

China's accession to the WTO and U.S. 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. 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. The tendency of relatively more labor intensive firms to also have lower leverage and lower investment, was stronger after the overall decline in employment and labor intensity than before, demonstrating that firms actively used their *joint* labor, investment and financing policies to face the new production- and product market environments.

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.

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, Molloy, 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 our outcomes of interest. 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. Furthermore, our results are also of independent interest given the prominence of US-China relations and in particular the associated effects on both US manufacturing employment in the 2000s (Pierce and Schott, 2016; Acemoglu, Autor, Dorn, Hanson, and Price, 2016), the role of R&D as a vehicle for U.S. firms to face the increasing competition from Chinese exporters (Hombert and Matray, 2018), and the effects on Chinese manufacturing firms (Brandt, Van Biesebroeck, Wang, and Zhang, 2017).¹

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

¹In an analysis of how foreign direct investment firms can propagate liquidity shocks, Lin and Ye (2017) document how trade credit provision depends on foreign direct investment status and how it changed around China's accession to the WTO.

how the relations between firm employment on the one 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 in response to China's accession to the WTO, U.S. manufacturing firms lowered their leverage and increased their cash holdings, thus choosing to implement more conservative capital structures. The magnitude of the effects are of economic importance. Considering, for example, market leverage, 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 documented 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).

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.² Chen, Harford, and Kamara (2019) use China’s accession to the WTO as exogenous variation in operating leverage to identify 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. Morellec and Zhdanov (2019) provide empirical evidence for their theoretical prediction, based on a real options model with product 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) docu-

²See, 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.

ment 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. More broadly, competition 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, 2014; Hoberg, Phillips, and Prabhala, 2014), and the cost of debt Valta (2012). Though competition is likely an important mechanism underlying the effects we uncover, our focus is on the level of trade policy uncertainty as a determinant of corporate policy. 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)³ 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 in-

³See Matsa (2018) for a review of research on labor and capital structure.

dustries with higher NTR gaps, and further dissect the mechanism underlying the effect on employment using U.S. and Chinese microdata. 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 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.

The rest of the paper is organized as follows. In Section 2 we describe our sample and research design. In Section 3 we present our main analysis of the impact on investment and financing policies, while in Section 4 we provide evidence on the interaction between the effects on employment and firm investment and financing policy. Section 5 concludes.

2 Data and Empirical Methods

2.1 Sample

Data on the NTR tariff gap (Pierce and Schott, 2016; Feenstra, Romalis, and Schott, 2002) is obtained from Peter Schott’s webpage⁴. In order to merge the NTR gap data with our 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 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 firm accounting data are from Compustat, and historical SIC codes from CRSP.

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. firm financial policies. In particular, $NTRgap$ is calculated

⁴“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.

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 dummy 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.

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 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 θ in the regression

$$\begin{aligned} \overline{(\text{Inv/Fin Pol})}_{it} = & \theta \text{After}_t \times \text{NTRGap}_i + \text{After}_t \times \mathbf{X}'_i \gamma \\ & + \mathbf{Z}'_{it} \lambda + \delta_t + \delta_i + \alpha + \epsilon_{it}, \end{aligned} \tag{1}$$

where $\overline{(\text{Inv/Fin Pol})}_{it}$ 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 (industry, firm), \mathbf{Z} are time-varying characteristics (industry, firm), δ_t is a time fixed effect, δ_i is an industry fixed effect, α is a constant term, and ϵ_{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 the $NTRGap_i$ measures that 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 θ on the interaction between $After_t$ and $\times NTRGap_i$ measures the effect of the WTO event on the outcome $\overline{(Inv/Fin Pol)}_{it}$ under study.

2.3.2 The Interaction Between Labor and Investment and Financing

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 investment/financing policies by a regression with employee intensity as the dependent variable and the respective investment/financing policy as the independent variables, 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:

$$\begin{aligned}
(Empl/TA)_{i,j,t} &= \beta_0 + \beta_1 (Inv/Fin Pol)_{i,j,t} + \epsilon_{i,t}^I + \epsilon_{i,j,t}^J \\
\beta_1 &= \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon_{i,t}^{\beta_1}
\end{aligned} \tag{2}$$

Our main interest is in the coefficient β_1 that characterizes the mapping from $(Inv/Fin Pol)_{i,j,t}$ to $(Empl/TA)_{i,j,t}$, and the hierarchical setup allows us to let this regression coefficient be a function of observable characteristics, and in particular the post-event dummy $After_t$, the pre-event NTR gap $NTRGap_i$, and their interaction, forming a difference-in-differences specification for the regression coefficient β_1 .

3 The effect on firm financial policy

3.1 Main Results

Table 2 contains our main results for the effect of China's accession to the WTO on leverage. The main coefficient of interest is the coefficient θ on the variable $After_t \times NTRGap_i$, measuring how the response to the WTO event depends on tariff increases that would results from a failure to maintain NTR status. A negative effect (θ) is consistent with our hypothesis that a decrease in trade policy uncertainty that intensifies competition and makes offshoring easier induces firms to choose more conservative financial structures. 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. Within each set of results for a given dependent variables, we show different specifications adding standard control variables, year

fixed effects and industry fixed effects. The specification in column (1) uses the post-event dummy 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 3.2 we also 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 demonstrates 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 new state characterizing 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 firm 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 dummy, 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 average cash holdings in the sample. 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 here 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 increased 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 the next section 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.

3.2 Further Analysis

In this section we provide supplemental analyses to our results presented in section 3.1 that investigate the robustness of our main results.

3.2.1 Firm-level Analysis

We conduct our main analyses from above at the firm level, with results given in Table 5. 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.

3.2.2 Regression Specification

In table 6 we extend our baseline analysis in tables 2 and 4, adding more control variables, following (Pierce and Schott, 2016), that could potentially be confounding factors with the WTO event. The data is available for the sample period of Pierce and Schott (2016), so 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 ΔCIT , 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 from section 3

Having established how average firm investment and financing characteristics 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 these investment and financing policies on the one hand and labor policies on the other.

4 The interaction between employment and firm investment and financing policy

Our results on the impact of China’s accession to the WTO on corporate policy variables 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 7 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 7 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 8 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 2.3.2, where we include a difference-in-differences term measuring 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 8 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 α_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 8 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 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 8 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 8, 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 effects on 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. 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
<i>MLeverage</i>	Market leverage: $(dlc + dltt)/(dlc + dltt + csho * prcc_f)$
<i>BLeverage</i>	Book leverage: $(dlc + dltt)/at$
<i>Cash</i>	Cash holding: che/at
<i>NetLev</i>	Net leverage: $(dlc + dltt - che)/at$
<i>Div</i>	Dividend: $(dvc + dvp)/at$
<i>SR</i>	Share repurchase: $prstk/at$
<i>EI</i>	Equity issuance: $(sstk)/at$
<i>Inv</i>	Investment: $capx/at$
<i>After</i>	Dummy variable for post-event period.
<i>Profitability</i>	Profitability: $ebitda/at$
<i>MB</i>	Market-to-book ratio: $(csho * prcc_f + at - (seq + txditc - pstk))/at$, $pstkrv$ replaces missing $pstk$ and $pstkl$ replaces missing $pstkrv$.
<i>lnSales</i>	Natural logarithm of sales ($sale$).
<i>Empl</i>	The number of employees in a firm in thousands (emp).
<i>NTR</i>	Import tariff rate associated with Normal Trade Relations status.
<i>NTRgap</i>	Industry-average NTR gap (Difference in tariff rate without versus with Normal Trade Relations status).
ΔCIT	Industry-level change in Chinese import tariffs.
<i>ATP</i>	Industry indicator variable for advanced technology products.
<i>MFAexp</i>	Industry import-weighted Multi Fiber Arrangement quota rates.
<i>Contract</i>	Contractability, see Nunn (2007).
<i>Union</i>	Industry unionization rate.
<i>NPEMP</i>	Industry skill intensity.
<i>capInt</i>	Industry capital intensity.

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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
<i>Empl</i>	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
<i>Empl/at</i>	42355	.017	.018	.004	.01	.023
Panel B: Industry	Obs.	Mean	S.D.	p25	p50	p75
<i>NTRgap</i>	369	.324	.143	.229	.337	.4
ΔCIT	95	-.179	.149	-.26	-.14	-.069
<i>ATP</i>	369	.041	.198	0	0	0
<i>Contract</i>	369	.511	.217	.346	.503	.693
Panel C: Industry-year	Obs.	Mean	S.D.	p25	p50	p75
<i>NTRrate</i>	4233	.044	.049	.016	.034	.054
<i>MFAexp</i>	4356	0	0	0	0	0
<i>Union</i>	5922	18.98	11.41	10.3	17.1	24.7
<i>NPEMP</i>	9240	-1.32	.41	-1.59	-1.32	-1.03
<i>CapInt</i>	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 firm leverage in U.S. manufacturing industries, using the estimator presented in section 2.3 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 dummy *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)
<i>After</i> × <i>NTRgap</i>	-0.096*** (-4.05)	-0.105*** (-4.86)	-0.121*** (-5.79)	-0.111*** (-5.66)	-0.096*** (-3.45)	-0.118*** (-6.14)	-0.131*** (-7.07)	-0.132*** (-7.17)	-0.126*** (-7.48)	-0.093*** (-4.10)
<i>After</i>	-0.054*** (-6.54)	-0.027*** (-3.59)				0.019*** (2.82)	0.012* (1.78)			
<i>NTRgap</i>	-0.090*** (-6.49)	0.015 (1.16)	0.029** (2.36)			-0.049*** (-5.19)	0.040*** (4.14)	0.041*** (4.32)		
$\overline{Profitability}$		-0.399*** (-15.44)	-0.530*** (-18.75)	-0.514*** (-17.45)	-0.409*** (-9.76)		-0.205*** (-9.43)	-0.213*** (-9.13)	-0.255*** (-9.90)	-0.223*** (-5.49)
$\overline{Tangibility}$		0.191*** (14.15)	0.186*** (14.04)	0.104*** (4.96)	0.073** (2.17)		0.149*** (13.29)	0.148*** (13.18)	0.069*** (3.89)	0.060** (2.12)
\overline{MB}		-0.111*** (-36.54)	-0.099*** (-30.95)	-0.077*** (-24.15)	-0.072*** (-15.46)		-0.016*** (-7.07)	-0.018*** (-7.21)	-0.011*** (-3.75)	-0.021*** (-5.17)
$\overline{\log(Sales)}$		0.012*** (11.49)	0.018*** (16.00)	0.020*** (12.18)	0.022*** (8.89)		0.018*** (20.08)	0.018*** (18.43)	0.018*** (12.77)	0.022*** (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 firm leverage in U.S. manufacturing industries, using the estimator presented in section 2.3 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 dummy *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)
<i>After</i> \times <i>NTRgap</i>	0.101*** (7.50)	0.086*** (6.83)	0.087*** (6.90)	0.079*** (6.60)	0.122*** (7.05)	-0.220*** (-7.89)	-0.217*** (-8.34)	-0.218*** (-8.44)	-0.205*** (-8.64)	-0.215*** (-6.44)
<i>After</i>	0.014*** (3.07)	0.005 (1.23)				0.006 (0.58)	0.007 (0.71)			
<i>NTRgap</i>	0.012* (1.86)	-0.071*** (-10.89)	-0.071*** (-11.01)			-0.060*** (-4.52)	0.111*** (8.03)	0.113*** (8.24)		
<i>NTRgap</i>			0.000 (.)							
$\overline{Profitability}$		-0.200*** (-10.78)	-0.198*** (-9.97)	-0.059*** (-2.81)	-0.076** (-2.43)		-0.005 (-0.15)	-0.014 (-0.40)	-0.196*** (-4.91)	-0.147** (-2.43)
$\overline{Tangibility}$		-0.151*** (-19.60)	-0.144*** (-18.63)	-0.141*** (-11.06)	-0.143*** (-6.76)		0.300*** (19.04)	0.292*** (18.58)	0.210*** (8.26)	0.203*** (4.88)
\overline{MB}		0.032*** (14.07)	0.036*** (14.02)	0.024*** (9.20)	0.022*** (6.28)		-0.048*** (-13.09)	-0.054*** (-13.15)	-0.035*** (-7.77)	-0.043*** (-6.98)
$\overline{\log(Sales)}$		-0.012*** (-18.68)	-0.012*** (-17.74)	-0.016*** (-14.11)	-0.016*** (-8.51)		0.030*** (23.20)	0.030*** (21.51)	0.034*** (16.02)	0.039*** (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 and the 1970-2017 sample described in section 2.1. The dependent variable is the average cash holdings (*Cash*) 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), the average equity issuance (*EI*) for an industry-year in columns (7) and (8), and the average investment (*Inv*) for an industry-year in columns (9) and (10). The key explanatory variable of interest is the interaction between the post-event dummy *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) <i>Inv</i>	(2) <i>Inv</i>	(3) <i>Div</i>	(4) <i>Div</i>	(5) <i>SP</i>	(6) <i>SP</i>	(7) <i>EI</i>	(8) <i>EI</i>
<i>After</i> × <i>NTRgap</i>	0.009** (1.99)	0.012*** (3.15)	0.013** (2.09)	0.014** (2.19)	0.005 (1.07)	0.007 (1.48)	-0.005 (-0.48)	-0.009 (-0.96)
$\overline{Profitability}$		0.100*** (16.34)		0.027*** (4.38)		0.048*** (8.90)		-0.126*** (-5.42)
$\overline{Tangibility}$		0.095*** (19.33)		-0.002 (-0.57)		-0.008 (-1.53)		0.028 (1.52)
\overline{MB}		0.008*** (10.40)		0.003*** (7.49)		0.009*** (9.31)		0.025*** (8.42)
$\overline{\log(Sales)}$		-0.002*** (-5.81)		0.002*** (5.24)		0.001*** (3.37)		-0.004*** (-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
<i>R</i> 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) <i>Inv</i>	(4) <i>Inv</i>	(5) <i>Div</i>	(6) <i>Div</i>	(7) <i>SP</i>	(8) <i>SP</i>	(9) <i>EI</i>	(10) <i>EI</i>
<i>After</i> × <i>NTRgap</i>	0.002 (0.31)	0.003 (0.48)	0.018* (1.78)	0.018* (1.82)	0.003 (0.40)	0.007 (1.15)	0.008 (0.47)	-0.000 (-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
<i>R</i> ²	0.429	0.528	0.205	0.209	0.226	0.260	0.147	0.177

Table 5: 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 the estimator presented in section 2.3. 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 dummy *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)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>MLeverage</i>	<i>BLeverage</i>	<i>Cash</i>	<i>Inv</i>	<i>Div</i>	<i>SP</i>	<i>EI</i>
<i>After</i> × <i>NTRgap</i>	-0.089* (-1.85)	-0.096* (-1.85)	0.160*** (4.08)	0.017*** (2.70)	0.014* (1.79)	0.013** (2.36)	0.005 (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
<i>R</i> 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)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>MLeverage</i>	<i>BLeverage</i>	<i>Cash</i>	<i>Inv</i>	<i>Div</i>	<i>SP</i>	<i>EI</i>
<i>After</i> × <i>NTRgap</i>	-0.089** (-2.46)	-0.078* (-1.95)	0.158*** (4.50)	0.009 (1.41)	0.013 (1.38)	0.013* (1.73)	0.011 (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
<i>R</i> ²	0.375	0.285	0.469	0.342	0.095	0.139	0.174

Table 6: 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 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 dummy *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 $\overline{\ln Sales}$ 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)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>MLeverage</i>	<i>BLeverage</i>	<i>Cash</i>	<i>Inv</i>	<i>Div</i>	<i>SP</i>	<i>EI</i>
<i>After</i> × <i>NTRgap</i>	-0.076** (-2.38)	-0.091*** (-3.53)	0.113*** (5.32)	0.003 (0.54)	0.016 (1.15)	0.004 (0.59)	0.006 (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
<i>R</i> ²	0.621	0.588	0.612	0.531	0.218	0.271	0.159

Table 6 continued

Panel B - Additional Controls I							
	(1) <i>MLeverage</i>	(2) <i>BLeverage</i>	(3) <i>Cash</i>	(4) <i>Inv</i>	(5) <i>Div</i>	(6) <i>SP</i>	(7) <i>EI</i>
<i>After</i> \times <i>NTRgap</i>	-0.091*** (-2.90)	-0.080*** (-3.05)	0.108*** (5.07)	0.002 (0.28)	0.021* (1.67)	0.001 (0.17)	0.008 (0.39)
<i>After</i> \times Δ <i>CIT</i>	-0.122*** (-4.22)	-0.131*** (-4.98)	0.040** (1.96)	-0.009 (-1.47)	-0.004 (-0.32)	-0.033*** (-3.40)	-0.012 (-0.60)
<i>MF Aexp</i>	79.421 (0.83)	129.740* (1.82)	-108.957* (-1.83)	30.272** (1.99)	-62.857* (-1.84)	46.067 (1.22)	-10.619 (-0.29)
<i>NTRrate</i>	-0.239** (-2.05)	-0.032 (-0.34)	-0.020 (-0.30)	-0.001 (-0.07)	0.020 (0.97)	-0.008 (-0.70)	0.014 (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 6 continued

Panel C - Additional Controls II							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>MLeverage</i>	<i>BLeverage</i>	<i>Cash</i>	<i>Inv</i>	<i>Div</i>	<i>SP</i>	<i>EI</i>
<i>After</i> \times <i>NTRgap</i>	-0.079** (-2.24)	-0.093*** (-3.35)	0.084*** (3.42)	0.003 (0.53)	0.030* (1.79)	0.000 (0.03)	0.021 (0.97)
<i>After</i> \times Δ <i>CIT</i>	-0.090** (-2.49)	-0.079** (-2.50)	-0.018 (-0.70)	-0.020** (-2.57)	-0.011 (-0.59)	-0.029*** (-3.11)	-0.005 (-0.20)
<i>MFAexp</i>	71.774 (0.70)	138.890* (1.81)	-126.002** (-2.02)	41.443** (2.46)	-67.570* (-1.93)	29.304 (0.77)	-7.056 (-0.14)
<i>NTRrate</i>	0.189 (1.17)	0.258** (2.22)	-0.099 (-1.29)	0.028 (0.97)	0.062 (1.02)	0.027 (0.82)	0.127 (1.02)
<i>After</i> \times <i>ATP</i>	-0.025** (-2.41)	-0.029*** (-3.17)	0.065*** (7.91)	0.009*** (4.16)	0.001 (0.20)	0.000 (0.05)	-0.012 (-0.89)
<i>After</i> \times <i>Contract</i>	0.039* (1.75)	0.047*** (2.60)	-0.019 (-1.26)	-0.007 (-1.57)	-0.018 (-1.61)	0.001 (0.26)	-0.004 (-0.15)
<i>Union</i>	-0.001 (-0.77)	-0.001 (-1.09)	-0.000 (-1.31)	0.000 (1.41)	-0.000 (-0.87)	-0.000** (-1.97)	0.000 (1.02)
<i>NPEMP</i>	0.011 (0.57)	-0.009 (-0.60)	-0.008 (-0.65)	0.005 (1.37)	-0.008 (-1.26)	-0.010* (-1.86)	0.002 (0.17)
<i>capInt</i>	-0.010 (-0.92)	-0.005 (-0.48)	0.023*** (3.27)	-0.005** (-2.03)	0.004 (0.87)	0.010** (2.28)	-0.007 (-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 7: 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 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 dummy *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) $\ln(\overline{emp})$ (1970-2017)	(2) $\ln(\overline{emp})$ (1970-2017)	(3) $\ln(\overline{emp})$ (1990-2010)	(4) $\overline{emp/at}$ (1970-2017)	(5) $\overline{emp/at}$ (1970-2017)	(6) $\overline{emp/at}$ (1990-2010)
<i>After</i> \times <i>NTRgap</i>	-0.414*** (-4.94)	-0.422*** (-5.02)	-0.542*** (-9.39)	-0.012*** (-10.03)	-0.011*** (-9.98)	-0.003*** (-4.17)
$\overline{Profitability}$		-0.087 (-1.33)	-0.243*** (-2.97)		0.006** (2.51)	0.004*** (3.47)
$\overline{Tangibility}$		0.295*** (5.78)	0.287*** (4.85)		0.005*** (3.55)	0.005*** (4.21)
\overline{MB}		0.037*** (4.46)	0.021** (2.55)		-0.001*** (-3.60)	-0.000** (-2.10)
$\overline{\log(Sales)}$		0.015*** (3.28)	0.011** (2.22)		-0.001*** (-14.06)	-0.001*** (-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 7 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 (0.08)	-0.223 (-0.97)	-0.122 (-0.62)	-0.013** (-2.54)	-0.012** (-2.46)	-0.003** (-2.08)
$Profitability$		-0.564*** (-5.83)	-0.630*** (-5.12)		0.004*** (3.30)	0.003*** (4.62)
$Tangibility$		0.769*** (7.25)	0.900*** (6.61)		0.004** (2.55)	0.006*** (6.09)
MB		0.018** (1.98)	0.012 (1.21)		-0.001*** (-6.18)	-0.001*** (-5.25)
$\log(Sales)$		0.937*** (171.18)	0.916*** (111.16)		-0.001*** (-9.03)	-0.001*** (-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 8: Interactions with Employment

This table contains estimates of the effect of China's accession to the WTO on the relation between firm characteristics 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 and the sample described in section 2.1. Column headers define the independent variable $(Inv/Fin\ Pol)_{i,j,t}$ in the following equation

$$(Empl/TA)_{i,j,t} = \beta_0 + \beta_1 (Inv/Fin\ Pol)_{i,j,t} + \epsilon_{i,t}^I + \epsilon_{i,j,t}^J \quad (3)$$

$$\beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon_{i,t}^{\beta_1}$$

The key explanatory variable of interest is the interaction between the post-event dummy *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) <i>MLeverage</i>	(2) <i>BLeverage</i>	(3) <i>Cash</i>	(4) <i>NetLev</i>	(5) <i>Inv</i>	(6) <i>Div</i>	(7) <i>SP</i>	(8) <i>EI</i>
β_0	0.015*** (32.26)	0.018*** (32.68)	0.019*** (33.98)	0.017*** (32.25)	0.016*** (31.20)	0.016*** (29.29)	0.018*** (34.17)	0.017*** (33.27)
$\beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon_{i,t}^2$								
α_0	0.012*** (4.55)	0.003 (0.97)	0.011** (2.05)	0.005 (1.63)	0.064*** (4.74)	0.197*** (4.70)	-0.007 (-0.55)	-0.001 (-0.13)
α_1	-0.052*** (-11.47)	-0.048*** (-9.88)	0.053*** (5.45)	0.010* (1.77)	-0.236*** (-9.62)	0.085* (1.93)	0.021 (0.57)	0.059*** (3.46)
α_2	-0.027*** (-18.09)	-0.033*** (-19.98)	-0.064*** (-18.12)	-0.027*** (-14.43)	-0.126*** (-15.44)	-0.384*** (-23.31)	-0.100*** (-7.48)	-0.039*** (-5.89)
α_3	0.021*** (2.74)	0.034*** (3.24)	-0.030* (-1.90)	0.021** (2.46)	0.054 (1.38)	-0.006 (-0.05)	-0.041 (-1.10)	-0.004 (-0.27)
Observations	42355	42355	42355	42355	42070	42306	40169	40684

Table 8 continued

Panel B - Sample restricted to the 1990 - 2010 period

	(1) <i>MLeverage</i>	(2) <i>BLeverage</i>	(3) <i>Cash</i>	(4) <i>NetLev</i>	(5) <i>Inv</i>	(6) <i>Div</i>	(7) <i>SP</i>	(8) <i>EI</i>
β_0	0.008*** (30.95)	0.008*** (29.27)	0.009*** (34.33)	0.008*** (32.11)	0.007*** (29.62)	0.008*** (31.61)	0.08*** (33.60)	0.008*** (33.79)
$\beta_1 = \alpha_0 + \alpha_1 After_t \times NTRGap_i + \alpha_2 After_t + \alpha_3 NTRGap_i + \epsilon_{i,t}^2$								
α_0	0.002 (1.35)	0.001 (0.50)	0.000 (0.01)	0.002 (1.32)	0.018** (2.40)	0.006 (0.30)	0.002 (0.34)	-0.004 (-1.56)
α_1	-0.013*** (-4.89)	-0.013*** (-4.71)	0.000 (0.06)	0.007** (2.26)	-0.069*** (-5.05)	-0.003 (-0.09)	-0.020 (-0.91)	-0.016 (-1.64)
α_2	-0.006*** (-6.54)	-0.007*** (-7.74)	-0.012*** (-5.77)	-0.007*** (-6.62)	-0.023*** (-5.04)	-0.068*** (-5.80)	-0.027*** (-3.39)	-0.001 (-0.32)
α_3	0.010** (2.53)	0.012** (2.39)	0.000 (0.03)	0.006 (1.41)	0.071*** (3.25)	0.061 (1.14)	0.025 (1.23)	0.018** (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* for sample and industry definition described in Section 2.1.

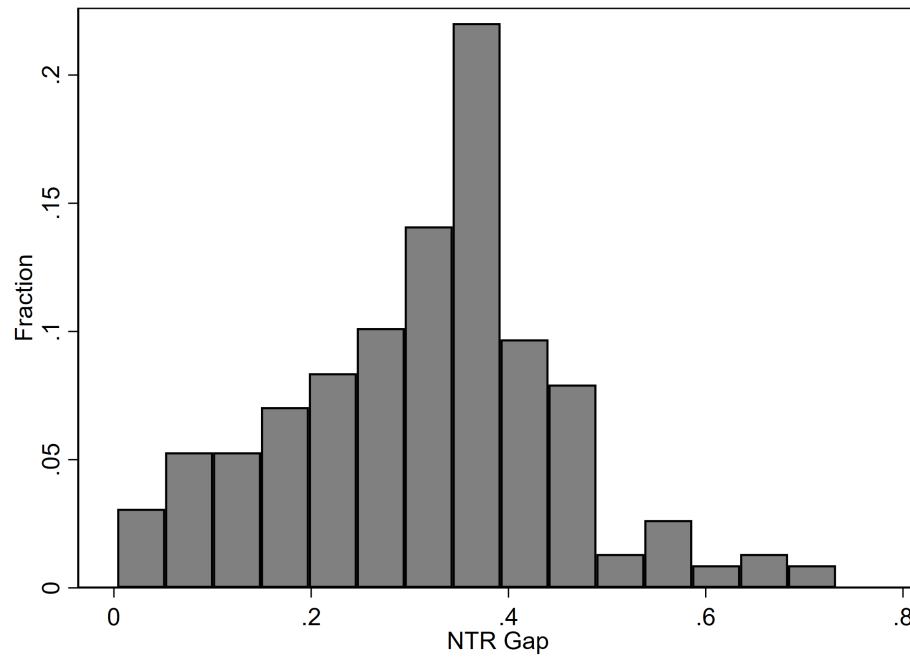


Figure 2: Average Firm Characteristics Over Time

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.

