Trade Wars and Solar Flares: The Unintended Consequences of Ray-dical Protectionist Policies

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Abstract

The recent shift in the global economy from openness to trade protectionism challenges international business (IB) practice and theory. We develop a framework in which multinational enterprises face institutional changes under the World Trade Organization rules and complement it with a resource-based view of IB. We use this framework to analyze unintended consequences on targeted multinational enterprises. In our empirical analysis, we examine the anti-dumping and countervailing duties implemented by the United States on the import of solar panels from China in 2012. Using the Directory of Corporate Affiliations database and a difference-in-differences design, we document how this shock affects Chinese MNEs and their reactions. Our findings show that targeted MNEs experience a reduction in their net income and return on assets the year the policy is implemented. They respond by restructuring their domestic units, increasing the regional dispersion of their foreign subsidiaries, and diversifying their industrial activities. These results document that US protectionism harms Chinese conglomerates that, as a response, develop strategies to regain financial strength and market preeminence.

Keywords: Trade Policy, Anti-Dumping, Firm Strategies, Multinational Enterprises, Solar Panels, United States, China.

1 Introduction

The recent shift in the global economy from openness to trade protectionism challenges international business (IB) practice and theory (Luo (2023)). This paradigm change raises questions about the potential impacts on multinational enterprises facing uncertainties in their global operations (Luo and Van Assche (2023), Buckley (2020) Petricevic and Teece (2019)). Specifically, the strategies they develop and how they affect the organization's structure (Witt (2019)).

Institutional changes impact many aspects of MNEs' activities (Meyer et al. (2023)). Trade policy, in particular, can have unintended consequences that amplify uncertainty in the global economy (Gereffi et al. (2021)). Thus, a comprehensive study of MNEs must include an approach highlighting the importance of unfolding capabilities in a changing environment (Petricevic and Teece (2019)). Especially in key industries, given the increased prevalence of industrial policy in strategic sectors (Luo (2023)).

The recent discussion on changes in IB institutional conditions emphasizes protectionism as moving away from the rules of the World Trade Organization. By focusing on cases such as the US and China trade war or the different protectionist measures that industrialized countries have implemented after the COVID-19 pandemic and that base their motivation on supply chain or national security concerns. However, we highlight that MNEs face institutional challenges even in a stable international rule-based system. That is the case of anti-dumping and countervailing duties that are usually a one-sided change to bilateral trade conditions and can harm MNEs impacted by them. Thus, maintaining an adaptive managerial approach is key to not losing relevance in the international markets while overcoming negative external shocks, even within the WTO rules.

We develop a framework for studying the unintended consequences of protectionist policies on multinational enterprises, focusing on anti-dumping and countervailing duties (AD-CVDs). For firms operating in the global economy, these administered forms of protection represent institutional changes that can potentially harm their operations, use, and development of resources.

We apply this framework to the analysis of the AD-CVDs implemented by the US on the import of solar panels from China in 2012. Using the Directory of Corporate Affiliations

(DCA) database and a difference-in-differences design, we document how targeted Chinese MNEs are affected and the strategies they develop as a reaction to the negative shock of this policy. Our research design exploits the fact that AD-CVDs target firms in the same industry with different rates that reflect the differential exposure to the US trade policy, with firms receiving a specific rate being the most exposed (Montti (2024)).

Building on the proposal by Meyer et al. (2023) for the study of firms facing sanctions, we develop a framework in which MNEs' institutional changes come from the World Trade Organization-supported AD-CVDs, as suggested in Peng et al. (2008). We complement this institutional-based view of IB theory with a resource-based view, as suggested in Meyer et al. (2009), emphasizing the use of existing resources and the development of new ones

We use this integrated approach to analyze how institutional changes in bilateral trade conditions have unintended consequences on the internal aspects of firms operating in the global economy. In particular, how they adapt to a changing environment. We focus on the financial effects firms experience due to this negative shock, and their strategic responses regarding the use of existing resources such as labor force and industrial capacity, and the development of new subsidiaries.

We examine these trade barriers' impact on multinational enterprises that, within their conglomerate, have companies targeted by the US anti-dumping and countervailing duties. Our descriptive data analysis and statistical results show that this is a heterogeneous group of MNEs. To address the internal sources of variation, we estimate the effects on the whole sample and different subsamples defined by conglomerate characteristics like availability of financial data and number of employees.

Our empirical findings show that targeted MNEs experience a reduction in their net income and return on assets the year the policy is implemented. Following this negative shock, they develop several strategic responses. They restructure their domestic units by reducing the number of employees in Chinese subsidiaries. They increase the regional dispersion, having more subsidiaries in foreign Asian countries. Finally, they diversify their industrial activities, increasing the number of industry activities developed by the companies in the conglomerate. Our analysis of heterogeneous effects shows that smaller companies (in terms of employees) are more affected by this external shock and that firms in the financial subsample are more capable of implementing an industry diversification

strategy.

Our results document that US protectionism harms Chinese conglomerates that, as a response, develop strategies to avoid being undermined financially and in their international market preeminence. In addition, it reflects that not all MNEs can take full advantage of these strategies, and those who do share characteristics that make them more capable of adapting to changing external environments.

Our paper contributes to the theoretical understanding of MNEs' behavior by analyzing the unintended consequences of a negative institutional shock under the WTO regime and complementing it with a resource-based view of IB strategy. We also contribute to analyzing managerial decisions in an unstable external context that hinders globalization. Our empirical contribution provides an identification strategy that allows us to find the causal effects of these policies on MNEs' finances, structure, and geographical and industrial scope. Further, we detail a case study for the renewable energy sector, contributing to a better understanding of how Chinese multinational enterprises in a key industry operate in the global economy and react to US unilateral changes in trade policy.

The paper is organized as follows: In section 2 we develop our conceptual framework, in section 3 we describe our dataset and the variables we use in our estimations. Section 4 explains our model and estimation method, while section 5 presents and discusses our results. Finally, in section 6 we conclude and present the implications of our findings for MNEs' managerial decisions.

2 MNE Reconfiguration as a Response to AD-CVDs

Building on the proposal by Meyer et al. (2023) for the study of firms facing sanctions, we develop a framework in which MNEs' institutional changes come from the World Trade Organization-supported AD-CVDs, as suggested in Peng et al. (2008). We complement this institutional-based view of IB theory with the resource-based view (Meyer et al. (2009)). We use this integrated framework to analyze how institutional changes in bilateral trade conditions have unintended consequences on the internal aspects of conglomerates operating in the global economy and in their geographic scope. We focus on how they adapt to a

changing environment and recover from a negative financial shock.

The institution-based view of international business asks how institutions impact firm strategy and performance (Peng et al. (2008)). Recent developments in the global economy, such as the rise of protectionism and geopolitical tensions, have prompted IB theorists to suggest that the institutional view needs to adapt to be able to explain this new reality (Luo (2023), Luo and Van Assche (2023), Meyer et al. (2023)). However, tensions and uncertainties also arise under the global institutions governed by the World Trade Organization's rules, such as anti-dumping and countervailing duties.

The current discussion on changes in IB institutional conditions emphasizes protectionism as moving away from international trade and investment rules. The argument focuses on cases such as the US and China trade war or different protectionist measures that industrialized countries have implemented after the COVID-19 pandemic and that base their motivation on supply chain or national security concerns. However, we highlight that MNEs may face institutional disruptions even in a stable international rule-based system. That is the case of anti-dumping and countervailing duties that are a one-sided change to bilateral trade conditions with the potential to harm targeted MNEs.

The Anti-Dumping Agreement (Agreement on Implementation of Article VI of the GATT 1994) defines dumping as "the introduction of a product into the commerce of another country at less than its normal value" (World Trade Organization). The Agreement on Subsidies and Countervailing Measures allows countries to charge a countervailing duty when they find that subsidized imports are hurting domestic producers (World Trade Organization).[1] Because both mechanisms aim at specific products and exporters from a particular country they make for an interesting setting to analyze the differential effects of institutional changes.

When faced with a changing institutional context, multinational enterprises must make critical strategic decisions regarding their resources and operations. These include exploiting loopholes in the regime or relocating operations to third countries and have short and long-term intended and unintended consequences for the organization (Meyer et al. (2023)). Many IB theories focus on the ownership, exploitation, and acquisition of resources to explain MNEs' internationalization strategies (Dunning (1980)). We build on this resource-

[1]See more information for AD and CVD.

based view by focusing on how firms reconfigure their structure and geographic scope across locations when AD-CVDs disrupt the external environment. Using this policy change to examine institutional transitions allows us to have a country and industry-specific focus.

Motivated by the challenges posed by a negative shift in bilateral trade policy, MNEs can move away from the targeted country into trade-neutral zones, increasing the geographic scope of their organizational units. This behavior has been described as "friend-shoring" in the current context of deglobalization of international trade policies (Hsu et al. (2022)). Previous work has shown that even in a context of growing globalization, the largest MNEs tend to have a home region orientation (Rugman and Verbeke (2004), Banalieva and Dhanaraj (2013)). A widely accepted explanation for this phenomenon is that distance, be it cultural, administrative, geographic, or economic, increases costs and thus refrains multinationals from engaging in international trade, investment, and business with countries far away from their home market (Ghemawat (2001), Hofstede (1994)).

Some common strategies for alleviating negative impacts induced by trade restrictions are described by Gereffi et al. (2021). These involve production-switching, which implies moving production to countries unaffected by the barriers, or market-switching, which entails selling products to alternative countries. Due to the size of their economy, Chinese companies can even move away from foreign markets into their domestic economy to avoid trade barriers. Firms can also leverage their resources and diversify their industrial activities to avoid dependence on the harmed industry. An upgrading strategy involves improving processes or products or moving into higher value-added market segments.

Changes in external conditions directly affect MNEs' operations and require specific strategies. Wenzel et al. (2021) find four strategies firms implement when responding to a crisis. Retrenchment, which implies reducing costs, assets, and product lines, among others, and has the potential of narrowing the scope of the firm's business activity. In contrast, a persevering strategy aims to maintain the firm's activity after a crisis. Another approach is innovating, which they define as realizing strategic renewal in response to a crisis. Strategic renewal, as defined by Agarwa and Helfat (2009), can involve continuing incremental changes and discontinuous transformations and may include widening the scope of the business. Finally, an exit strategy is discontinuing a firm's business activities after a crisis.

MNE responses depend on managerial decisions and are possible by having context-specific capabilities (Meyer et al. (2009)). Strategic and organizational flexibility allows firms to compete and adapt in volatile environments, especially in emerging economies (Meyer et al. (2023)). This adaptive managerial approach is key to firms overcoming negative external shocks and not losing relevance in the international markets, even within a seemingly stable WTO-ruled system.

3 Data & Variables

In this section, we describe our dataset and the construction of the several variables we use in our empirical analysis.

3.1 Dataset

Our data comes from the LexisNexis' Directory of Corporate Affiliates (DCA) and consists of Chinese MNEs through the years 2010 to 2015. This period allows us to have two years before the AD-CVDs are in place, and observe possible mid-term effects after their implementation.

The DCA provides corporate affiliations on global parent companies, affiliates, subsidiaries, and divisions. It traces corporate families to the eighth linkage level. This allows us to capture the full chain of ownership affiliations, defining the headquarters as the ultimate parent. For non-US-based companies to be included in this dataset, they have to demonstrate revenues above $10 million.

The dataset includes information on corporate identity, such as company name. We use this to identify the companies targeted by the 2012 AD-CDVs on solar panels imposed by the US. The list of Chinese company names comes from the determination for the anti-dumping duty order (United States Department of Commerce (2012)). We refer to these as "solar firms" to differentiate them from the whole conglomerate of which they are part. We define the variable "treated headquarters" as the ultimate parent of an MNE that has within their conglomerate a company in the targeted list by the USDOC. This is our main

unit of analysis.

The control group for our difference-in-differences design comes from identifying firms that operate in the same economic activities as the targeted group and make foreign direct investment announcements during the period of analysis. We search for these companies in the Financial Times' fDi markets dataset and classify them according to the cluster, industry, sub-sector, and industry activity classification listed in their FDI announcement. This yields a control group with companies that the Federal Register does not list but is as similar as possible to the targeted ones regarding industry and FDI activity. We call this group non-targeted MNEs.

From the descriptive data provided by the DCA, we use the number of employees at the headquarters and subsidiary level, and primary industries indicated by Standard Industry Codes (SIC). We also take advantage of the financial and location information as described in section 3.

We end up with a balanced panel of 28 Chinese conglomerates, 17 targeted and 11 non-targeted, for the six years.

3.2 Descriptive Analysis

A key feature of this dataset is the heterogeneity in the value of the observations. Since we analyze the effects that AD-CVDs on solar firms have on the whole conglomerate there is variation in our main variables of interest, defined at the headquarters level.

We address this by performing our empirical analysis for the full headquarters sample and two subsamples. One is restricted to firms with financial information available in our dataset for the whole period. The rationale behind this choice is twofold. First, MNEs that provide information for their financial indicators are mostly publicly traded and share this data due to regulation requirements. Thus, these firms have specific characteristics that differentiate them from those without this information. Second, the availability of this data in our sample fluctuates over time, since we want to minimize the already large sources of variation, in our estimations we only include those companies that have the financial information available for the whole period from 2010 to 2015.

The second subsample is defined by the number of employees at the headquarters level. It is comprised of firms that before the policy, during 2010 and 2011, had less than 100000 employees. This number represents approximately the mean plus one standard deviation of employees.

Table 1 depicts the summary statistics of our relevant variables. In Panel A we show the values for the full sample at the headquarters level. In Panel B we restrict the observations to those who are part of the financial subsample, while in Panel C we summarize it for the sample restricted to MNEs with less than 100000 employees. In Table A2 in the Appendix, we show the summary statistics for the full sample by year, reflecting the evolution of these variables through time.

To further describe our data, in Figure 1 we present the scatter plots by year for all the variables, differentiating by targeted and non-targeted MNE. This visualization provides more evidence of the intrinsic heterogeneity of the sample and the variation in the mean values of our variables of interest.

The heterogeneous characteristic of our study object, Chinese MNEs with solar firms within their conglomerate, impacts our analysis and estimations. Our empirical approach explained in detail in section 4, captures outliers and other specific characteristics with MNE fixed effects. The intrinsic variation in our dataset, especially toward the end of our analysis period, impacts the standard errors of our estimations, though not the point estimates.

3.3 Variables

In this subsection, we describe the construction of the several dependent variables we use to evaluate the impact of AD-CVDs in Chinese conglomerates. In all cases, the independent variables are the interaction of the treatment and the year.

3.3.1 Financial Results

To analyze the effects of the AD-CVDs on targeted MNEs' financial performance, we rely on two financial indicators: net income (in million dollars) and return on assets. These

variables are measured at the headquarters level.

The net income variable is provided in our dataset. It reflects a company's revenues minus its expenses, as it is a useful measure for assessing its profitability. We construct the variable ROA (Return On Assets) as the ratio of net income over assets. This performance measure compares a company's profit with the capital invested in assets.

3.3.2 Number of Employees in Chinese Subsidiares

We investigate the effects on the structure of targeted conglomerates by focusing on their level of employment in their domestic. We create the variable "Number of Employees in Chinese Subsidiaries" as the sum of the employees in units located in China for conglomerates that are either targeted or non-targeted.

3.3.3 Number Subsidiaries in Asia

To account for the regional dispersion of firms, we create a variable that counts the number of subsidiaries per year in Asia. This leaves out mainland China but includes Hong Kong and Macau, as well as the rest of the Asian countries in the sample.

3.3.4 Number of SIC Codes

The dataset provides Standard Industrial Classification (SIC) codes at the 4-digit level of each unit in the conglomerate by year. It includes up to nine SIC codes for the same company level. This means a subsidiary can have activities in nine different industries in one year. We construct the variable "Number of SIC Codes" at the headquarters level by counting all the different SIC codes by all the companies in the conglomerate.

4 Model and Estimation Method

To evaluate the impact of the AD-CVDs on targeted Chinese MNEs, we develop a difference-in-differences design exploiting the fact that the policy targets firms in the same industry with different rates. The treatment is given by the AD-CVD rate imposed in 2012 by the US on the imports of Chinese solar cells and modules.

This design has specific characteristics given by the US anti-dumping law defining China as a non-market economy (Section 771(18) of the Tariff Act of 1930). The US Department of Commerce assumes that all Chinese firms are under government control unless they prove otherwise, in which case they are granted a specific anti-dumping duty rate. All other Chinese firms in the industry are assigned a general - larger - rate (PRC-wide). Firms granted a specific rate in the 2012 solar panel case are larger exporters than those granted the PRC-wide rate. Thus, the different AD-CVD rates reflect the differential exposure to the US trade policy, with firms receiving the specific rate being the most exposed (Montti (2024)).

Our model is expressed at the level of MNE i and year t as follows:

$$Y_{it} = \sum_{s=2009}^{2015} \delta_t (D_{it} \times 1[t = s]) + \gamma_i + \lambda_t + \epsilon_{it}. \tag{1}$$

Where Y_{it} represents our dependent variables of interest depending on the effect we are assessing, as described in section 3.3; D is a binary indicator for targeted MNE; γ_i are firm fixed effects; λ_t are year fixed effects, and ϵ_{it} is the error term. Robust standard errors are clustered at the MNE level. We use OLS to estimate our main coefficient of interest δ_t.

The key assumption in a difference-in-differences design is the existence of parallel trends, which implies that the pre-treatment trajectories for treated and control groups are parallel (Cunningham (2021)). We present support for this assumption in the event study plots in Figures A1. We show the results for the subsample of MNEs with less than 100000 employees since it captures statistically significant effects after the policy for all our variables of interest. The bars in the chart display the estimated coefficients at 90 and 95

% confidence intervals. As expected for the validity of the design, the event study plots show that the estimated coefficients have no statistically significant effects in the pre-policy period for all our variables.

5 Results: MNE Shock and Reconfiguration

In this section, we show and discuss how the 2012 US AD-CVDs on solar panels resulted in a reconfiguration by Chinese multinational enterprises with solar firms within their conglomerate. Our main explanatory variables are the interaction of year and targeted MNE. The year 2011 is the baseline as it is the last year without the effects of the policy. All our estimations include MNE and year-fixed effects. As expected for a difference-in-differences design, we do not obtain statistically significant effects in the pre-policy period (before 2012). At the bottom of each result table, we display the mean and standard deviation of the respective dependent variable.

5.1 Financial Results

In Table 2, we present the estimation results for the financial variables net income and return on assets (ROA). In the first two columns, we use the financial subsample, in columns three and four, the subsample of MNEs with less than 100000 employees.

In column 1, the results for the net income variable expressed in million dollars show a statistically significant effect at the 10% level for the year 2012. The estimated coefficient indicates that targeted MNEs decrease their net income by 301.2 million dollars the year the policy is implemented, compared to the non-targeted group. In this specification, the mean net income is about 39 with a standard deviation of 394 million dollars. This reflects the economic significance of the effect we find as well as the large heterogeneity of the observations.

In column 2, the estimations for ROA, which is the net income normalized by assets and is measured as a percentage, have no statistically significant results.

Column 3 shows that the estimated effects on net income for MNEs with less than

100000 employees are statistically significant at the 10% level in 2012. The coefficient of -348.4 million dollars reflects that the loss for the targeted conglomerates in this subsample is larger than for those in the financial one. Furthermore, this subsample has a smaller mean of the dependent variable, 26.67 million dollars, and a larger standard deviation, 410.7, than firms in the previous subgroup. Thus, even though these companies are more similar in terms of their number of employees, they are more heterogeneous in their financial performance.

Meanwhile, in column 4, the impact on the return on assets is negative and significant at the 5% level in 2012. The point estimate of -0.089 indicates that targeted conglomerates experience a decrease in the return on assets of nearly 0.09 percentage points compared to the non-targeted group. This is larger than the mean of -0.006.

Overall, we see that the anti-dumping and countervailing duties implemented by the US harm the net income and return on assets of targeted Chinese MNEs. Smaller conglomerates, in terms of their number of employees, experience larger negative shocks compared to those in the financial subsample and have a greater dispersion in the observed variables.

5.2 Domestic Restructure

We continue our analysis by focusing on the effects on the number of employees in these conglomerates. In Table A1 in the Appendix we show that the AD-CVDs do not have statistically significant effects on employment at the headquarters level. We shift our analysis to the domestic units and find negative effects.

Table 3 displays the results for the number of employees in Chinese subsidiaries. In the first column, the estimations are performed in the whole sample with information for this variable, in the second, for the subsample of conglomerates that share financial data, and in the last one for MNEs with less than 100000 employees.

In column 1, we find a negative effect in 2013 which is statistically significant at the 10% level and shows a reduction of about 820 employees for targeted conglomerates with respect to non-targeted. The average number of employees in Chinese subsidiaries in this specification is approximately 41500 with a standard deviation of more than 100000, thus

our point estimates do not mean a large loss in employment for the whole sample.

In column 2, the results for the financial subsample, statistically significant at the 10% level, reflect that in 2013 targeted MNEs had a loss of 1042.2 employees compared to non-targeted. This is a smaller and more homogeneous subsample, compared to that reflected in column 1, with an average number of employees of approximately 6500 and a standard deviation of 9700. Hence, the point estimate indicates that this group experiences a more relevant impact than the previous one.

In column 3 the estimation results for MNEs with less than 100000 employees show negative effects in 2013 which are statistically significant at the 5% level. The estimated coefficient reflects a loss by the targeted group of 1067 employees the year after the policy is implemented, with respect to the non-targeted. This subsample has an average of 8190 employees with a 9898 standard deviation, reflecting that, on average, these MNEs employ more workers than those in the financial subsample, with a similar dispersion.

These results show that after the negative financial shock experienced in 2012, as the AD-CVDs were implemented, affected MNEs did not reduce the number of employees at the headquarters level. Instead, they resorted to their domestic units to recompose their financial performance. This is the case across our different specifications, with smaller conglomerates suffering larger employment losses.

5.3 Regional Dispersion

Our next analysis looks at the internationalization strategy of the affected conglomerates. As we discuss in section 2, MNEs facing an international changing environment may seek to expand their operations into new countries to take advantage of the available resources. In the case we are analyzing, where China is a direct target of a US trade policy, finding new locations for subsidiaries implies an MNE's strategy of moving into a trade-neutral zone. However, not all new locations present the same desirable characteristics. In particular when the conglomerate faces financial losses, as we have shown, and requires a rapid recovery from the negative shock. Following our discussion in section 2, we expect these MNEs to focus on nearby countries, as being geographically and culturally close has already proved to be a relevant driver of location choice.

In Table 4 we present the results of our regional dispersion analysis, using the dependent variable described in section 3.3.3.

Column 1 shows the estimations for the full sample, with positive statistically significant results at the 10% level in 2012 and the 5% level in 2013. The coefficient for the year the policy is implemented is 0.176 while the following year is 0.235. Comparing both point estimates with the sample mean of 0.589 implies a 30% increase in the number of Asian subsidiaries in 2012 and almost 40% in 2013 for targeted conglomerates with respect to non-targeted.

The estimations for the financial sample in column 2 show a point estimate of 0.375 with a 10% significance level in 2012, and 0.500 with a 5% significance level in 2013. The sample mean in this case is 1.015, almost twice the whole sample, indicating these MNEs have more Asian subsidiaries on average. The results show that the difference in the regional dispersion between targeted and non-targeted MNES is 37% the first year with the policy effect and 50% the following year.

Finally column 3, with results for the subsample with less than 100000 employees, also has positive and statistically significant effects at the 10% level in 2012 and 5% in 2013. The point estimates of 0.214 and 0.286 compared with the mean of 0.592 indicate a rise in regional dispersion variables of 36% and 48% respectively by targeted MNEs with respect to non-targeted.

This illustrates that all conglomerates in our sample develop a regionalization strategy as a response to the negative shock created by unilateral changes in a bilateral trade policy. The magnitudes are different, with firms in the financial subsample taking more advantage of this approach. In addition, we find this effect concomitantly with the policy implementation in 2012 but is larger in magnitude and statistical significance the following year.

5.4 Industry Diversification

Lastly, we turn our attention to the industrial activities of these MNEs to investigate if they implement a diversification strategy. The construction of the dependent variable is stated in section 3.3.4.

Column 1 presents the estimations for the full sample, with no statistically significant effects. The average number of SIC codes in this specification is 4.708 with a standard deviation of 5.103.

In column 2 we see the results for the financial subsample. We find positive effects in the year 2012 for targeted MNEs, with a significance level of 5%. Comparing the estimated coefficient of 3 with the sample average quantity of SIC codes by conglomerates which is 5.970, this represents a 50% increase for targeted MNEs in comparison with the non-targeted. The following year, the positive effect is statistically significant at the 10% level and represents an increase by targeted conglomerates of 57% with respect to the non-targeted.

In column 3, we present the estimations for the subsample of MNEs with less than 100000 employees and find positive statistically significant effects at the 10% level in 2013. The point estimate of 2.190 implies that the differential increase in industry diversification by targeted MNEs is 46%.

Our results show that industry diversification is not a strategy implemented by all conglomerates, there are, instead, heterogeneous effects. The MNEs that take more advantage of it are those in the financial subsample, which make public their financial data possibly due to being traded in international financial markets. Thus, their organizational structure and managerial capabilities share specific characteristics that are not common in the whole sample.

6 Conclusion: Implications for MNEs

The current shift in the global economy from openness to trade protectionism challenges multinational enterprises that adapt to a changing environment by making new business decisions. This change in the "rules of the game" that directly impacts international business academics and practitioners. This is especially relevant in economic industries that are key for countries' sovereignty and international climate change commitments.

Our paper studies the unintended consequences of protectionist policies on MNEs, focusing on anti-dumping and countervailing duties. These administered forms of protection

represent institutional changes with the potential to harm MNEs' operations, use, and development of resources.

We analyze the AD-CVDs implemented by the US on the import of solar panels from China in 2012, using the DCA database and a difference-in-differences design. We document how targeted Chinese MNEs are affected by the policy change, and the strategies they develop as a reaction to the negative shock.

Our data analysis shows the heterogeneity of the Chinese conglomerates operating in the global economy that have units in the solar energy sector. This leads us to perform our econometric analysis in different subsamples. Meanwhile, our policy evaluation focuses on several areas of MNEs' operations and strategies: financial results, domestic restructuring, regional dispersion, and industry diversification.

We find that the US anti-dumping and countervailing duties harm the net income and return on assets of targeted Chinese MNEs the year they are imposed, with smaller conglomerates experiencing larger negative results. After the negative financial shock experienced in 2012, targeted MNEs did not reduce the number of employees at the headquarters level. Instead, they resorted to their domestic units to recompose their financial performance, with smaller conglomerates suffering larger employment losses.

We document that all conglomerates in our sample develop a regionalization strategy as a response to the negative shock created by unilateral changes in bilateral trade policy. There are differences in magnitudes, with firms in the financial subsample taking more advantage of this approach. In addition, we see that this starts in 2012, concomitantly with the policy, but is larger in magnitude and statistical significance the following year.

Lastly, we shift our focus to industry diversification and find it is a strategy that not all conglomerates implement. We do not find results for the full sample but identify effects in the subsamples. The MNEs that take more advantage of this strategy are those in the financial subsample, which share a specific set of organizational structure and managerial capabilities.

In terms of the strategies identified by Wenzel et al. (2021), we find evidence of retrenchment and innovation. The first one as cost reduction, when we show a decrease in the number of employees in China. However, it is not general to the whole conglomerate

but specific to the domestic units. We see innovation as a strategic renewal when firms expand their activities toward other industrial sectors, widening their business scope as a response to the changing institutional environment.

Our findings align with the literature claiming that in the absence of a pro-globalization social environment - skepticism of globalization - multinational enterprises' strategies may counteract regulatory restrictions (Cuervo-Cazurra et al. (2020)). We show that despite facing an increase in trade barriers, Chinese MNEs do not diminish their international presence. Rather, they re-focus on the home region by increasing the number of subsidiaries in Asia. Thus, firms can alter their organizational structure to facilitate strategic responses that try to avoid de-globalization measures.

These results highlight that is key for MNEs to show capabilities that allow them to be attuned to geopolitical changes (Petricevic and Teece (2019)). These are critical decisions driven by both institution-based and resource-based motivations (Meyer et al. (2023)). Different strategies must be timely implemented for multinational enterprises to successfully navigate the unintended consequences of the changing conditions in international trade policy, investment, and business.

6.1 Limitations and Future Research

Our study's limitations suggest future research directions. Firstly, due to data availability and consistency, we focus on a reduced number of Chinese conglomerates. Therefore, our study faces issues in terms of generalizability. It would be interesting to find a complementary source of conglomerate-level information that could provide a wider characterization of the sector.

It would also be interesting to determine if our findings can be applied to MNEs from other home countries. Because the Chinese solar sector experienced a rapid increase in the years before 2012, it might be that there are industry and country-specific skills that allow them to develop this set of reconfiguration strategies.

Our study of AD-CVDs allows us to focus on country and industry-specific effects, future research could focus on how this has different effects on MNEs strategies than a

generalized increase in tariffs, such as what happened in the US-China trade war.

Finally, the recent growth in the Chinese industry of Electric Vehicles (EV) presents an interesting parallel with the solar panel case. With China becoming the largest EV exporter in the world, both the US and the European Union have been explicit about the possibility of imposing anti-dumping duties on the import of Chinese EVs. Future research could use the solar panel experience to inform how implementing anti-dumping duties impacts the global provision of resources that promote a green-energy transition.

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Table 1. Summary Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Full sample					
Net Income (million USD)	89	108	560	-1637	3616
Return Over Assets	89	0.01	0.11	-0.54	0.17
Employees in China	102	34138	92582	0	390254
Subsidiaries in Asia	168	0.59	1.42	0	11
Number of Industries	168	4.71	5.10	1	28
Financial Sample					
Net Income (million USD)	66	39	394	-1637	708
Return Over Assets	66	-0.004	0.12	-0.54	0.17
Employees in China	50	5230	9330	0	30902
Subsidiaries in Asia	66	1	2	0	11
Number of Industries	66	6	7	1	28
<100000 employees					
Net Income (million USD)	74	18	390	-1637	708
Return Over Assets	74	0.004	0.12	-0.54	0.17
Employees in China	75	7207	9655	0	30902
Subsidiaries in Asia	120	1	2	0	11
Number of Industries	120	4.77	5.24	1	28

Figure 1. Variables' Scatter Plots by Year for Targeted and Non-Targeted MNEs

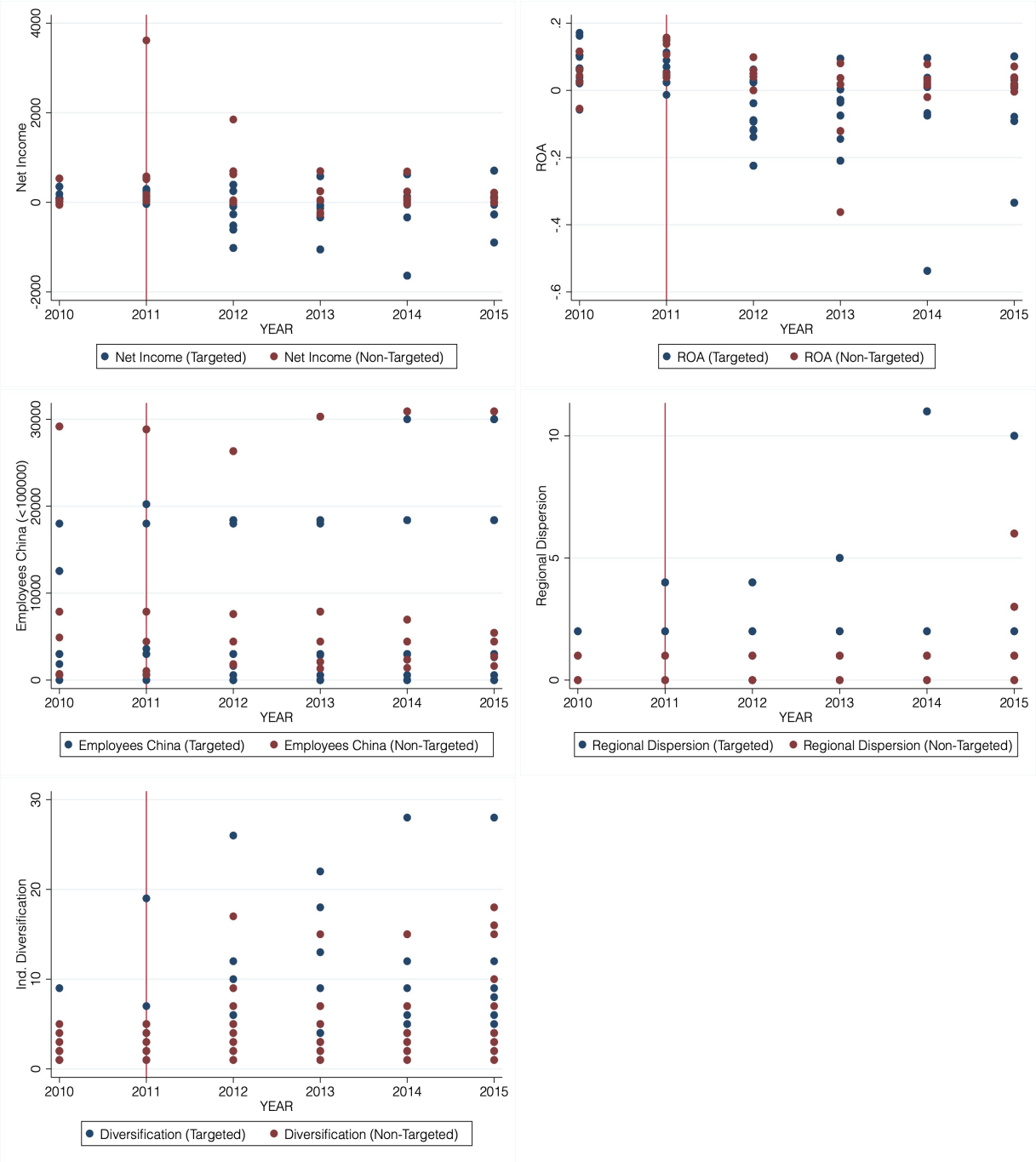

Table 2. Financial Results

	(1) Net Income	(2) ROA	(3) Net Income	(4) ROA
TargetedHQ*2010	-3.55	0.016	-9.706	0.010
	(70.08)	(0.069)	(74.75)	(0.071)
TargetedHQ*2012	-301.2*	-0.070	-348.4*	-0.089**
	(146.9)	(0.039)	(154.1)	(0.036)
TargetedHQ*2013	-146.4	0.101	-164.6	0.085
	(228.3)	(0.130)	(249.4)	(0.132)
TargetedHQ*2014	-298.3	-0.074	-329.9	-0.092
	(268.8)	(0.079)	(305.6)	(0.087)
TargetedHQ*2015	39.16	-0.058	25.19	-0.073
	(220.5)	(0.059)	(241.4)	(0.063)
Fixed Effects				
MNE	✓	✓	✓	✓
Year	✓	✓	✓	✓
Mean	38.99	-0.004	26.67	-0.006
Std_Dev	394.0	0.119	410.7	0.125
Sample	Financials		<100000 emp.	
MNEs	11	11	10	10
Observations	66	66	60	60
R^2	0.232	0.405	0.245	0.430

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Domestic Restructure

	(1) Employees in China	(2) Employees in China	(3) Employees in China
TargetedHQ*2010	-1408.9	-573.2	-1657.9
	(1115.5)	(610.0)	(1314.5)
TargetedHQ*2012	-418.6	-437.3	-459.0
	(576.3)	(1103.4)	(770.6)
TargetedHQ*2013	-823.3*	-1042.2*	-1066.9**
	(381.5)	(480.6)	(468.7)
TargetedHQ*2014	899.3	-1022.1	942.4
	(1880.9)	(765.0)	(2260.5)
TargetedHQ*2015	990.9	-887.5	1080.9
	(1937.5)	(1184.2)	(2357.7)
Fixed Effects			
MNE	✓	✓	✓
Year	✓	✓	✓
Mean	41453	6469	8190
Std_Dev	100615	9749	9898
Sample	Full	Financials	$<$ 100000 emp.
MNEs	14	7	11
Observations	84	42	66
R^2	0.168	0.184	0.198

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4. Regional Dispersion

	(1) Subsidiaries in Asia	(2) Subsidiaries in Asia	(3) Subsidiaries in Asia
TargetedHQ*2010	-0.176	-0.375	-0.143
	(0.131)	(0.281)	(0.148)
TargetedHQ*2012	0.176*	0.375*	0.214*
	(0.0971)	(0.195)	(0.118)
TargetedHQ*2013	0.235**	0.500**	0.286**
	(0.108)	(0.202)	(0.129)
TargetedHQ*2014	0.406	0.917	0.548
	(0.437)	(0.948)	(0.538)
TargetedHQ*2015	-0.294	0.792	0.690
	(0.692)	(0.826)	(0.498)
Fixed Effects			
MNE	✓	✓	✓
Year	✓	✓	✓
Mean	0.589	1.015	0.592
Std_Dev	1.424	1.981	1.537
Sample	Full	Financials	$<$ 100000 emp.
MNEs	28	11	20
Observations	168	66	120
R^2	0.156	0.226	0.140

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5. Industry Diversification

	(1) Number of Industries	(2) Number of Industries	(3) Number of Industries
TargetedHQ*2010	-1.021	-2.500	-1.143
	(0.749)	(1.439)	(0.772)
TargetedHQ*2012	-0.187	3.000**	1.024
	(1.473)	(1.104)	(1.062)
TargetedHQ*2013	0.711	3.375*	2.190*
	(1.450)	(1.560)	(1.155)
TargetedHQ*2014	-0.642	-0.708	0.0238
	(1.502)	(3.293)	(1.767)
TargetedHQ*2015	-2.107	-1.042	0.286
	(1.791)	(3.587)	(1.915)
Fixed Effects			
MNE	✓	✓	✓
Year	✓	✓	✓
Mean	4.708	5.970	4.767
Std_Dev	5.103	6.523	5.240
Sample	Full	Financials	$<$ 100000 emp.
MNEs	28	11	20
Observations	168	66	120
R^2	0.309	0.379	0.291

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

A Appendix

Figure A1. Event Studies

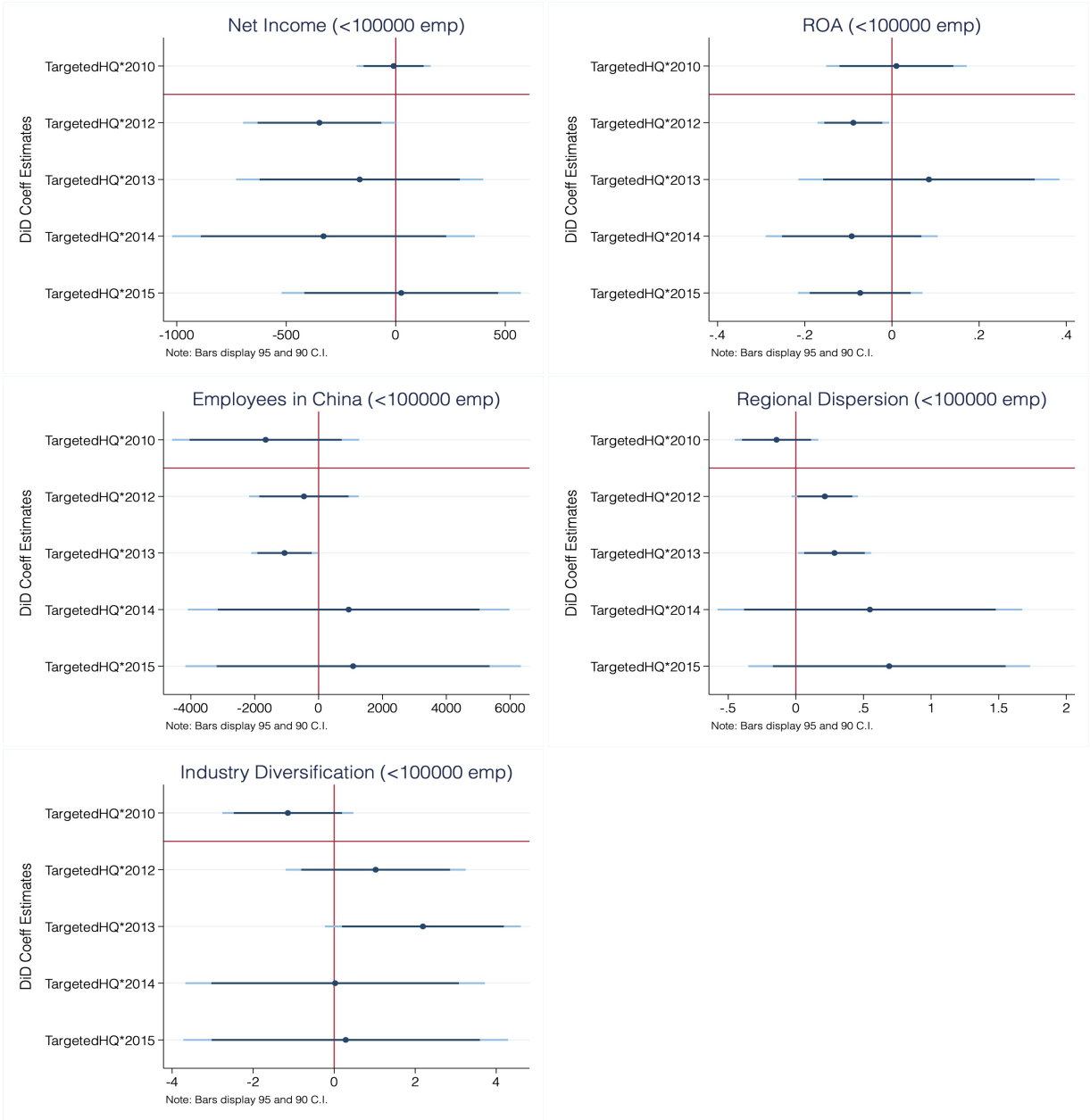

Table A1. Number of Employees in Headquarters

	(1) Employees in Headquarters	(2) Employees in Headquarters	(3) Employees in Headquarters
TargetedHQ*2010	5856.0	-5683.0***	-3723.3***
	(9650.9)	(950.2)	(999.0)
TargetedHQ*2012	46.85	930.0	95.74
	(672.6)	(1425.6)	(778.3)
TargetedHQ*2013	-1043.0	-1497.9	-1220.4
	(1318.8)	(2627.8)	(1347.0)
TargetedHQ*2014	63.50	-1075.2	-114.4
	(1721.2)	(2865.9)	(1769.5)
TargetedHQ*2015	42.79	-876.5	-82.44
	(1726.0)	(2945.0)	(1812.5)
Fixed Effects			
MNE	✓	✓	✓
Year	✓	✓	✓
Mean	37705	16848	12820
Std_Dev	82557	18868	15431
Sample	Full	Financials	$<$ 100000 emp.
MNEs	22	10	19
Observations	132	60	114
R^2	0.123	0.292	0.190

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A2. Summary Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
year = 2010					
Net Income (million USD)	16	97.22	149.46	-54.91	532.57
Return Over Assets	16	0.06	0.06	-0.06	0.17
Employees in China	14	40678	103984	0.00	390254
Subsidiaries in Asia	28	0.25	0.52	0.00	2.00
Number of Industries	28	2.25	1.67	1.00	9.00
year = 2011					
Net Income (million USD)	17	416.58	844.91	-37.82	3616.05
Return Over Assets	17	0.09	0.05	-0.01	0.16
Employees in China	16	36156	97657	0.00	390254
Subsidiaries in Asia	28	0.36	0.87	0.00	4.00
Number of Industries	28	3.14	3.47	1.00	19.00
year = 2012					
Net Income (million USD)	16	81.29	641.86	-1018.00	1850.13
Return Over Assets	16	-0.03	0.09	-0.22	0.10
Employees in China	18	31878	92500	0.00	390254
Subsidiaries in Asia	28	0.46	0.88	0.00	4.00
Number of Industries	28	5.39	5.50	1.00	26.00
year = 2013					
Net Income (million USD)	13	-38.33	431.60	-1052.06	696.07
Return Over Assets	13	-0.06	0.13	-0.36	0.09
Employees in China	18	32173	92467	0.00	390254
Subsidiaries in Asia	28	0.50	1.04	0.00	5.00
Number of Industries	28	5.39	5.36	1.00	22.00
year = 2014					
Net Income (million USD)	13	-2.28	560.06	-1637.21	687.26
Return Over Assets	13	-0.03	0.16	-0.54	0.10
Employees in China	18	32844	92408	0.00	390254
Subsidiaries in Asia	28	0.79	2.08	0.00	11.00
Number of Industries	28	5.57	5.83	1.00	28.00
year = 2015					
Net Income (million USD)	14	17.22	337.42	-896.51	708.23
Return Over Assets	14	-0.01	0.11	-0.33	0.10
Employees in China	18	32775	92429	0.00	39025
Subsidiaries in Asia	28	1.18	2.18	0.00	10.00
Number of Industries	28	6.50	6.28	1.00	28.00