

Trade Policy Uncertainty and Shareholder Returns in Mergers and Acquisitions

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Abstract

We use a change in US trade policy, which eliminated uncertainty regarding potential tariff increases on Chinese imports, to examine the effect of resolution of trade policy uncertainty on merger and acquisition (M&A) activity and shareholder value of acquiring and target firms. After this policy change, industries with greater resolution of tariff uncertainty experience higher within-industry and cross-industry M&A activity, and acquiring firms in these industries experience higher announcement returns, but there is no corresponding effect on target announcement returns. Acquirer shareholder wealth effects are stronger for R&D-intensive acquirers; in transactions involving publicly-traded targets, especially for less profitable and high-leverage targets; and for cross-industry acquisitions, especially those in which the target is in a less competitive and less fluid product market than the acquirer. The effects on acquirer shareholder wealth indicate that elimination of trade policy uncertainty and increase in import competition raise the bargaining power of acquirers relative to targets.

Keywords: Mergers and Acquisitions, Trade Policy Uncertainty, Shareholder Wealth, Product Market Competition

JEL Classification: G34, P33

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Introduction

Past literature highlights that merger and acquisition (M&A) activity is affected by industry-specific regulatory shocks (Mitchell and Mulherin 1996; Harford 2005) and profitability shocks (Maksimovic and Phillips 2002). In the globalized economy, trade policy shocks are arguably the most important shocks affecting US firms, especially those in the manufacturing sector, which is the sector that is most exposed to foreign trade. Although the US has mostly liberalized its trade policy over the past several decades, it is also common for US presidents to introduce protectionist measures by raising tariffs substantially (Amiti, Redding, and Weinstein 2019; Fajgelbaum, Goldberg, Kennedy, and Khandelwal 2020).¹ Thus, firms are exposed to substantial trade policy uncertainty, which has been shown to have an adverse impact on business investment and economic activity (e.g., Caldara, Iacoviello, Molligo, Prestipino, and Raffo 2020). Yet, we know little about the effect of trade policy uncertainty on M&A activity and the resultant gains to shareholders of the bidding and target firms. In this paper, we use the granting of Permanent Normal Trade Relations (PNTR) status to China by the US in 2001— which eliminated uncertainty regarding potential tariff increases on Chinese imports— to examine the effects of resolution of tariff (or trade policy) uncertainty on M&A activity and shareholder wealth of acquirers and targets in the US manufacturing sector.

Conferral of PNTR did not change the import tariff rates the US actually applied to Chinese goods, but instead removed the uncertainty associated with politically contentious annual renewals of Normal Trade Relations (NTR) status to China (see Pierce and Schott 2016), failing which import tariffs would increase to non-NTR rates that had been specified as part of the Smoot-Hawley Tariff Act of 1930. Hence, a key feature of this policy change, which greatly aids identification, is that the extent of resolution of tariff uncertainty varies

¹Amiti et al. (2019) show that every US president since Richard Nixon, with the exception of George H. W. Bush and Bill Clinton, has introduced protectionist measures early in his first term. Most recently, the Trump administration did this with more force and breadth than in earlier instances, and has sought to renegotiate existing free trade agreements.

across industry groups within the US manufacturing sector in a plausibly exogenous manner because the non-NTR rates had been set almost seventy years ago. We measure the extent of resolution of tariff uncertainty using the industry-specific *NTR Gap*, which is defined as the difference between the substantially higher non-NTR rates to which tariffs would have risen if annual renewal had failed and the NTR tariff rates locked in by PNTR (Pierce and Schott 2016).² Our generalized difference-in-differences identification strategy exploits this cross-sectional variation in the NTR gap to test how the level of M&A activity and shareholder returns of acquirers and targets vary across industries with their NTR gap before and after the passage of PNTR.

There are multiple reasons why passage of PNTR may impact M&A activity and shareholder wealth. First, resolution of tariff (or trade policy) uncertainty should significantly *reduce valuation uncertainty* in the US manufacturing sector by enabling firms to more accurately forecast not only their own future cash flows, but also the cash flows of and likely synergies from acquiring other firms. The reduction in uncertainty should also lower the discount rates that acquirers apply while valuing potential synergies, thus increasing the net present value of acquisitions, all else equal. Because M&A transactions are long-term and irreversible investments from the acquirers' perspective, we expect that firms which experience higher resolution of tariff uncertainty are more likely to undertake acquisitions after the passage of PNTR.

Second, past literature has found that PNTR passage led to a surge of Chinese imports after 2001 (Pierce and Schott 2016; Handley and Limao 2017). We expect that the *increase in product market competition* due to the surge of Chinese imports puts pressure on cost-inefficient and financially fragile firms in exposed industries to downsize (see Lileeva 2008), thus creating attractive acquisition opportunities for efficient and/or financially strong firms. The increase in product market competition should trigger both within-industry consolidation and cross-industry M&A transactions that allow acquirers to diversify their exposure

²We obtain similar results if we instead using the log difference in these tariff rates, or equivalently, the percentage difference between the rates (Handley and Limao 2017).

to Chinese import competition.³ However, the US manufacturing sector had been subject to high import competition since 1980 when the US started applying low NTR tariff rates on a temporary basis, and recent literature has documented surges in Chinese imports in the years *before* the passage of PNTR as importers anticipated changes in US trade policy (Alessandria, Khan, and Khederlarian 2019). These forces should negate the predictions of an increase in M&A activity driven solely by increase in product market competition following PNTR passage.

The two channels described above also have implications for shareholder wealth of acquirer and target firms. All else equal, intensification of import competition should strengthen the bargaining power of acquirers relative to targets, because acquirers will generally merge with or acquire targets that are expected to be weakened by import competition, and will benefit from the pressure on cost-inefficient and financially fragile targets to downsize. Hence, resolution of tariff uncertainty should have a positive (negative) effect on acquirer (target) announcement returns, and a negative effect on the takeover premium. The positive effect of trade liberalization on acquirer shareholder wealth should be stronger in case of targets that are less profitable and highly-levered in comparison to their industry peers, and for R&D-intensive acquirers who are more resilient to import competition (Hombert and Matray 2018). Finally, if acquirers strategically undertake cross-industry acquisitions to hedge their exposure to Chinese import competition, then the effects of trade liberalization on acquirer shareholder wealth should be stronger in deals where the target is from a less competitive and less fluid product market compared to the acquirer.

The empirical results support the empirical hypotheses derived from our conceptual framework. We find a positive relationship between resolution of tariff uncertainty and M&A activity that is both statistically and economically significant. The baseline specification implies that moving an SIC 4-digit industry from an NTR gap at the twenty-fifth percentile to the seventy-fifth percentile value increases M&A activity by around 21%. Past

³Indeed, past literature highlights that firms are more likely to diversify into other industries when their core business experiences a negative shock (Maksimovic and Phillips 2002).

literature finds that passage of PNTR resulted in a decline in organic growth in the US manufacturing sector through capital expenditures (see [Pierce and Schott 2018](#)), but our results indicate that it had a positive effect on industrial restructuring through the M&A market. It is important to emphasize that these results are not driven by a merger wave that simply happened to coincide with the passage of PNTR. In fact, the previous merger wave had crested in 1998 *before* the passage of PNTR, and merger activity both within and outside the manufacturing sector exhibits a downward trend around the passage of PNTR.⁴

We find that resolution of tariff uncertainty has a strong positive effect on acquirer announcement returns when the target is a publicly-traded firm, but no significant effect in case of private targets; which is notable because, in general, the literature has found that acquirer announcement returns are more negative on average for publicly-traded targets compared to private targets. In terms of economic significance, increasing the acquirer's NTR gap from its twenty-fifth percentile to the seventy-fifth percentile value increases acquirer announcement return by 4.76%. However, we do not find any effect of this trade reform on target announcement returns. The stronger acquirer shareholder wealth effects from publicly-listed targets following PNTR passage may arise because publicly-traded targets face more intensive pressures to downsize than private targets, which works to the benefit of acquirers. Indeed, resolution of tariff uncertainty has a strong negative effect on the takeover premium offered to target shareholders, which is consistent with the idea that increase in product market competition strengthens the bargaining power of acquirers relative to targets. Also consistent with the predictions of the product market channel, we find that the acquirer shareholder wealth effects are stronger for R&D-intensive acquirers, and for transactions involving cost-inefficient and highly-levered targets.

When we distinguish between within-industry and cross-industry acquisitions, we find that the positive effect of this trade reform on acquirer announcement returns is present only among cross-industry acquisitions, which contrasts with the received literature that

⁴The drop in aggregate M&A activity around the passage of PNTR is likely driven by events such as the Dotcom bust, the terrorist attacks of September 2001, and the ensuing recession.

finds acquirer announcement returns to be higher for within-industry acquisitions. These patterns, however, are consistent with the risk diversification hypothesis (Garfinkel and Hankins 2011) that acquirers strategically undertake cross-industry acquisitions to hedge their exposure to Chinese import competition. Specifically, we find that the positive effect of this trade reform on acquirer announcement returns is mainly driven by transactions in which acquirers expand into less competitive and less fluid product markets, as per the text-based Herfindahl-Hirschman (HHI) measure (Hoberg and Phillips 2016) and market fluidity measure (Hoberg, Phillips, and Prabhala 2014), respectively.

To our knowledge, our study is the first to examine the impact of trade liberalization through passage of PNTR on M&A activity and shareholder wealth. Other studies have shown that this trade liberalization policy event contributed to a swift decline in US manufacturing employment (Autor, Dorn, and Hanson 2013; Pierce and Schott 2016); decline in capital expenditure in exposed sectors (Pierce and Schott 2018); increase in innovation and technical change (Bloom, Draca, and Van Reenen 2016); and a decline in entrepreneurship in exposed sectors, but increased entrepreneurship in non-exposed sectors (Aslan and Kumar 2021). In contrast to the negative effects on industry-level employment and capital expenditures (Pierce and Schott 2016; Handley and Limao 2017; Pierce and Schott 2018), we find that resolution of tariff uncertainty had a positive effect on both within-industry and cross-industry M&A activity within the US manufacturing sector. The allocation of value creation from M&A towards acquiring shareholders in the US manufacturing sector in the post-PNTR period is in stark contrast to the general consensus in the literature that most of the value gains from M&A activity accrue to target shareholders (Andrade, Mitchell, and Stafford 2001; Betton, Eckbo, and Thorburn 2008). For instance, Moeller, Schlingemann, and Stulz (2005) find that the merger wave of the 1990s destroyed shareholder value of acquiring firms on an epic scale.

Our analysis also has implications for the literature on determinants of merger activity which has highlighted the role of industry-specific economic, regulatory and technological

shocks (Mitchell and Mulherin 1996; Harford 2005). We contribute to this literature by identifying the effect of trade reform on M&A activity and the resultant gains to shareholders of the acquiring and target firms. Our study is related to Breinlich (2008) who finds that bilateral tariff reductions under the Canada-United States Free Trade Agreement (CUSFTA) increases merger activity in Canada but not in the US. We find very different results on US M&A activity from the passage of PNTR, which is arguably one of the most important regulatory shocks to the US manufacturing sector in the past several decades, and was much more consequential than the CUSFTA. Moreover, Breinlich (2008) does not examine the effects of trade policy shocks on gains to shareholders of acquiring and target firms.

Our study is also related to recent studies which use the policy uncertainty index developed by Baker, Bloom, and Davis (2016) to examine the relation between economic policy uncertainty and merger activity. Both Nguyen and Phan (2017) and Bonaime, Gulen, and Ion (2018) find a negative association between policy uncertainty and merger activity, although Bonaime, Gulen, and Ion (2018) argue that this is primarily driven by uncertainty relating to fiscal and monetary policy rather than trade policy. Unlike these papers, we examine the effect of a specific trade reform on M&A activity. Because PNTR substantially reduced tariff uncertainty, our finding of a positive effect of PNTR on merger activity is consistent with the negative relation between uncertainty and M&A activity documented in these papers. One source of disagreement between these papers is that Nguyen and Phan (2017) claim that uncertainty benefits acquirers (lower bid premiums and higher acquirer announcement returns), whereas Bonaime, Gulen, and Ion (2018) claim that policy uncertainty increases the target's negotiating power. Our findings that resolution of tariff uncertainty has a negative effect on bid premium and positive effect on acquirer announcement return are more consistent with those in Bonaime, Gulen, and Ion (2018).

1 Data and Key Variables

1.1 Resolution of Tariff Uncertainty

We first provide a brief background of the PNTR policy, and then explain how we measure the extent of resolution of tariff uncertainty.

Policy Background: PNTR

In 1980, the United States granted China *temporary* most favored nation (MFN) status, which reserved low Normal Trade Relations (NTR) tariff rates for Chinese imports. This temporary status was subject to annual renewals by Congress. From 1990 to 2001, the average House vote against annual NTR renewal was 38 percent. The renewals of NTR tariff rates never failed, but it came close when House of Representatives voted to revoke the temporary MFN status in 1990, 1991, and 1992. If the renewal failed, the US import tariffs on Chinese imports would have reverted to the substantially higher non-NTR tariff rates set by Smoot-Hawley Tariff Act of 1930. In 1999, for instance, the average NTR rate was 4 percent whereas the average non-NTR rate was 37 percent. This huge gap in tariff rates created high levels of tariff uncertainty.

In 2000, the United States granted Permanent Normal Trade Relations (PNTR) to China, bringing an end to tariff uncertainty for Chinese imports. The PNTR was passed by the House in May 2000, approved by the Senate in September 2000, signed into law in October 2000, and became effective when China was officially admitted to the World Trade Organization (WTO) in late 2001 ([Alessandria, Khan, and Khederlarian 2019](#)). As a result, the uncertainty of trade policy associated with China's NTR status was effectively eliminated upon the passage of PNTR in 2000 ([Pierce and Schott 2016](#)). It is important to note that the uncertainty regarding potential reversal of tariff rates—for example, by withdrawal of PNTR by U.S. Congress—was effectively eliminated by China's entry to WTO (which was facilitated by the PNTR) because tariff rates for Chinese goods by member countries are

now governed by WTO rules. Throughout the paper, therefore, we treat year 2001 onward as the post-PNTR period.

Measuring Resolution of Tariff Uncertainty

Following [Pierce and Schott \(2016\)](#), we measure the extent of resolution of tariff uncertainty (or equivalently, exposure to the PNTR policy shock) using the variable *NTR Gap*, which is defined as the difference between the non-NTR (NNTR) rates to which tariffs would have risen if annual renewal had failed and the NTR tariff rates locked in by PNTR. We use the NTR rate in 1999 to define NTR gap, but we obtain very similar results even if we use a time-varying NTR gap.

We obtain NTR tariff rates from [Feenstra, Romalis, and Schott \(2002\)](#), which are available at the level of eight-digit Harmonized Tariff System (HTS) codes. We use the concordance provided by [Pierce and Schott \(2012\)](#) to match HTS to SIC industry classification. Note that HTS classifies products based on physical characteristics whereas SIC and NAICS consider types of economic activities in addition to physical characteristics of products.

The NTR gap for an industry i , defined by 4-digit SIC, is computed as the average NTR gap across eight-digit HTS codes matching to that industry. Specifically, for industry i

$$NTR\ Gap_i = NNTR\ Rate_i - NTR\ Rate_i, \tag{1}$$

In 1999, the average NTR gap across all SIC 4-digit industries is 0.3, and the twenty-fifth and seventy-fifth percentile values are 0.165 and 0.394, respectively. On the other hand, the average NTR rate across all SIC 4-digit industries is 0.04, and the twenty-fifth and seventy-fifth percentile values are 0.005 and 0.048, respectively. We note that cross-sectional variation in non-NTR rate accounts for about 80 percent of the total variation in NTR gap. Recall that the non-NTR rates were set by Smoot-Hawley Tariff Act of 1930. This is important for our identification strategy because it suggests that variation in NTR gap is largely exogenous

to any investment opportunities that emerged around the passage of PNTR.

A strand of the literature argues that effects of trade policy changes should be driven by percentage changes, and not absolute changes, in tariff rates (e.g., [Handley and Limao 2017](#)). We, therefore, verify that our results are robust to using the following log-difference gap measure instead of *NTR Gap*:

$$LNTR\ Gap_i = \ln(1 + NNTR_i) - \ln(1 + NTR_i), \quad (2)$$

1.2 M&A Activity

We obtain data on M&A transactions from Securities Data Company (SDC) Platinum. Given our focus on the US manufacturing sector, we restrict attention to transactions in which either the acquirer or the target belongs to the US manufacturing sector. We use both the Standard Industrial Classification (SIC) and the North American Industrial Classification System (NAICS) to identify firms in the manufacturing sector, although our results are robust to using either classification on its own. We define a company as belonging to the manufacturing sector if either its SIC 2-digit code is between 20 and 39 or its NAICS 2-digit code is between 31 and 33.

We use the following additional criteria to assemble our M&A sample: (1) the announcement date lies between 01/01/1990 and 12/31/2010; (2) both the acquirer and the target are US firms, and neither of them belong to the utility sector (SIC 40-49) or the financial service sector (SIC 60-69); (3) the transaction is valued at least 1 million dollars; (4) the acquirer holds less than 50 percent of the target's shares outstanding prior to the announcement and plans to own 100% after the transaction is completed; and (6) the deal is completed.

1.3 Shareholder Wealth Effects

For the publicly-traded acquirers and targets in our sample, we obtain firm financial data from COMPUSTAT, and stock price data from the Center for Research in Security Prices

(CRSP) daily stock price database.

We measure shareholder wealth effects for acquirers and targets using their respective cumulative abnormal returns (CAR) over the [-10,+10] trading-day window surrounding the announcement of the M&A transaction (date 0). To construct CAR, we first estimate the following market model:

$$R_{kt} = a_k + b_k R_{mt} + \varepsilon_{kt}$$

where R_{kt} represents the stock return of firm k on date t , and R_{mt} is the CRSP value-weighted market return on the same date. We estimate the market model using daily returns using an estimation window of [-80,-20] (i.e., 80 to 20 trading days prior to the announcement date), although our results are robust to using longer estimation windows such as [-100,-20] or [-120,-20].

We calculate abnormal return (AR) for the acquirer or target on a given by taking the difference between its actual return and the “normal” return as per the market model; i.e., $AR_{kt} = R_{kt} - \hat{R}_{kt}$. We then aggregate AR_{kt} over the announcement window [-10,+10] to compute the firm’s CAR; i.e., $CAR_k = \sum_{t=-10}^{+10} AR_{kt}$.

Our results are also robust to using an alternative [-5,+5] window for computing CAR, but the economic significance of the results is slightly larger with the [-10,+10] window. Similarly, our results are robust to alternative definitions of abnormal return, such as the widely-used “excess return” (i.e., difference between the firm’s stock return and the CRSP value-weighted market return)

1.4 Other Variables

We obtain text-based measures of Herfindahl-Hirschman Index (HHI) from [Hoberg and Phillips \(2016\)](#) to proxy for product market concentration (i.e., inverse proxy of competition) at the firm-year level. The computation of HHI relies on the text-based Network Industry Classification (TNIC), which identifies a unique set of rivals for each public firm

based on 10-K product descriptions, and hence, is a less rigid definition of product market compared to the SIC or NAICS classification.

Along similar lines, we obtain text-based measures of “fluidity”, which measures how intensively the product market around a firm changes each year, from [Hoberg, Phillips, and Prabhala \(2014\)](#).

1.5 Descriptive Statistics

Table 1 presents year-wise statistics over the 1990-2010 period on the number of M&A transactions both within and outside the manufacturing sector. We define manufacturing M&A transactions as those in which either the acquirer or the target is from a manufacturing industry; and non-manufacturing M&A transactions as those in which neither firm is from a manufacturing industry. Within each category, we further classify transactions as within-industry and cross-industry transactions, using the 4-digit SIC classification of industry.

It is important to note that the passage of PNTR does not coincide with an M&A wave in the US manufacturing sector. It is evident from Table 1 that the M&A wave of the 1990s reached its peak in 1998-99, before the passage of PNTR. Indeed, there is a sharp decline in annual M&A activity between 2000 and 2002 (i.e., around the passage of PNTR in 2001) in both the manufacturing and non-manufacturing sectors, possibly due to factors such as the bursting of the dotcom bubble, the terrorist attacks of September 2001, and the ensuing recession.

We assemble an industry-year panel to keep track of M&A activity for each industry-year combination. The industry-year panel spans the time period from 1990 to 2010, and includes each SIC 4-digit manufacturing industry with at least 10 M&A transactions over this time period (i.e., firms within the industry were involved in at least 10 M&A transactions either as acquirers or targets). We impose the cutoff of 10 transactions to exclude inactive M&A industries from our analysis, but our results are robust to this exclusion.

In Figure 1 we provide histograms for the number of acquirers (Panel (a)) and number of

targets (Panel (b)) at the industry-year level. Consistent with findings in the prior literature (e.g., [Mitchell and Mulherin 1996](#)), we find that M&A activity is highly concentrated in a few industry-year combinations.

We provide descriptive statistics for our M&A sample in [Table 2](#). There are a total of 14,149 transactions in which either the acquirer or the target is from the manufacturing sector. Out of these, around 7,900 transactions involve publicly-traded acquirers which we were able to match with CRSP-COMPUSTAT, and around 1,600 involve publicly-traded targets. Consistent with the extant literature on M&A announcement returns, we find that the median target CAR is large and positive, whereas the median acquirer CAR is close to zero. The median takeover premium of 43% is also consistent with previous studies.

As expected, there is substantial skewness in the distribution of deal value, and the MV of assets of the acquirer and target firms. The median value of Acquirer-to-Target MV indicates that the median acquirer is around 9 times the size of the median target.

2 Effect of Trade Liberalization on M&A Activity

To examine the effect of trade liberalization on M&A activity, we estimate the following Poisson regression model on our industry-year panels using a generalized difference-in-differences (DID) framework:

$$\begin{aligned} \ln[E(Y_{it})] = & \beta Post \times NTRGap_i + Post \times X_i' \gamma + X_{it}' \delta \\ & + \alpha_i + \alpha_t + \alpha, \end{aligned} \tag{3}$$

where Y_{it} is either the number of acquirers or the number of targets from industry i involved in M&A transactions announced in year t . $Post$ is a dummy variable to identify the post-PNTR years, that is, years 2001 through 2010. The main coefficient of interest is β , which captures the effect of reduction in tariff uncertainty ($NTRGap_i$) on M&A activity in the post-PNTR period. We include industry fixed effects (α_i) to control for unobserved heterogeneity across

industries, and year fixed effects (α_t) to control for common macroeconomic shocks that may affect M&A activity. To account for the bursting of the dotcom bubble in 2000, which may have affected M&A activity in the Multi Fiber Agreement (MFA)-affected industries (Pierce and Schott 2016; Khandelwal, Schott, and Wei 2013) and high-tech industries (defined as level-I high-tech industries in Heckler 2005), we also interact *Post* with dummies identifying MFA and telecom industries ($Post \times X_i$). The time-varying vector X_{it} controls for other industry-year variables. Standard errors are robust to heteroskedasticity and are clustered at the industry-year level.

The long-drawn process by which PNTR became effective may raise concerns about the specification of regression (3). PNTR was passed by both the House and the Senate in early 2000, several months before being signed into law in October 2000, and became effective only in 2001 after China’s entry into the WTO. Moreover, we cannot rule out the possibility that the passage of PNTR was anticipated a year or two before 2000 (Alessandria, Khan, and Khederlarian 2019). Therefore, as a robustness test, we verify that all our results are robust to the exclusion of years 1998 through 2001 from the analysis.

Baseline Results

We present the results of regression (3) in Table 3. Recall that the dependent variable is $\ln[E(Y_{it})]$, where Y_{it} is the number of acquirers in industry i in year t in columns (1) and (2), and the number of targets in industry i in year t in columns (3) through (4).

The positive and significant coefficients on $Post \times NTR\ Gap_i$ in columns (1) and (2) indicate that resolution of tariff uncertainty has a positive effect on M&A activity, measured using the number of acquirers at the industry-year level. This effect is also economically significant: the coefficient estimate in column (2) indicates that moving an industry from an NTR gap at the twenty-fifth percentile to the seventy-fifth percentile increases the number of acquirers at the industry-year level by around 21%.⁵ We find similar, albeit weaker,

⁵The difference between the seventy-fifth percentile and twenty-fifth percentile value of NTR gap is 0.23, which when multiplied with the regression coefficient of 0.909 in column (2) yields 0.209, which corresponds

results when we measure M&A activity using the number of targets at the industry-year level. Specifically, the coefficient on $Post \times NTR\ Gap_i$ is positive and significant in column (4), but is statistically insignificant in column (3).

As noted above, we control for any possible effects of the bursting of the dotcom bubble on M&A activity in the hi-tech and MFA industries. The positive and significant coefficient on $Post \times HighTech_i$ in columns (2) and (4) indicates that M&A activity in hi-tech industries increased after the bursting of the dotcom bubble in 2000, which suggests that turmoil in this industry resulted in corporate restructuring through the M&A market. By contrast, the coefficients on $Post \times MFA_i$ are statistically insignificant and have a negative sign.

Next, we examine the effect of trade liberalization separately on within-industry and cross-industry M&A activity. The results of these regressions are presented in Table 5. We examine the effect on within-industry deals in columns (1) and (2), where we use *Same NTR Gap_i* to denote that both the acquirer and target experienced the same amount of resolution of tariff uncertainty. The positive and significant coefficients on $Post \times Same\ NTR\ Gap_i$ in these columns indicate that resolution of tariff uncertainty has a positive effect on within-industry M&A activity.

For the effects on cross-industry M&A activity, we separately examine the number of acquirers (columns (3) and (4)) and the number of targets (columns (5) and (6)) from industry i in year t that are involved in a cross-industry transaction, and distinguish the effects of *Acquirer NTR Gap* and *Target NTR Gap*. We find that the coefficient on $Post \times Acquirer\ NTR\ Gap_i$ is positive and significant in both columns (3) and (4), whereas the coefficient on $Post \times Target\ NTR\ Gap_i$ is positive and significant in the specification with the full set of control variables in column (6). These results indicate that resolution of tariff uncertainty has a positive effect on cross-industry M&A activity as well. As in Table 3, these results are stronger for the number of acquirers than for the number of targets.

Overall, the evidence presented in Tables 3 and 5 indicates that reduction in tariff un-

to a 21% increase in M&A activity because the dependent variable is $\ln[E(Y_{it})]$.

certainty has a positive effect on M&A activity, for both within-industry and cross-industry transactions. In unreported tests, we verify that these results are robust to using the log-difference measure, *LNTR Gap*, instead of *NTR Gap* as the measure of reduction in tariff uncertainty.

Dynamic Effects

Regression (3) examines how the level of M&A activity varies with the industry NTR gap during the post-PNTR period (i.e., 2001–2010) versus the pre-PNTR period (i.e., 1990–2000). We now subdivide the pre-PNTR and post-PNTR periods into three periods each in order to examine how these effects varied over time. These dynamic effects are useful in understanding how soon the effects of PNTR materialized, how long they lasted, and whether the effects of PNTR were anticipated even before the passage of PNTR (as [Alessandria et al. \(2019\)](#) argue).

Specifically, we create the following dummy variables to identify specific time periods in the pre-PNTR period: $Year_{90-92}$ to identify years 1990-92, $Year_{93-95}$ to identify years 1993-95, and $Year_{96-99}$ to identify the years 1996-99. Similarly, we create the following dummy variables to identify specific time periods in the post-PNTR period: $Year_{01-04}$ to identify years 2001-04, $Year_{05-07}$ to identify years 2005-07, and $Year_{08-10}$ to identify the years 2008-10. We then estimate a dynamic variant of regression (3) as follows:

$$\begin{aligned} \ln[E(Y_{it})] = & \sum_{\tau} \beta_{\tau} \times Year_{\tau} \times NTRGap_i + Post \times X'_i \gamma + X'_{it} \delta \\ & + \alpha_i + \alpha_t + \alpha, \end{aligned} \tag{4}$$

where the $Year_{\tau}$ dummies are defined as described above. In regression (4), Y_{it} is either the number of acquirers or the number of targets in industry i in year t . We present the results of this regression in Table 4.

In column (1), Y_{it} is the number of acquirers in industry i in year t . As can be seen, the β_{τ} coefficient on $Year_{\tau} \times NTRGap_i$ is positive and significant in all the post-PNTR periods,

especially in the later half of the 2000s. By contrast, the β_τ is statistically insignificant in the pre-PNTR periods, except during the 1993-95 period. The positive coefficient on $Year_{93-95} \times NTRGap_i$ is supportive of the argument made by [Alessandria et al. \(2019\)](#) that US manufacturing firms anticipated liberalization of US trade policy even before the actual passage of PNTR. Nonetheless, the consistently large and positive β_τ coefficients in the post-PNTR period suggest that the reduction in valuation uncertainty brought about by the passage of PNTR made it more likely for US manufacturing firms to undertake acquisitions.

In column (2), Y_{it} is the number of targets in industry i in year t . The β_τ coefficients present a more complicated picture. We find that the β_τ coefficients are positive and significant during the 1990s, which is consistent with the idea that targets were under pressure from low NTR tariff rates even before the passage of PNTR. However, the β_τ coefficients have larger magnitudes, on average, in the post-2000 period than in the pre-2000 period, which is consistent with the positive coefficient on $Post \times Industry NTR Gap$ in column (4) of [Table 3](#).

Overall, the evidence presented in this section complements the findings of [Breinlich \(2008\)](#) who analyzes the effects of the Canada-United States Free Trade Agreement (CUS-FTA) on domestic Canadian merger activity. One significant difference is that [Breinlich \(2008\)](#) draws evidence from realized tariff cuts while our analysis focuses on elimination of tariff uncertainty. Our rich data also allow us to better control for unobserved heterogeneity across industries and over time, which greatly aids identification. The most important difference, however, arises from our analysis in the next section where we examine the effects of reduction in tariff uncertainty on shareholder wealth of acquiring and target firms.

3 Effect of Trade Liberalization on Shareholder Wealth

In this section we empirically examine the effects of resolution of tariff uncertainty on the takeover premium, and M&A announcement returns of acquirer and target firms.

3.1 Univariate Evidence

We first present univariate evidence regarding the effect of resolution of tariff uncertainty on M&A announcement returns of acquirer and target firms. To do this, we divide our M&A sample into two groups based on whether the transaction was announced before or after the passage of PNTR (“before” and “after” groups), and then, divide each of these groups into two sub-groups based on whether the industry NTR gap of the firm is higher or lower than the median NTR gap across all industries (“high” and “low” NTR gap groups). Thus, we have a four-way classification of M&A transactions based on the intersection of before vs. after PNTR passage, and high vs. low NTR gap industries.

In Table 6 we present the mean and median CARs for acquirers (Panel A) and targets (Panel B) in each of the four categories created above. The column (row) titled “Difference” reports the difference between average and median CARs between the “high” and “low” groups (“after” and “before” groups); the corresponding p -values are reported in square brackets. In case of acquirers, we present the CARs separately for deals with publicly-traded targets and non-public targets, because past literature highlights that acquirer CARs vary significantly across these two groups.

The results in Panel A indicate that the effect of resolution of tariff uncertainty on acquirer announcement returns varies based on whether the target is publicly traded or private. In case of public targets, acquirers in the “high” group experience higher average (and median) CARs compared to acquirers in the “low” group in the post-PNTR period, whereas there are no differences between these two groups in the pre-PNTR period. Specifically, the difference in average CAR between the two groups is a statistically significant 2.99% in the post-PNTR period, and a less significant -1.91% in the pre-PNTR period, which translates to a positive and significant difference-in-differences estimate of 4.90%. However, in case of private targets, there are no significant differences between the average or median CARs between acquirers in the “high” versus “low” groups, either before or after the passage of PNTR.⁶

⁶Consistent with the M&A literature, average acquirer CARs are negative in case of public targets, and

We present target CARs in Panel B. Consistent with the extant M&A literature, target CARs are large and positive, on average. We find that although targets in the “high” group experience lower average CARs compared to targets in the “low” group in the post-PNTR period, and slightly higher CARs in the pre-PNTR, neither of these differences is statistically significant but lead to a difference-in-differences estimate of -7.17%. We find similar patterns with regard to the median target CARs.

Overall, the evidence in Panel A of Table 6 suggests that resolution of tariff uncertainty has a positive effect on acquirer announcement returns, but only in case of publicly-traded targets. On the other hand, the evidence in Panel B suggests that resolution of tariff uncertainty has a weak negative effect on shareholder wealth of target firms. We must, however, caution that these univariate differences do not control for important determinants of CARs, such as method of payment, firm characteristics, and heterogeneity across industries and over time. Therefore, we now turn to multivariate analysis where we can better control for these differences.

3.2 Regression Analysis

We estimate the following deal-level regression using a generalized DID framework to examine the effect of resolution of tariff uncertainty on the shareholder wealth of acquirers and targets:

$$\begin{aligned}
 CAR_{ijkt} = & \beta Post \times NTRGap_i + X'_j \gamma + X'_{ijkt} \delta \\
 & + \alpha_i + \alpha_t + \alpha + \varepsilon_{ijkt}
 \end{aligned}
 \tag{5}$$

The dependent variable is either the acquirer CAR or the target CAR estimated over the [-10,+10] window. We use the subscript ‘k’ to denote the firm (acquirer or target), ‘i’ to denote the SIC 4-digit industry, ‘j’ to denote the deal, and ‘t’ to denote the announcement year. Apart from firm characteristics, such as size, Q , leverage and ROE, we also control for positive in case of private targets, regardless of the acquirer’s industry NTR gap and whether the deal was announced before or after the passage of PNTR.

the percentage of stock payment ($Stock\ Pct_j$) because it is an important determinant of CAR (Travlos 1987). We include industry fixed effects (α_i) to control for unobserved heterogeneity across industries, and year fixed effects (α_t) to control for common macroeconomic shocks that may affect announcement returns. Our main coefficient of interest is β , which captures the effect of resolution of tariff uncertainty ($NTR\ Gap_i$) on acquirer (or target) announcement returns.

Baseline Result

We present the results of regression (5) in Panel A of Table 7. We examine the effect on acquirer CAR in columns (1) through (4), separately for public targets (columns (1) and (2)) and private targets (columns (3) and (4)). The positive and significant coefficients on $Post \times NTR\ Gap$ in columns (1) and (2) indicate that resolution of tariff uncertainty has a positive effect on acquirer shareholder wealth in case of acquisitions involving publicly-traded targets. This effect is economically significant: the coefficient estimate in column (2) indicates that increasing the NTR gap from its twenty-fifth percentile to seventy-fifth percentile value increases acquirer CAR by 4.76%, which is significant in comparison to the average acquirer CAR of 1.29%. By contrast, and consistent with the univariate evidence in Table 6, we do not find a similar effect in case of acquisitions involving private targets.

We examine the effect on target CARs in columns (5) and (6). Consistent with the univariate evidence above, the coefficient on $Post \times NTR\ Gap$ is negative in column (5), but is not statistically significant after we control for deal and target firm characteristics in column (6). That is, we do not find any significant effect of resolution of tariff uncertainty on the shareholder wealth of acquisition targets.

To examine the effect of resolution of tariff uncertainty on the overall synergy value creation in M&A transactions, we estimate regression (5) with *Combined CAR* as the dependent variable, which is defined as the market-value weighted average of the acquirer CAR and target CAR (see Kaplan and Weisbach 1992). Along similar lines, we define *Combined NTR*

Gap as the weighted average NTR gap of the acquirer and target industries. The results of this estimation are presented in Panel B. The coefficient on $Post \times Combined\ NTR\ Gap$ in column (1) is positive and significant, which suggests that resolution of tariff uncertainty has a positive effect on M&A synergies. In terms of economic significance, the coefficient estimate translates to a 3.2% increase in combined CAR for an inter-quartile increase in NTR gap.

In columns (2) and (3) we estimate this regression separately for within-industry transactions and cross-industry transactions, respectively. For within-industry transactions, *Combined NTR Gap* equals the *Same NTR Gap* because the acquirer and target are from the same industry. For cross-industry transactions, we examine the effects of *Acquirer NTR Gap* and *Target NTR Gap* on *Combined CAR*. Although the coefficient on $Post \times Same\ NTR\ Gap$ in column (2) is positive and larger in magnitude than the corresponding coefficient in column (1), it is not statistically significant at the conventional 10% level. The results in column (3) indicate that PNTR passage had no significant effect on synergy creation in cross-industry transactions.

Dynamic Effects

Next, we estimate a dynamic variant of regression (5) to estimate how the effects of resolution of tariff uncertainty on acquirer CAR vary over time. To do this, we use the following dummy variables we created above to identify specific time periods in the pre-PNTR and post-PNT periods: $Year_{90-92}$, $Year_{93-95}$, $Year_{96-99}$, $Year_{01-04}$, $Year_{05-07}$ and $Year_{08-10}$, where the subscripts denote the time periods identified by these dummy variables. We then estimate a dynamic variant of regression (5) as follows:

$$\begin{aligned}
 Acquirer\ CAR_{ijkt} = & \sum_{\tau} \beta_{\tau} \times Year_{\tau} \times NTRGap_i + X'_j \gamma + X'_{ijkt} \delta \\
 & + \alpha_i + \alpha_t + \alpha + \varepsilon_{ijkt}
 \end{aligned} \tag{6}$$

We present the results of this regression in Table 8. The dependent variable in both

columns is *Acquirer CAR*[-10,10]. Column (1) does not include any controls whereas column (2) includes the full set of controls. As can be seen, the β_{τ} is positive and significant in all the post-PNTR periods in column (1) and two out of three post-PNTR periods in column (2), but is statistically and economically insignificant in all the pre-PNTR periods. These results provide strong evidence that resolution of tariff uncertainty had a positive effect on acquirer announcement returns.

3.3 Drivers of Acquirer Shareholder Wealth Effects

We showed above that trade liberalization has a positive effect on acquirer CAR in case of acquisitions involving publicly-traded targets. In this section we do further cross-sectional analysis to understand the drivers of this effect.

Within-industry vs. Cross-industry M&As

As we noted in Section 2, trade liberalization leads to an increase in both within-industry and cross-industry M&A activity. To understand how acquirer shareholder wealth effects of trade liberalization vary between within-industry and cross-industry deals, we estimate regression (5) with *Acquirer CAR* as dependent variable separately for within-industry and cross-industry acquisitions involving public targets.

The results of this estimation are presented in Table 9. The regression sample comprises within-industry transaction in columns (1) and (2) where we use *Same NTR Gap* because the acquirer and target are from the same industry; and cross-industry transactions in columns (3) and (4) where we examine the effect of both acquirer NTR gap and target NTR gap. As can be seen, the coefficient on $Post \times Same\ NTR\ Gap$ is statistically insignificant in columns (1) and (2). By contrast, the coefficient on $Post \times Acquirer\ NTR\ Gap$ is positive and significant in columns (3) and (4), whereas the coefficient on $Post \times Target\ NTR\ Gap$ is statistically insignificant. That is, the positive effect of trade liberalization on acquirer shareholder wealth is mainly driven by cross-industry acquisitions and by the resolution of

tariff uncertainty in the acquirers' industry. This evidence highlights the value of cash flow hedging or operational hedging to acquirers from cross-industry acquisitions following trade liberalization.

Effects of Market Competitiveness and Market Fluidity

Some firms may respond to the trade policy shock by strategically acquiring targets from product markets that are less exposed to the threat of Chinese imports, in a bid to diversify their cash flow risk. If so, we expect the effect of trade liberalization on acquirer shareholder wealth to be stronger in deals where the target is from a less competitive (i.e., more concentrated) and less fluid product market than the acquirer.

To test the hypothesis regarding product market concentration, we use the text-based HHI measure from [Hoberg and Phillips \(2016\)](#) to measure product market concentration at the firm-year level. Based on this measure, we stratify our M&A sample into two groups based on whether acquirer HHI is higher than or lower than the target HHI. We then estimate regression (5) with *Acquirer CAR* as dependent variable separately on these two groups.

The results of these regressions are presented in Table 10. We find that the coefficient on $Post \times NTR\ Gap$ is positive and significant only in the group in which the target is in a less competitive product market than the acquirer (i.e., target HHI exceeds acquirer HHI). By contrast, in deals where the acquirer is in a less competitive product market than the target, we fail to find any effect of trade liberalization on acquirer shareholder wealth.

Next, to test the hypothesis relating to product market fluidity, we use the text-based fluidity measure from [Hoberg, Phillips, and Prabhala \(2014\)](#) which is available at the firm-year level. Based on this measure, we stratify our M&A sample into two groups based on whether the acquirer is in a more or less fluid product market compared to the target. We then estimate regression (5) with *Acquirer CAR* as dependent variable separately on these two groups.

The results of these regressions are presented in Panel B of Table 11. Consistent with

our prediction, we find that the coefficient on $Post \times NTR\ Gap$ is positive and significant only in the group in which the target is in a less fluid product market than the acquirer. By contrast, in deals where the acquirer is in a less fluid product market than the target, we fail to find any effect of trade liberalization on acquirer shareholder wealth.

Effect on Takeover Premium

A potential explanation for the positive effect of trade liberalization on acquirer shareholder wealth is that trade liberalization strengthens the bargaining power of acquirers relative to targets, thus allowing acquirers to pay a low offer premium for targets. To test this hypothesis, we estimate regression (5) with *Takeover Premium* as the dependent variable, which is calculated by comparing the offer price to the target's price 4 weeks prior to announcement (and expressed as a percentage value).

The results of these estimation are presented in Table 14, where we examine the effects separately for within-industry deals (columns (1) and (2)) and cross-industry deals (columns (3) and (4)). The negative and significant coefficient on $Post \times Same\ NTR\ Gap$ in columns (1) and (2) suggests that trade liberalization has a negative effect on takeover premium. These effects are economically significant: the negative coefficient on $Post \times Same\ NTR\ Gap$ in column (2) indicates that increasing the NTR gap from its twenty-fifth percentile to seventy-fifth percentile value decrease the takeover premium by 24.84%, which is large in comparison to the average takeover premium of 50.54%.

In case of the cross-industry sample in columns (3) through (4), the coefficient on $Post \times Acquirer\ NTR\ Gap$ is negative and large but is not statistically significant, whereas the coefficient on $Post \times Target\ NTR\ Gap$ is both statistically and economically insignificant. One potential explanation for the weaker effect on takeover premium in case of cross-industry deals is that acquirers may be willing to offer a slightly higher takeover premium in lieu of the potential diversification benefits from the cross-industry deals.

Effect of Target Profitability and Leverage

If the passage of PNTR put pressure on cost-inefficient and financially fragile firms in exposed industries to downsize, then we expect the positive effect of trade liberalization on acquirer shareholder wealth to be stronger in case of targets that are less profitable and highly-levered in comparison to their industry peers. To test these predictions, we compute the industry-adjusted return on equity (ROE) for each firm-year combination by subtracting the industry average ROE and scaling this difference by the standard deviation of ROE within the industry. To enhance credibility, a firm is included in the sample for a given year only if we can identify at least 10 of its publicly-traded industry peers. We define the industry-adjusted leverage using a similar procedure.⁷ We then stratify the M&A sample into two groups based on whether the target’s industry-adjusted ROE is higher than (“Efficient Target”) or lower than (“Inefficient Target”) the sample median; and into two groups based on whether the target’s industry-adjusted leverage is higher than (“High-leverage Target”) or lower than (“Low-leverage Target”) the sample median. We then estimate regression (5) with *Acquirer CAR* as dependent variable separately on these groups.

The results of these estimation are presented in Table 12. When we distinguish between targets based on their industry-adjusted ROE, we find that the coefficient on $Post \times NTR$ *Gap* is positive and significant only in the inefficient target group (columns (3) and (4)). Similarly, when we distinguish between targets based on their industry-adjusted leverage, we find that the coefficient on $Post \times NTR$ *Gap* is positive and significant only in the high-leverage target group (columns (5) and (6)).

Effect of Acquirer and Target R&D Intensity

Hombert and Matray (2018) find that R&D-intensive firms are more resilient to import competition. Hence, it is natural to wonder if the positive effect of trade liberalization on

⁷We obtain similar results if we define industry-adjusted ROE by subtracting the industry median ROE, and scale the difference with the inter-quartile range of ROE; and similarly for industry-adjusted leverage.

acquirer shareholder wealth is stronger in case of R&D-intensive acquirers and targets. To test this, we define industry-adjusted R&D using the same procedure we used to define industry-adjusted ROE and leverage. We then stratify our M&A sample into two groups based on whether the acquirer’s industry-adjusted R&D is higher than (“High R&D” group) or lower than (“Low R&D” group) the sample median, and estimate regression (5) separately on each of these groups.

The results of our estimation are presented in Table 13. Although the coefficient on $Post \times NTR\ Gap$ is positive in all specifications, it is statistically significant only among the high-R&D group of acquirers (columns (1) and (2)). That is, the positive effect of trade liberalization on acquirer shareholder wealth is mainly driven by R&D-intensive acquirers.

Along similar lines as above, we also distinguish our results based on target R&D intensity, by estimating the regressions separately for high-R&D group of targets (columns (5) and (6)) and low-R&D group of targets (columns (7) and (8)). As can be seen, the positive effect of trade liberalization on acquirer shareholder wealth is mainly driven by R&D-intensive targets (positive and weakly significant coefficient on $Post \times NTR\ Gap$ in columns (5) and (6) only).

4 Conclusions

Conferral of PNTR status to China by the US in late 2000 did not change the tariff rates that US applied to Chinese imports, but eliminated tariff uncertainty associated with annual renewals of the NTR status. We use this policy change to examine the effect of resolution in trade policy uncertainty on M&A activity and shareholder returns to acquirer and target firms. Our analysis exploits the cross-industry variation in resolution of tariff uncertainty, which arises because the non-NTR rates to which tariffs would have risen if annual renewal of NTR status failed vary substantially across industries in the US manufacturing sector.

We find that, after trade liberalization, industries with greater resolution of tariff un-

certainty experience higher within-industry and cross-industry M&A activity. Acquirers in industries with greater resolution of tariff uncertainty experience higher announcement returns in the post-PNTR period, but there is no corresponding effect on target announcement returns. That is, resolution of tariff uncertainty has a positive effect on shareholder wealth of acquiring firms. Acquirer shareholder wealth effects are stronger for R&D-intensive acquirers; in transactions involving publicly-traded targets, especially for less profitable and high-leverage targets; and for cross-industry acquisitions, especially those in which the target is in a less competitive and less fluid product market than the acquirer.

Our results are consistent with the view that resolution of trade policy uncertainty impacts M&A activity through reduction in valuation uncertainty and by triggering industry restructuring that raises the bargaining power of acquirers relative to targets. Our analysis raises several important but challenging questions. What effect did PNTR have on vertical integration, corporate diversification, and industry structures within the manufacturing sector? How did US manufacturing firms change the composition of their capital investment policy in response to PNTR? What are the long-term consequences of this policy change on shareholder wealth? We leave these as avenues for future research.

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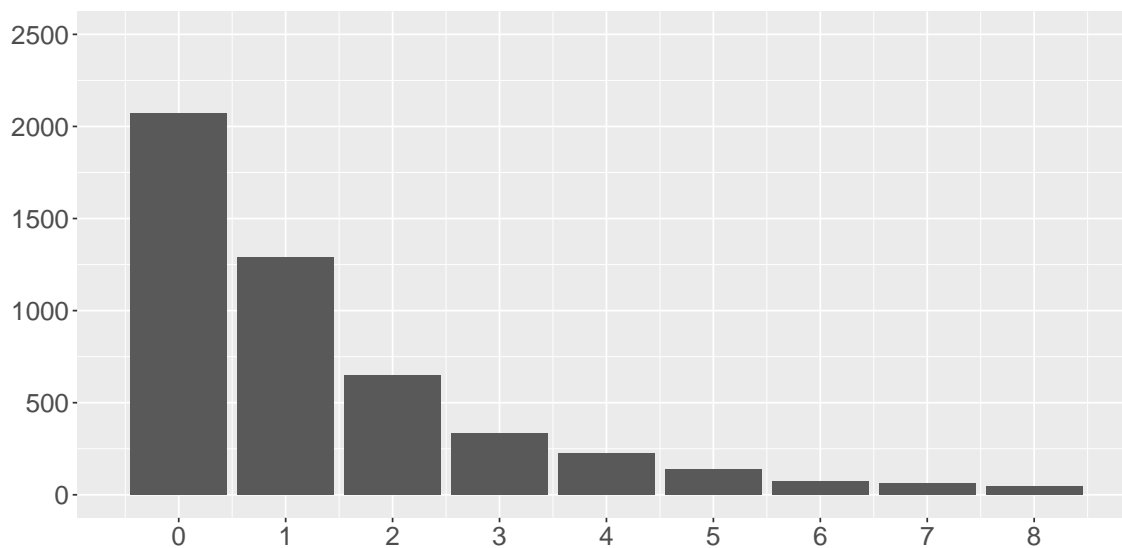
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Figure 1: Histogram of M&A Transactions at Industry-Year Level

The histograms below summarize M&A activity in our industry-year panel, which is defined using SIC 4-digit definitions of manufacturing industries, span the 1990-2010 period, and include all manufacturing industries which saw at least 10 M&A transaction over this time period. Panels (a) and (b) plot histograms for the number of acquirers and the number of targets at the industry-year level, respectively.

(a) Number of Acquirers



(b) Number of Targets

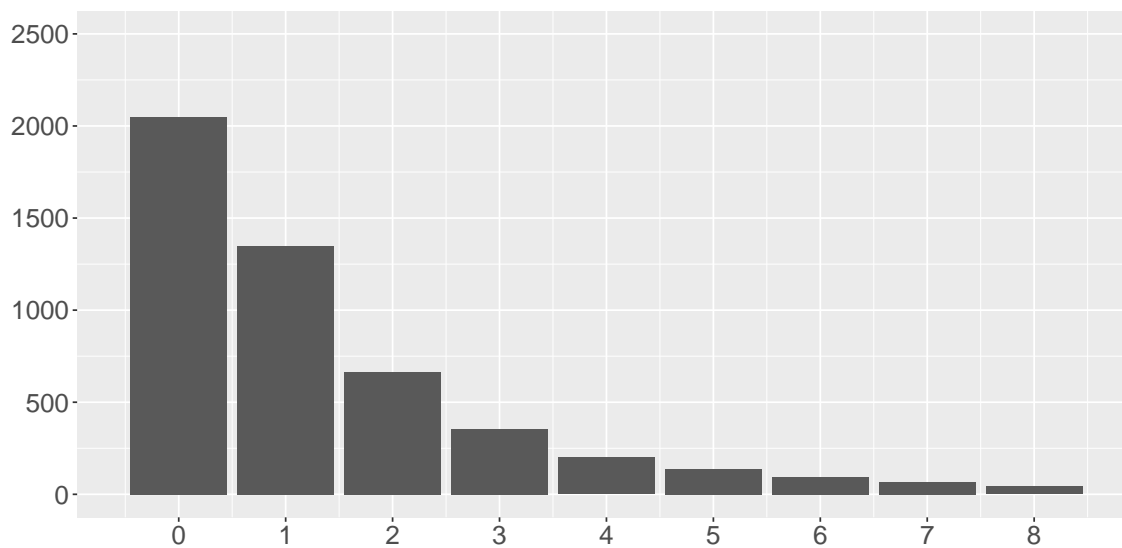


Table 1: M&A Activity Statistics

This table presents year-wise statistics over the 1990-2010 period on the number of MA transactions both within and outside the manufacturing sector. We define manufacturing MA transactions as those in which either the acquirer or the target is from a manufacturing industry; and non-manufacturing MA transactions as those in which neither is a manufacturing firm. We further classify transactions as within-industry ('Within') and cross-industry ('Cross') transactions based on whether the acquirer and the target belong to a same 4-digit SIC industry.

Year	Manufacturing Deals		Non-Manufacturing Deals	
	Within (1)	Cross (2)	Within (3)	Cross (4)
1990	76	244	158	89
1991	101	215	133	89
1992	139	314	192	120
1993	138	399	239	158
1994	146	482	261	223
1995	196	530	266	266
1996	212	691	340	334
1997	311	761	486	403
1998	333	771	453	454
1999	339	733	356	333
2000	365	712	262	330
2001	251	518	195	216
2002	210	423	225	227
2003	223	401	238	197
2004	211	446	253	255
2005	213	457	307	286
2006	185	477	308	288
2007	177	471	331	284
2008	155	298	270	197
2009	145	257	188	137
2010	131	292	258	204
<i>Total</i>	4,257	9,892	5,719	5,090

Table 2: M&A Deal-level Descriptive Statistics

This table provides descriptive statistics for our M&A deal-level sample. Each observation corresponds to a unique M&A deal in which either (or both) the acquirer or (and) the target is a manufacturing firm. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles.

Variable Name	Q1 (1)	Median (2)	Q3 (3)	Mean (4)	STD (5)	Obs (6)
Acquirer CAR (%)	-8.01	0.33	9.44	0.91	17.82	7,942
Target CAR (%)	9.33	25.97	44.96	30.20	36.92	1,317
Acquirer MV (million \$)	146.27	608.95	2,644.69	7,454.93	25,256.10	7,683
Target MV (million \$)	35.25	114.34	423.27	788.92	2,874.31	1,620
Acquirer-to-Target MV	2.97	9.02	43.01	121.12	449.66	1,326
Acquirer NTR Gap	0.00	0.31	0.37	0.24	0.18	14,149
Target NTR Gap	0.00	0.26	0.36	0.21	0.19	14,149
Deal Value (million \$)	6.69	22.50	90.00	173.91	620.64	14,149
Takeover Premium (%)	22.07	42.86	67.89	51.21	50.43	1,715
Stock Payment (%)	0.00	0.00	95.13	33.87	43.61	10,043
Acquirer ROE	0.02	0.06	0.11	0.04	0.19	7,671
Acquirer Leverage	0.01	0.23	0.65	0.57	1.71	7,962
Acquirer R&D Intensity	0.02	0.06	0.12	0.10	0.12	6,118
Acquirer Tobin's Q	0.85	1.44	2.69	2.64	4.30	7,683
Acquirer HHI	0.09	0.18	0.40	0.29	0.27	7,291
Acquirer Fluidity	4.42	6.43	8.85	6.94	3.43	7,254
Target ROE	-0.09	0.04	0.11	-0.10	0.61	1,619
Target Leverage	0.00	0.13	0.61	0.38	1.74	1,640
Target R&D Intensity	0.04	0.10	0.20	0.16	0.21	1,308
Target Tobin's Q	0.63	1.10	2.05	1.74	2.11	1,620
Target HHI	0.09	0.16	0.34	0.27	0.26	1,530
Target Fluidity	4.81	6.88	9.28	7.28	3.38	1,533

Table 3: Effect of Trade Liberalization on M&A Activity

This table reports the results of the Poisson regression (3) aimed at investigating the effect of trade liberalization on M&A activity at the industry-year level. The dependent variable is $\ln[E(Y_{it})]$ where Y_{it} is either the number of acquirers (columns (1) and (2)) or the number of targets (columns (3) and (4)) in manufacturing industry i in year t . We estimate these regressions on the industry-year panel. All the variables are defined in the Appendix. Standard errors reported in parentheses are clustered by industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	$Y = \text{Number of Acquirers}$		$Y = \text{Number of Targets}$	
	(1)	(2)	(3)	(4)
$Post \times NTRGap_i$	0.632*** (0.228)	0.909*** (0.239)	0.329 (0.234)	0.687*** (0.240)
NTR_{it}		4.746*** (1.406)		4.818*** (1.639)
$Post \times MFA_i$		-0.094 (0.097)		-0.114 (0.098)
$Post \times HighTech_i$		0.170*** (0.059)		0.225*** (0.059)
Industry FE	Acquirer	Acquirer	Target	Target
Year FE	Yes	Yes	Yes	Yes
Observations	5,166	5,166	5,166	5,166
Pseudo R^2	0.78	0.82	0.78	0.82

Table 4: Activity level: Dynamic Effects

This table reports the results of the difference-in-differences regression (6) examining the dynamic effect of trade liberalization on M&A activity. The dependent variable is either the number of acquirers or the number of targets. $Year_{a-b}$ are dummy variables equal to one when observations fall between year a and b , and zero otherwise. All the variables are defined in the Appendix. Standard errors reported in parentheses are clustered by industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Variable=	Number of Acquirers (1)	Number of Targets (2)
$Year_{90-92} \times NTRGap_i$	0.969 (0.634)	2.050*** (0.602)
$Year_{93-95} \times NTRGap_i$	1.135* (0.588)	1.435** (0.585)
$Year_{96-99} \times NTRGap_i$	0.749 (0.574)	0.933* (0.553)
$Year_{01-04} \times NTRGap_i$	1.107* (0.582)	1.274** (0.552)
$Year_{05-07} \times NTRGap_i$	1.876*** (0.619)	1.721*** (0.581)
$Year_{08-10} \times NTRGap_i$	2.397*** (0.662)	2.342*** (0.614)
NTR_{it}	3.471** (1.346)	2.063 (1.346)
$Post \times MFA_i$	-0.092 (0.096)	-0.102 (0.096)
$Post \times HighTech_i$	0.167*** (0.056)	0.219*** (0.056)
Industry FE	Acquirer	Target
Year FE	Yes	Yes
Observations	5,166	5,166
Pseudo R^2	0.62	0.62

Table 5: Effect of Trade Liberalization on M&A Activity: Within-Industry and Cross-Industry Deals

This table reports the results of the Poisson regression (3) aimed at separately investigating the effect of trade liberalization on within-industry M&A activity and cross-industry M&A activity at the industry-year level. The dependent variable is $\ln[E(Y_{it})]$ where Y_{it} measured at the level of manufacturing industry i and year t is one of the following: the number of within-industry transactions (columns (1) and (2)), the number of acquirers involved in cross-industry transactions (columns (3) and (4)), or the number of targets involved in cross-industry transactions (columns (5) and (6)). We estimate these regressions on industry-year panel. All the variables are defined in the Appendix. Standard errors reported in parentheses are clustered by industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	within-industry activity		cross-industry activity			
	Y = Number of Deals		Y = Number of Acquirers		Y = Number of Targets	
	(1)	(2)	(3)	(4)	(5)	(6)
$Post \times Same\ NTRGap_i$	0.750** (0.373)	1.427*** (0.388)				
$Post \times Acquirer\ NTRGap_i$			0.664*** (0.188)	0.848*** (0.206)		
$Post \times Target\ NTRGap_i$					0.141 (0.205)	0.460** (0.218)
NTR_{it}		13.830*** (2.901)		3.208** (1.458)		3.673** (1.698)
$Post \times MFA_i$		-0.291 (0.205)		-0.057 (0.106)		-0.096 (0.110)
$Post \times HighTech_i$		0.270** (0.107)		0.141** (0.057)		0.222*** (0.060)
Industry FE	Same	Same	Acquirer	Acquirer	Target	Target
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,470	1,470	4,515	4,515	4,515	4,515
Pseudo R^2	0.78	0.82	0.70	0.73	0.70	0.72

Table 6: Effect of Trade Liberalization on Announcement Returns: Univariate Evidence

This table presents univariate evidence regarding the effect of trade liberalization on acquirer $CAR[-10,10]$ and target $CAR[-10,10]$. We divide our M&A sample into four categories as follows: two groups based on whether the transaction was announced before or after the passage of PNTR (“before” and “after” groups), and then, divide each of these groups into two sub-groups based on whether the industry NTR gap of the firm is higher or lower than the median NTR gap across all industries (“high” and “low” NTR gap groups). We report the mean and median CARs for acquirers (Panel A) and targets (Panel B) in each of the four categories created above; we summarize acquirer CARs separately for deals with publicly-traded targets and private targets. The column (row) titled “Difference” reports the difference between average/median CARs between the “high” and “low” groups (“after” and “before” groups); the corresponding p -values are reported in square brackets. *Diff-in-Diff* denotes the difference-in-differences estimate, or equivalently, the second mean difference. CARs are winsorized at the 0.5th and 99.5th percentiles.

Panel A: Acquirer Mean (Median) CAR[-10,10] (in %)

	With Public Targets		<i>Difference</i>	With Non-Public Targets		<i>Difference</i>
	High	Low		High	Low	
After	-0.55 -1.09	-3.54 -2.96	2.99 [0.05] 2.77 [0.05]	1.42 0.69	1.38 1.14	0.04 [0.95] -0.45 [0.72]
Before	-2.32 -1.49	-0.41 -1.02	-1.91 [0.17] -0.47 [0.57]	1.55 0.53	1.46 0.80	0.09 [0.90] -0.27 [0.93]
<i>Difference</i>	1.77 [0.12] 0.40 [0.42]	-3.13 [0.07] -1.94 [0.12]		-0.13 [0.82] 0.16 [0.82]	-0.08 [0.92] 0.34 [0.86]	
<i>Diff-in-Diff</i>		4.90			-0.05	
<i>Observations</i>		1,197			5,626	

Panel B: Target Mean (Median) CAR[-10,10] (in %)

	With All Acquirers		<i>Difference</i>
	High	Low	
After	28.86 24.16	33.67 26.35	-4.81 [0.20] -2.19 [0.67]
Before	30.54 28.48	28.18 24.68	2.36 [0.39] 3.80 [0.20]
<i>Difference</i>	-1.68 [0.51] -4.32 [0.22]	5.49 [0.15] 1.67 [0.65]	
<i>Diff-in-Diff</i>		-7.17	
<i>Observations</i>		1,151	

Table 7: Effect of Trade Liberalization on Announcement Returns

This table reports the results of the difference-in-differences regression (5) examining the effect of trade liberalization on M&A announcement returns. The dependent variable is either *Acquirer CAR*[-10, 10] or *Target CAR*[-10, 10] in Panel A, and the *Combined CAR*[-10, 10] from the transaction in Panel B. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Effect on Acquirer and Target Announcement Returns						
Dep. Variable=	Acquirer CAR[-10,10]				Target CAR[-10,10]	
	With Public Targets		With Non-Public Targets		With All Acquirers	
	(1)	(2)	(3)	(4)	(5)	(6)
$Post \times NTRGap_i$	0.244*** (0.072)	0.207*** (0.080)	0.007 (0.031)	0.032 (0.045)	-0.264* (0.151)	-0.178 (0.171)
NTR_{it}		0.704 (0.591)		0.444 (0.446)		-1.189 (1.532)
$Stock Pct_j$		-0.001*** (0.000)		-0.000 (0.000)		-0.001*** (0.000)
$\log(MV_{k,t-1})$		-0.003 (0.004)		-0.006*** (0.002)		-0.014 (0.011)
$Tobin's Q_{k,t-1}$		-0.001 (0.004)		-0.002* (0.001)		0.003 (0.008)
$Leverage_{k,t-1}$		-0.005 (0.007)		-0.000 (0.003)		-0.014* (0.009)
$ROE_{k,t-1}$		-0.113 (0.103)		0.070* (0.039)		0.113 (0.103)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer	Target	Target
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,197	1,084	5,626	3,387	1,151	961
R^2	0.13	0.15	0.05	0.08	0.20	0.27

Panel B: Effect on Combined Announcement Return			
	Dep. Variable= Combined CAR[-10,10]		
	All (1)	Within-industry (2)	Cross-industry (3)
<i>Post</i> × <i>Combined NTRGap_i</i>	0.139* (0.084)		
<i>Post</i> × <i>Same NTRGap_i</i>		0.170 (0.127)	
<i>Post</i> × <i>Acquirer NTRGap_i</i>			0.067 (0.113)
<i>Post</i> × <i>Target NTRGap_i</i>			-0.036 (0.071)
Industry FE	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes
Observations	772	311	461
<i>R</i> ²	0.20	0.30	0.33

Table 8: Acquirer Announcement Returns: Dynamic Effects

This table reports the results of the difference-in-differences regression (6) examining the dynamic effect of trade liberalization on M&A acquirer announcement returns when target firms are publicly traded. The dependent variable is *Acquirer CAR*[-10, 10]. $Year_{a-b}$ are dummy variables equal to one when observations fall between year a and b , and zero otherwise. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Variable=	Acquirer CAR[-10,10]	
	(1)	(2)
$Year_{90-92} \times NTRGap_i$	-0.093 (0.151)	-0.042 (0.157)
$Year_{93-95} \times NTRGap_i$	0.018 (0.127)	0.029 (0.115)
$Year_{96-99} \times NTRGap_i$	0.005 (0.121)	0.082 (0.117)
$Year_{01-04} \times NTRGap_i$	0.228* (0.122)	0.270** (0.123)
$Year_{05-07} \times NTRGap_i$	0.218* (0.120)	0.152 (0.121)
$Year_{08-10} \times NTRGap_i$	0.317* (0.169)	0.378* (0.200)
NTR_{it}		0.859 (0.706)
$Stock Pct_j$		-0.001*** (0.000)
$\log(MV_{k,t-1})$		-0.003 (0.004)
$Tobin's Q_{k,t-1}$		-0.001 (0.002)
$Leverage_{k,t-1}$		-0.004 (0.007)
$ROE_{k,t-1}$		-0.112 (0.101)
Industry FE	Acquirer	Acquirer
Year FE	Yes	Yes
Observations	1,197	1,084
R^2	0.09	0.12

Table 9: Acquirer Announcement Returns: Within- vs. Cross-Industry Deals

This table reports the results of the difference-in-differences regression (5) with *Acquirer CAR*[-10,10] as the dependent variable, separately for within-industry transactions (columns (1) and (2)) and cross-industry transactions (columns (3) and (4)). We estimate these regressions only on M&A deals involving publicly-traded targets. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Acquirer CAR[-10,10]			
	Within-industry		Cross-industry	
	(1)	(2)	(3)	(4)
<i>Post</i> × <i>Same NTRGap_i</i>	0.120 (0.119)	0.024 (0.139)		
<i>Post</i> × <i>Acquirer NTRGap_i</i>			0.223** (0.112)	0.213* (0.116)
<i>Post</i> × <i>Target NTRGap_i</i>			0.030 (0.063)	0.046 (0.067)
<i>NTR_{it}</i>		0.263 (1.265)		1.024 (0.680)
<i>Stock Pct_j</i>		-0.001** (0.000)		-0.000*** (0.000)
<i>log(MV_{k,t-1})</i>		-0.005 (0.007)		0.001 (0.006)
<i>Tobin's Q_{k,t-1}</i>		-0.003 (0.005)		-0.002 (0.005)
<i>Leverage_{k,t-1}</i>		0.003 (0.014)		-0.015* (0.008)
<i>ROE_{k,t-1}</i>		0.098 (0.128)		-0.259 (0.163)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes
Observations	423	377	774	707
<i>R</i> ²	0.21	0.29	0.19	0.22

Table 10: Acquirer Announcement Returns: Product Market Competitiveness of Acquirers vs. Targets

This table reports the results of regressions examining how the effect of trade liberalization on acquirer CAR varies based on whether the target is in a less or more competitive product market compared to the acquirer. Using the text-based Herfindahl-Hirschman Index (HHI) of [Hoberg and Phillips \(2016\)](#) which is available at the firm-year level, we classify M&As into two groups: those in which $Acquirer\ HHI \geq Target\ HHI$ (columns (1) and (2)) and those in which $Acquirer\ HHI < Target\ HHI$ (columns (3) and (4)). We then estimate the difference-in-differences regression (5) with $Acquirer\ CAR[-10,10]$ as the dependent variable, separately for these two groups. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Acquirer CAR[-10,10]			
	<i>Acquirer HHI</i> \geq <i>Target HHI</i>		<i>Acquirer HHI</i> $<$ <i>Target HHI</i>	
	(1)	(2)	(3)	(4)
<i>Post</i> \times <i>NTRGap_i</i>	-0.085 (0.109)	-0.026 (0.112)	0.398*** (0.119)	0.442*** (0.133)
<i>NTR_{it}</i>		0.794 (0.999)		2.552 (1.552)
<i>Stock Pct_j</i>		-0.001** (0.000)		-0.001*** (0.000)
$\log(MV_{k,t-1})$		-0.008 (0.007)		0.002 (0.009)
<i>Tobin's Q_{k,t-1}</i>		0.005 (0.007)		-0.004 (0.008)
<i>Leverage_{k,t-1}</i>		-0.002 (0.010)		0.002 (0.021)
<i>ROE_{k,t-1}</i>		-0.018 (0.153)		-0.018 (0.136)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes
Observations	488	469	443	427
R^2	0.17	0.19	0.25	0.28

Table 11: Acquirer Announcement Returns: Product Market Fluidity of Acquirers vs. Targets

This table reports the results of regressions examining how the effect of trade liberalization on acquirer CAR varies based on whether the target is in a less or more “fluid” product market compared to the acquirer. Using the text-based product market fluidity measure of [Hoberg and Phillips \(2016\)](#) which is available at the firm-year level, we classify M&As into two groups: those in which $Acquirer\ Fluidity \geq Target\ Fluidity$ (columns (1) and (2)) and those in which $Acquirer\ Fluidity < Target\ Fluidity$ (columns (3) and (4)). We then estimate the difference-in-differences regression (5) with $Acquirer\ CAR[-10,10]$ as the dependent variable, separately for these two groups. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Acquirer CAR[-10,10]			
	$Acquirer\ Fluidity \geq Target\ Fluidity$		$Acquirer\ Fluidity < Target\ Fluidity$	
	(1)	(2)	(3)	(4)
$Post \times NTRGap_i$	0.346** (0.151)	0.506*** (0.160)	0.028 (0.107)	0.003 (0.119)
NTR_{it}		3.930** (1.509)		-1.568 (0.983)
$Stock\ Pct_j$		-0.001* (0.000)		-0.001** (0.000)
$\log(MV_{k,t-1})$		-0.007 (0.012)		-0.003 (0.006)
$Tobin's\ Q_{k,t-1}$		-0.006 (0.006)		0.004 (0.005)
$Leverage_{k,t-1}$		0.012 (0.010)		-0.020** (0.008)
$ROE_{k,t-1}$		-0.040 (0.144)		-0.015 (0.152)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes
Observations	389	377	533	510
R^2	0.19	0.24	0.21	0.25

Table 12: Acquirer Announcement Returns: Effect of Target Profitability and Leverage

This table reports the results of regressions examining how the effect of trade liberalization on acquirer CAR varies based on target profitability and leverage. To examine the effect of target’s profitability, we classify M&As into two groups based on whether the target’s industry-adjusted return on equity is higher than (“Efficient Target” in columns (1) and (2)) or lower than (“Inefficient Target” in columns (3) and (4)) the sample median. Similarly, to examine the effect of target’s leverage, we classify M&As into two groups based on whether the target’s industry-adjusted leverage is higher than (“High-LEV Target” in columns (5) and (6)) or lower than (“Low-LEV Target” in columns (7) and (8)) the sample median. We then estimate the difference-in-differences regression (5) with *Acquirer CAR*[-10,10] as the dependent variable, separately for these different groups. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Acquirer CAR[-10,10]							
	Efficient Target		Inefficient Target		High-LEV Target		Low-LEV Target	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Post</i> × <i>NTRGap_i</i>	0.082 (0.147)	0.099 (0.147)	0.461*** (0.152)	0.509*** (0.186)	0.289* (0.153)	0.390** (0.177)	-0.124 (0.226)	-0.190 (0.226)
<i>NTR_{it}</i>		1.785 (1.381)		2.799* (1.480)		2.790 (1.893)		-0.193 (1.375)
<i>Stock Pct_j</i>		-0.001** (0.000)		-0.000 (0.000)		-0.000* (0.000)		-0.000 (0.000)
<i>log(MV_{k,t-1})</i>		0.002 (0.007)		-0.002 (0.007)		-0.004 (0.010)		-0.009 (0.008)
<i>Tobin's Q_{k,t-1}</i>		-0.004 (0.006)		-0.002 (0.007)		0.001 (0.010)		-0.001 (0.003)
<i>Leverage_{k,t-1}</i>		-0.006** (0.003)		-0.020 (0.032)		0.009*** (0.004)		-0.015 (0.011)
<i>ROE_{k,t-1}</i>		0.234** (0.101)		-0.029 (0.144)		-0.116 (0.290)		0.092 (0.126)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	372	348	372	345	377	354	377	346
<i>R</i> ²	0.21	0.28	0.19	0.19	0.15	0.18	0.21	0.23

Table 13: Acquirer Announcement Returns: Effect of R&D Intensity

This table reports the results of regressions examining how the effect of trade liberalization on acquirer CAR varies based on the R&D intensity of the acquirer and the target. Accordingly, we divide our M&A sample into two groups based on whether the acquirer’s industry-adjusted R&D is higher than (“High Acquirer R&D”) or lower than (“Low Acquirer R&D”) the sample median; and into two groups based on whether the target’s industry-adjusted R&D is higher than (“High Target R&D”) or lower than (“Low Target R&D”) the sample median. We then estimate the difference-in-differences regression (5) with *Acquirer CAR*[-10,10] as the dependent variable, separately for these different groups. All the variables are defined in the Appendix. All ratios plus CARs are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Acquirer CAR[-10,10]							
	High Acquirer-R&D		Low Acquirer-R&D		High Target-R&D		Low Target-R&D	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Post</i> × <i>NTRGap_i</i>	0.435*** (0.159)	0.433** (0.202)	0.129 (0.134)	0.139 (0.133)	0.235* (0.132)	0.218 (0.158)	-0.028 (0.201)	0.040 (0.237)
<i>NTR_{it}</i>		3.394 (1.214)		-0.055 (0.973)		2.098* (1.131)		0.599 (1.608)
<i>Stock Pct_j</i>		-0.000 (0.000)		-0.001*** (0.000)		0.000 (0.000)		-0.001 (0.000)
<i>log(MV_{k,t-1})</i>		0.001 (0.008)		-0.003 (0.005)		-0.002 (0.009)		0.001 (0.007)
<i>Tobin's Q_{k,t-1}</i>		-0.001 (0.005)		0.002 (0.003)		-0.000 (0.003)		-0.016** (0.008)
<i>Leverage_{k,t-1}</i>		0.001 (0.003)		-0.011 (0.016)		(0.001) (0.003)		-0.012 (0.021)
<i>ROE_{k,t-1}</i>		-0.198*** (0.062)		0.125 (0.176)		-0.023 (0.140)		-0.124 (0.261)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	393	372	393	376	336	309	336	316
<i>R</i> ²	0.12	0.18	0.19	0.23	0.14	0.16	0.19	0.24

Table 14: Effect of Trade Liberalization on Takeover Premium

This table reports the results of the difference-in-differences regression (5) examining the effect of trade liberalization on the takeover premium offered to the target firm. The dependent variable is takeover premium expressed as a percentage. We examine the regression separately for within-industry deals (columns (1) and (2)) and cross-industry deals (columns (3) and (4)). All the variables are defined in the Appendix. All ratios plus takeover premiums are winsorized at the 0.5th and 99.5th percentiles. Standard errors reported in parentheses are clustered by the acquirer industry and year. We use *, **, and *** to denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dep. Variable= Takeover Premium (%)			
	Within-industry Deals		Cross-industry Deals	
	(1)	(2)	(3)	(4)
$Post \times Same\ NTRGap_i$	-97.676*** (35.070)	-107.979*** (38.385)		
$Post \times Acquirer\ NTRGap_i$			-44.809 (40.027)	-32.093 (47.585)
$Post \times Target\ NTRGap_i$			-8.926 (28.841)	-7.144 (32.177)
NTR_{it}		-192.760 (448.346)		-514.043 (397.612)
$Stock\ Pct_j$		-0.169** (0.067)		-0.077 (0.062)
$log(MV_{k,t-1})$		-4.482 (2.826)		-3.334** (1.601)
$Tobin's\ Q_{k,t-1}$		1.886 (1.172)		0.200 (1.026)
$Leverage_{k,t-1}$		0.694 (2.328)		-3.190 (3.762)
$ROE_{k,t-1}$		20.141 (18.107)		76.310*** (25.248)
Industry FE	Acquirer	Acquirer	Acquirer	Acquirer
Year FE	Yes	Yes	Yes	Yes
Observations	435	389	608	561
R^2	0.27	0.31	0.29	0.30

Appendix: Variable Definitions

Dependent Variables

- We measure *level of M&A activity* using either the number of acquirers or the number of targets at the industry-year level, using the SIC 4-digit definition of industry.
- *Acquirer CAR*: Cumulative abnormal return (estimated using the market model) of the acquirer over the announcement window [-10,10]; similar definition for *Target CAR*
- *Combined CAR*: The market-value weighted average of the acquirer CAR and target CAR (see [Kaplan and Weisbach 1992](#))
- *Premium*: The takeover premium, which is calculated by comparing the offer price to the target's price 4 weeks prior to announcement (and expressed as a percentage value).

Key Independent Variables

- *NTR Gap*: The difference between the non-NTR rates to which tariffs would have risen if annual renewal of NTR had failed and the NTR tariff rates locked in by PNTR ([Pierce and Schott 2016](#))
- *Combined NTR Gap*: The weighted average of the acquirer's NTR gap and the target's NTR gap
- *Post*: An indicator variable to identify the post-PNTR period, that is, years 2001 through 2010.

Industry Level Controls

- NTR_{it} : Normal Trade Relations (NTR) tariff rates applicable to industry i in year t
- *MFA*: An indicator variable to identify industries affected by the Multifiber Arrangement ([Khandelwal, Schott, and Wei 2013](#))
- *HighTech*: An indicator variable to identify high-tech industries defined, as per the level-I high-tech industry classification in [Heckler \(2005\)](#)

Firm-level Controls

- $\log(MV)$: The natural logarithm of the firm's market value of equity (CSHO*PRCC_F)
- *Tobin's Q*: Market value of common equity (CSHO*PRCC_F) plus book value of debt (DLTT+DLC) divided by the sum of book value of equity (SEQ) and debt
- *ROE*: Return on equity, which is obtained as the ratio of earnings before interest and taxes (EBIT) to market value of equity

- *Leverage*: Total long-term debt plus total debt in current liabilities (DLTT+DLC) divided by shareholders' equity (SEQ)
- *R&D Intensity*: Research and development expense (XRD) divided by total assets (AT)
- *Industry-adjusted ROE*: Difference between the firm's ROE and its industry (SIC-4 digit) average ROE, scaled by the standard deviation of ROE within the industry. We use a similar procedure to define *Industry-adjusted Leverage* and *Industry-adjusted R&D Intensity*
- *HHI* : Text-based measure of Herfindahl-Hirschman Index (HHI) defined at the firm-year level by [Hoberg and Phillips \(2016\)](#).
- *Fluidity* : Text-based measure of how intensively the product market around a firm is changing; computed at the firm-year level by [Hoberg et al. \(2014\)](#)

Deal-level Controls

- *Deal Value*: Total value of the transaction in \$ million.
- *Stock Pct*: Percentage of the total payment that is made in the form of the acquirer's stock