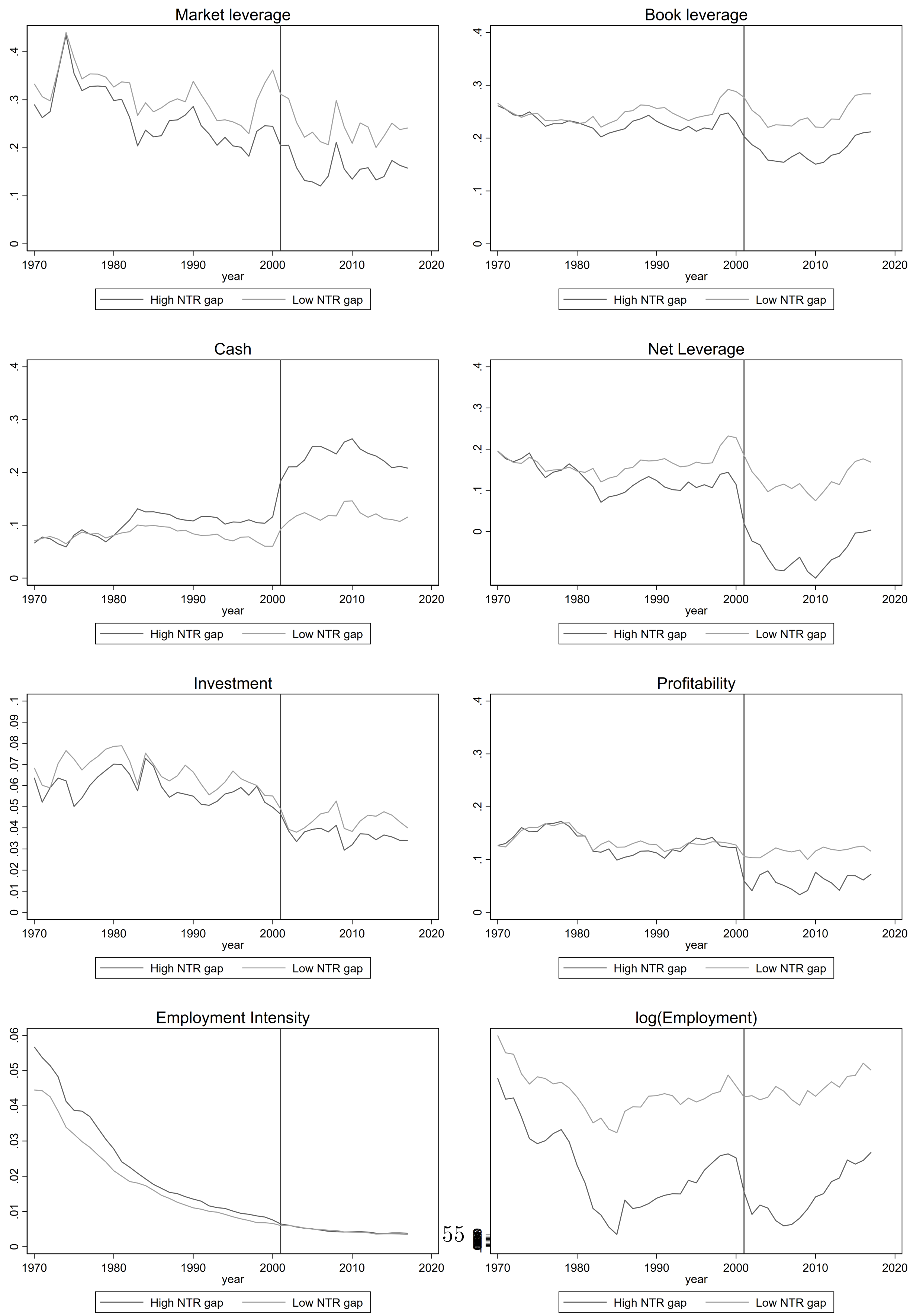

**Figure 3:** Estimated Factors and Factor Loadings

This figure shows plots of factors $f_t$ over time and histograms of factor loadings $\psi_i$ for our dependent variables market leverage, book leverage, cash, and investment. For each of the dependent variables, $f_t$ and $\psi_i$ are estimated based on equation 2:

$$\overline{(\text{Inv/Fin Pol})}_{it} = \theta After_t \times NTRGap_i + \mathbf{F}_t' \Psi_i + \epsilon_{it},$$

where $\mathbf{F}_i = \begin{bmatrix} 1 & \delta_t & f_t \end{bmatrix}'$ and $\mathbf{\Psi}_i = \begin{bmatrix} \delta_i & 1 & \psi_i \end{bmatrix}'$. The estimator is explained in section 2.3.2 and the sample is presented in section 2.1. The vertical line in each time series plot identifies the year 2001.