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Industrial policy and retaliatory protection under the WTO: Lessons from China

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Abstract

Using Chinese firm-level trade data combined with global anti-dumping (AD) and counter-vailing duty (CVD) investigations, we uncover a previously overlooked cost of industrial policy under WTO agreements. At every stage of AD/CVD investigation, subsidies significantly raise the probability of affirmative rulings and lead to higher imposed duties. Firms that received larger subsidies are also less likely to be granted firm-specific duties, which are lower than the product-level duties applied to all other firms exporting the investigated product. While AD/CVD duties create a moderate trade barrier that an average Chinese firm expects to face, they represent a significant cost of subsidy for those heavily subsidized and those potentially receiving firm-specific duties. The intended benefits of industrial sub-sidies are partially offset by increased foreign trade protection: AD/CVD duties induced by subsidies reduced the subsidy effect on firm revenue growth by 22%.

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Non-Technical Summary

Governments worldwide are increasingly turning to industrial policies to boost strategic sectors, accelerate innovation, and build domestic production capacity. China stands out in this global trend, having extensively supported industries such as renewable energy, steel, and electric vehicles. While these policies help firms scale up and improve competitiveness, this new research uncovers a significant hidden cost: domestic subsidies directly expose Chinese firms to severe foreign trade penalties.

Over the past two decades, China has become the primary target of antidumping and countervailing duty actions worldwide. Under the rules of the World Trade Organization, these measures are used by many countries to protect their domestic industries from subsidised or unfairly priced imports. By 2020, roughly 15% of Chinese exports to the United States and 12% to G7 countries were subject to antidumping and countervailing duties. Trading partners have adopted these measures amid rapid growth in China's exports, recurring concerns about industrial overcapacity, and extensive Chinese state support in key sectors.

This study provides the first systematic evidence on how domestic subsidies shape foreign trade protection. Using detailed data on Chinese industrial firms linked to every antidumping and countervailing duty case against China between 2000 and 2016, the authors examine how subsidies affect outcomes at each stage of an investigation.

Antidumping and countervailing duty cases are filed against specific products exported to a foreign market. For each case, exporters may receive either a lower, firm-specific duty if they fully cooperate and demonstrate independence from government influence, or a much higher product-wide duty if they do not. This two-tier system creates substantial variation in duty rates among firms exporting the same product to the same country at the same time.

Across thousands of investigations, the researchers find three consistent patterns. First, products exported by more heavily subsidised Chinese firms are more likely to receive affirmative rulings that result in duties. Second, when duties are imposed, the rates are higher for firms receiving larger subsidies. Third, firms with high subsidy levels are much less likely to obtain the more favourable firm-specific duty. Even among those that do, higher subsidies still lead to higher firm-specific duty rates. These findings show that subsidies strongly affect how severely firms are treated once a case begins.

The authors also look beyond individual investigations to assess how subsidies affect firms across the Chinese economy. On average, the impact is modest: a small increase in a firm's subsidy only slightly raises the chance of facing a foreign duty. This is because most firms never become involved in an antidumping and countervailing duty case. But the picture changes sharply for the small group of firms that receive very large subsidies. Since subsidies in China are highly uneven, most firms get little, while a few receive extremely high levels. These heavily supported firms face much steeper penalties abroad. Policymakers should consider the effectiveness of subsidies in relation to the potential extent of foreign trade retaliation they may trigger.

Industrial Policy and Retaliatory Protection under the WTO: Lessons from China*

Yusheng Feng† Haishi Li‡ Siwei Wang§ Min Zhu¶

October 14, 2025

Abstract

Using Chinese firm-level trade data combined with global anti-dumping (AD) and countervailing duty (CVD) investigations, we uncover a previously overlooked cost of industrial policy under WTO agreements. At every stage of AD/CVD investigation, subsidies significantly raise the probability of affirmative rulings and lead to higher imposed duties. Firms that received larger subsidies are also less likely to be granted firm-specific duties, which are lower than the product-level duties applied to all other firms exporting the investigated product. While AD/CVD duties create a moderate trade barrier that an average Chinese firm expects to face, they represent a significant cost of subsidy for those heavily subsidized and those potentially receiving firm-specific duties. The intended benefits of industrial subsidies are partially offset by increased foreign trade protection: AD/CVD duties induced by subsidies reduced the subsidy effect on firm revenue growth by 22%.

JEL Codes: F13, L52, O25

Keywords: Industrial Policy; Subsidies; Anti-dumping and Countervailing Duties

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1 Introduction

Governments worldwide increasingly implement industrial policies, driven by perceived benefits such as, in emerging markets, nurturing infant industries, promoting structural transformation and exports, leveraging economies of scale and technology diffusion, and, more recently, enhancing national security and supply chain resilience among advanced economies (Juhász et al., 2023).[1] However, the costs of industrial policy remain less understood, with empirical evidence notably lacking. Meanwhile, in recent decades, governments worldwide have also increasingly adopted protectionist trade policies, including anti-dumping (AD) and countervailing duty (CVD) investigations under WTO rules (Figure 1a, also see Vandenbussche and Zanardi 2010, Egger and Nelson 2011, among others), and the latest trade war tariffs that bypass WTO framework.

In this paper, we highlight the rise in foreign trade protection as a previously ignored cost of industrial policy and study their effects on firm performance. Policymakers who overlook this cost may exaggerate an industrial policy's effectiveness and risk damaging trade and diplomatic relations (Clayton et al., 2023; Mohr and Trebesch, 2025). We focus on AD and CVD investigations as retaliatory trade protection measures because they provided the most prevalent duty increases before recent Trump trade wars.[2] China offers an ideal setting for this study, as it heavily uses industrial policy (Barwick et al., 2021), faces international complaints regarding state-owned enterprise (SOE) activities and "overcapacity," and is most frequently targeted by AD and CVD investigations (Figure 1b).[3] Despite the numerous benefits of industrial policies highlighted in Chinese policy documents—as summarized by Fang et al. (2025)—the increased cost of foreign trade retaliation is rarely acknowledged.

Under the WTO Anti-Dumping Agreement and Agreement on Subsidies and Countervailing Measures, a country's subsidies can lead to more stringent trade protection from other countries through AD/CVD. AD investigations compare an exported product's normal value to its price in destination. For non-market economies like China, normal value is set to a third-country price (e.g., Turkey). When subsidies reduce the price of Chinese exports compared to similar products from other countries, they often lead to more AD measures. CVD specifically targets prohibited and actionable foreign subsidies, so naturally, subsidies can cause an increase in CVD measures.[4]

[1] Also see Harrison and Rodríguez-Clare (2010); Lane (2020); Rodrik (2022).

[2] See Bown et al. (2021).

[3] Figure 1b shows that in the recent decade, 70%-80% of global AD/CVD investigations targeted China.

[4] Under WTO rules, subsidies for exports or those that require using local over imported inputs are "prohibited." Subsidies are considered "actionable" if they injure another member country's domestic industry,

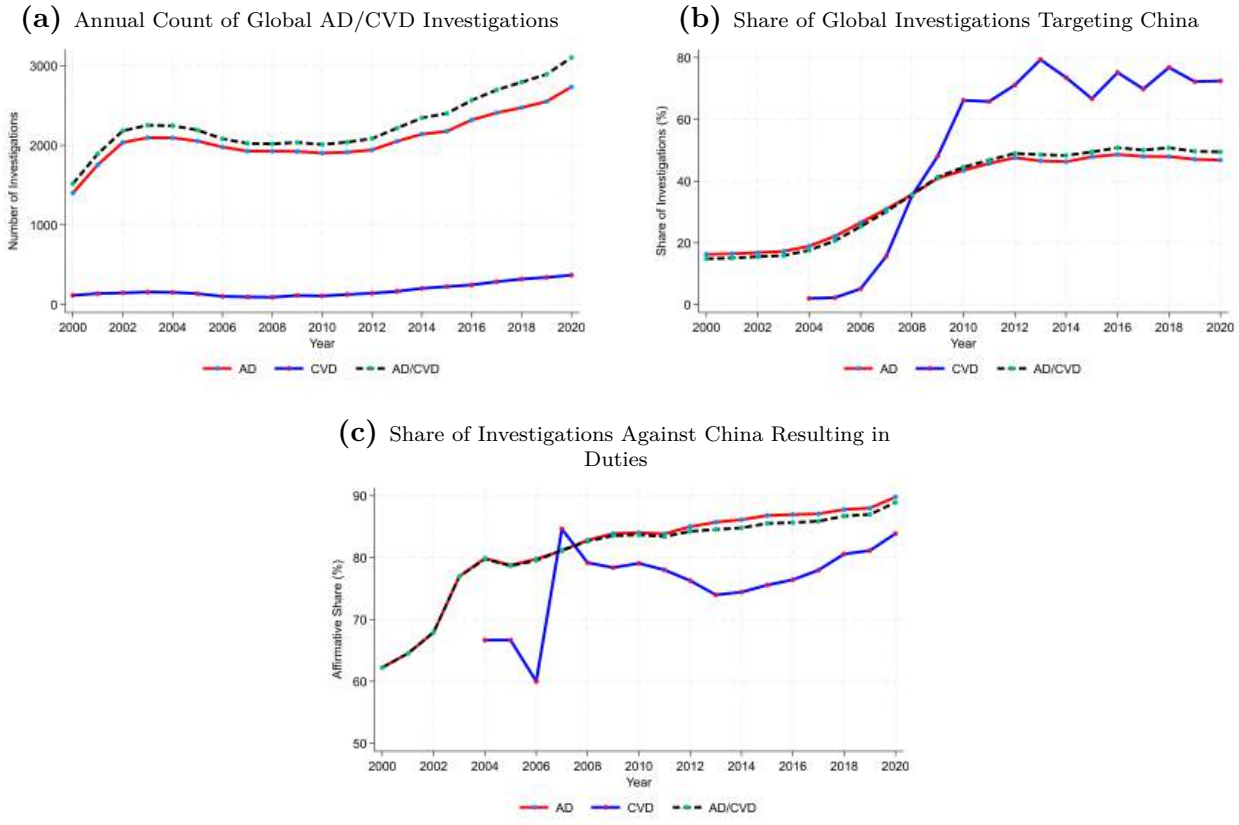

Figure 1: Trends in Global AD/CVD Investigations and China's Exposure

Notes: Figure 1 illustrates trends in global AD/CVD investigations from 2000 to 2020. Panel (a) reports the annual count of investigations worldwide. Panel (b) displays the share of these investigations that targeted China. Panel (c) presents the share of investigations against China that resulted in affirmative outcomes (i.e., the imposition of duties). *Source*: Temporary Trade Barriers Database (Signoret et al., 2020) and authors' calculations.

WTO rules allow firms facing AD/CVD investigations to appeal for *lower firm-specific* duties.[5] Investigating authorities are more likely to grant firm-specific duties, whose rates are significantly below the product-level duties applied to other exporters, when firms successfully demonstrate independence from government. Firms that receive substantial government support are less likely to establish such independence, thereby reducing their chances of obtaining favorable firm-specific rates.

We study the impact of Chinese subsidies on foreign AD/CVD investigations, by combin-

harm its interests in third-party markets, or undermine the benefits gained from WTO agreements. See https://www.wto.org/english/tratop_e/scm_e/subs_e.htm.

[5]For example, in the European Union's 2024 CVD investigation against Chinese electric vehicles, BYD, Geely, and Tesla each applied for individual examination and received firm-specific duties of 17%, 18.8%, and 7.8%, respectively. All other cooperating companies faced a 20.7% duty, while non-cooperating companies faced 35.3%. SAIC Group, an SOE, applied for a firm-specific tariff but still received 35.3%. See https://trade.ec.europa.eu/access-to-markets/en/news/eu-commission-imposes-countervailing-duties-imports-battery-electric-vehicles-bevs-china.

ing comprehensive datasets on Chinese industrial firms with global AD/CVD investigations against China.[6] We link each investigated Chinese product to its exporting firms and collect detailed firm information. Importantly, since the AD/CVD investigation dataset also documents the firms granted the lower firm-specific duties for each investigated product, we match these firms to Chinese datasets at the firm-product level. This precise identification of firm-product pairs subject to firm-specific AD/CVD is rarely observed in the literature.

Our primary specification uses subsidy variation across firms *within* each investigation. For each product targeted by an investigation, we compare the AD/CVD duties faced by exporters who received greater subsidies versus those who received fewer subsidies, as well as SOEs versus foreign and private firms. This specification is only possible because we have information on firm-specific AD/CVD duties.

We find that higher subsidies lead to more adverse AD/CVD measures at *all* stages of AD/CVD investigation. Heavily subsidized products are more likely to receive affirmative AD/CVD rulings, which lead to duties.[7] Among affirmative investigations, subsidies also lead to higher duties. At the firm level, firms receiving larger subsidies are less likely to be granted the firm-specific duties that are lower than product-level duties applied to other exporters of the investigated product. Among those that do receive firm-specific treatment, larger subsidies also lead to higher duty rates.

To mitigate reverse causality (foreign trade barriers might induce domestic government subsidy support), we use the average firm subsidy during the three years prior to investigation as the main regressor. This assumes that government subsidies are unlikely to base on *anticipation of future* AD/CVD investigations. Across all analyses, we control for firm- and industry-level characteristics that could correlate with both subsidies and AD/CVD investigations. These controls do not qualitatively change the findings and allow us to document that SOEs also face more adverse AD/CVD measures.

We examine whether various alternative forms of government connection—including preferential interest rate, reduced tax rate, firm entertainment expense, and land price discount, affect foreign AD/CVD investigations.[8] We also test the components of output and capital misallocation (Hsieh and Klenow, 2009) that cannot be attributed to subsidies. These alternative government supports might correlate with both subsidies and AD/CVD outcomes,

[6]We study AD and CVD investigations together because the majority of AD investigations also include a CVD investigation on the same product—a "double remedy." In fact, in 2020, 53% of G7 countries' AD investigations against China also involve a CVD investigation.

[7]Figure 1c shows that in the recent decade, about 80%-90% of investigations against China were ruled affirmative and lead to AD/CVD duties.

[8]Cai et al. (2011) measures political connection and corruption with firm entertainment expense.

potentially threatening our identification. However, we find that they do not consistently display a significant effect on foreign duties; the impact of subsidies, however, remains strong and robust. This highlights industrial subsidy as a crucial driver of foreign AD/CVD measures against Chinese firms.

While AD/CVD duties pose a moderate trade barrier for an average Chinese firm, they become a significant subsidy cost for those receiving substantial subsidies or potentially facing firm-specific rates. A one-percentage-point increase in the subsidy rate (subsidy-to-output ratio) leads to a 0.26-percentage-point increase in the AD/CVD duty for firms facing foreign AD/CVD investigations, and a 0.1 percentage point duty increase for an average Chinese firm.[9] This moderate effect on the average firm likely explains China's continued broad industrial policies (Fang et al., 2025), as current AD/CVD protection strength appears insufficient to deter overall Chinese subsidy activity.

Despite this moderate average effect, the highly skewed distribution of subsidy rates means firms in the right tail face significant trade cost. For example, a firm increasing its subsidy rate from the 5th percentile (0%) to the 99th percentile (115%) expects to face an 18 percentage point increase in foreign AD/CVD duties.[10] We further document a spillover effect: if a firm exporting a product targeted by AD/CVD investigations receives higher subsidies, even non-subsidized firms exporting the same product also face more adverse AD/CVD measures. In this scenario, AD/CVD duties are excessively applied at a level not justified by subsidies.

Moreover, among firms that appeal for firm-specific duties, as their subsidy information undergoes scrutiny during the investigation, a one-percentage-point increase in the subsidy rate leads to a two-percentage-point increase in AD/CVD duties and a 0.7-percentage-point decrease in the probability of receiving the firm-specific duty. Because firm-specific duties are lower than the product tariff within the same investigation, the combined effects lead to a 49 percentage point increase in the expected duty faced by these firms.

AD/CVD duties offset 22% of the subsidy's positive impact on firm growth. Using an instrumental variable approach, we examine the effects of subsidies and subsequent AD/CVD duties on firm future performance. When controlling for later AD/CVD duties, a one-percentage-point increase in the subsidy rate leads to a 1.2% increase in firm revenue after 5

[9]Following Aghion et al. (2015), we measure a firm's subsidy intensity with the ratio of its total subsidy revenue received from the government to its output, referred to as the *subsidy rate*.

[10]AD/CVD duties are imposed in addition to product-level applied tariffs (which include MFN and preferential trade agreement concessions), and recent trade war tariffs.

years.[11] Without accounting for AD/CVD duties, the subsidy's effect on firm revenue growth drops to 0.9%. Since higher duties reduce firm growth, estimating industrial policy's effect without considering the associated rise in foreign retaliatory AD/CVD duties introduces an omitted variable bias towards zero.

We contribute to the literature on trade policy, particularly such temporary trade barriers as AD/CVD duties. Prior research has primarily examined their *effects* on employment (Bown et al., 2021; Barattieri and Cacciatore, 2023; De Souza et al., 2024; De Souza and Li, 2025), firm productivity (Konings and Vandenbussche, 2008; Pierce, 2011), product quality (Caselli et al., 2023), and overall trade flows.[12] In contrast, the *drivers* of AD/CVD investigations remain less well understood. Existing work shows that rapid import growth increases the likelihood of AD/CVD filings (Bown and Crowley, 2007), while trade agreements reduce both duty level and duration (Tabakis and Zanardi, 2019; Zhu and Prusa, 2023). Most works leverage cross-product AD/CVD duty variations, with the notable exception of Felbermayr and Sandkamp (2020) who use within-product, across-firm variation to examine the effect of AD/CVD measures on Chinese exports.

We are the first to document that industrial subsidies drive more severe AD/CVD outcomes at all investigation stages.[13] We leverage novel datasets, including Chinese firm-level data matched to AD/CVD investigations, to exploit firm-level subsidy variation and product/firm-product level variation in AD/CVD investigations. We demonstrate WTO AD/CVD agreements' success in identifying and targeting highly subsidized firms through a formalized investigation procedure. We document that less-subsidized firms are more likely to receive firm-specific duties, which constitute important exceptions to the high product duties they otherwise face.[14] While an average subsidized Chinese firm is expected to face a moderate AD/CVD duty, the effect is particularly large for heavily subsidized firms and those receiving firm-specific duties.

This paper contributes to the literature on industrial policy. Extensive research focuses on industrial policy's benefits, including: spillover through geographical proximity (Schweiger et al. 2022, among others) and through firm linkage (Javorcik, 2004; Atalay et al., 2023); technology diffusion (Giorcelli, 2019; Lane, 2022; Choi and Shim, 2024); innovation (Howell, 2017; Azoulay et al., 2019; Kantor and Whalley, 2023); and structural change and export

[11] We focus on 5-year firm growth because AD/CVD duties typically last 5 years before they are reevaluated. We find similar effects of subsidies and AD/CVD duties on firm employment and TFP.

[12] See Staiger and Wolak (1994); Flaaen et al. (2019); Schiavo et al. (2021), among others.

[13] Qiu (1995), an early theoretical work, studies the interplay between CVD and export subsidy.

[14] Theoretically, Itskhoki and Moll (2019); Gaubert et al. (2021) show how firm-specific, granular tariffs should respond to firm-level subsidies, a relationship we empirically test.

growth (Martincus and Carballo, 2010; Munch and Schaur, 2018; Reed, 2024). In contrast, the cost of industrial policy remains less discussed, with empirical evidence notably lacking. Documented costs include: higher consumer prices (Cox, 2021); loss of high-quality foreign inputs (Amiti and Khandelwal, 2013); less competition (Amiti and Konings, 2007; Rotemberg, 2019); and policy inefficiencies due to incomplete information and political favoritism (Martin et al., 2017; Kim et al., 2021; Branstetter et al., 2023; Wei et al., 2023).

There has been no full consensus on the statistical significance of industrial policy effects. Older literature, typically leveraging cross-sector and cross-firm variations, generally found no significant benefits from industrial policies (Beason and Weinstein 1996; Harrison and Rodríguez-Clare 2010, among others). In contrast, recent papers employing plausibly exogenous variations from specific policy shocks, typically find significantly positive benefits (see the discussion in Juhász et al. 2023).

This paper highlights a previously overlooked cost of industrial policy: foreign trade protection through AD/CVD investigations. Export-led industrial policies should account for these retaliation; otherwise, their net gains may be exaggerated and policy makers may risk damaging trade and diplomatic relations.

This new cost creates an omitted variable bias that pushes the estimated effect of industrial policy toward zero. Studies using plausibly exogenous policy shocks likely compare firms facing similar subsequent foreign tariffs, making them less susceptible to this bias. This may explain why they estimate greater benefits. In contrast, other research may estimate a value closer to the net benefit of industrial policies subtracting this cost.

This paper sheds new light on the role of industrial policy in China's development. Despite interest from global policymakers and media, empirical evidence on Chinese government subsidies remains scant, especially when compared to the extensive studies on earlier industrial policies implemented by the Asian Tigers, such as Korea and Japan. Exceptions include Aghion et al. (2015) and Cai and Harrison (2021), who use a Chinese firm-level subsidy dataset (similar to ours) to show that subsidies for competitive sectors promote growth, while those for SOEs promote it less. Other studies on Chinese industrial policies focus on specific sectors or alternative forms of government support: Bai et al. (2021) (automobile), Cong et al. (2019) (bank lending), Lu et al. (2019) (Special Economic Zones), Chen et al. (2021) (investment subsidy), Deng et al. (2023); Eppinger and Ma (2024) (FDI), and Kalouptsidi (2018); Barwick et al. (2021) (shipbuilding).

We highlight a new cross-border spillover effect of Chinese government subsidies: retaliatory trade protection in the form of AD/CVD measures. We then estimate how both

subsidies and the resulting duties affect Chinese firms. We systematically examine how different forms of government support affect foreign trade protection. We find that direct government subsidy and state ownership are the primary driver behind the rise in AD/CVD investigations targeting China.

The remainder of the paper is organized as follows: Section 2 presents the institutional background and data. Section 3 examines the impact of subsidies on AD/CVD investigations. Section 4 conducts robustness tests and provides additional findings. Section 5 studies the impact of subsidies and AD/CVD duties on firm performance. Section 6 concludes.

2 Institution, Data, and Stylized Facts

Section 2.1 discusses the institutional background of AD/CVD investigations. Section 2.2 presents the datasets and summarizes descriptive facts about Chinese subsidies and AD/CVD investigations against China.

2.1 AD/CVD Investigation Procedure

WTO rules allow countries to raise tariffs against other countries through AD/CVD investigations. However, these investigations must follow specific rules required by the WTO through a formalized procedure, detailed below:[15]

Complaint. The process begins when firms in the importing country file a complaint with their government (the "government") in which they claim unfair foreign trade practices are harming their domestic industry. If the government finds evidence of such harm in reviewing the petition, it will start an investigation. The government opens an AD investigation if it suspects foreign firms are exporting products below normal value, and a CVD investigation if it believes the exporter's government provided prohibited or actionable subsidies.[16] If both conditions apply, the government may initiate a "double remedies" investigation.

[15]While member countries follow WTO rules in principle, their implementation can be different across countries. For example, the European Union adopts a "Less Duty Rule," which requires authorities to apply duties at a level lower than the full dumping margin if that lower amount is enough to eliminate injury to the domestic industry. In the US, interested parties can request a review of the investigation outcome each year, which is less than the typical 5-year sunset duration of AD/CVD tariffs. We account for such implementation differences with appropriate fixed effects.

[16]See WTO Anti-Dumping Agreement (https://www.wto.org/english/docs_e/legal_e/adp_e.htm) and Agreement on Subsidies and Countervailing Measures (https://www.wto.org/english/docs_e/legal_e/adp_e.htm).

Investigation and Ruling. An investigation has two stages: a preliminary phase and, if the preliminary phase has an affirmative ruling, a final phase. Exporters can appeal for lower firm-specific duties by applying for individual examination between these two stages.

In the preliminary phase, the government surveys domestic producers, importers, and foreign producers—typically a sample of large firms in the industry—to collect data on price, quantity, and inputs. These surveys also explicitly ask exporters about subsidies they receive from their government.[17] The government then suggests a duty, and an investigation committee votes on the evidence. If the vote is affirmative, stakeholders and the public can comment. At the same time, exporting firms can appeal for an individual examination and lower, firm-specific duties if they believe the product-level duty is unfair and excessive for them. Afterward, the government conducts the final phase of the investigation, which involves additional surveys and collecting more comments, followed by another vote.

Product-level Duty. If the affirmative final ruling receives majority vote, duties are imposed. These duties are the dumping margin for AD cases—calculated as $\frac{\text{fair value}-\text{price in destination}}{\text{price in destination}}$—or the subsidy rate an exporter received from their government for CVD cases.[18] If "double remedy" is implemented, the total tariff sums the AD and CVD duties. The dumping margin and the subsidy rate are decided based on the survey information. These duties are reviewed every five years. If any ruling is negative, the case is dropped. For non-market economies like China, the fair value used to calculate the AD duty comes from a third country's price.[19]

Firm-Specific Duty. Exporters can apply for lower, firm-specific duties during survey and comment phases.[20] They should demonstrate their independence from government control, by supplying detailed business information to investigators. Firms that do not apply or fail to demonstrate such independence are typically assigned the higher, product-level duty.

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[17]The surveyed firms have an incentive to provide accurate information. Those found to provide false or incomplete information face punitive duties based on "facts available." For further details, see https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds539_e.htm.

[18]The fair value typically includes the exporter's home market price, shipping cost, and exchange rate difference. See, for example, https://www.usitc.gov/trade_remedy/documents/handbook.pdf for how authorities determine the fair value.

[19]See https://www.wto.org/english/thewto_e/acc_e/chn_e/wtaccchn45_leg_1.pdf for the computation of Chinese product's fair value.

[20]Firm-specific duties might be determined by factors other than the survey information. For example, anecdotal evidence suggests that when an investigating authority receives too many individual examination applications, they may be less likely to grant a firm-specific rate due to the administrative burden. We address these investigation- and country-level factors that affect firm-level duty determination with appropriate fixed effects.

Subsidies Lead to Adverse AD/CVD Investigation Outcomes. Subsidies reduce the price of products from Chinese exporters under investigation relative to prices from third countries. This increases the likelihood of an affirmative AD investigation ruling and leads to higher AD duties if imposed. Subsidies also directly increase the chance of an affirmative CVD investigation ruling and subsequent CVD duties. Furthermore, exporters who receive substantial subsidies are less likely to prove their independence from government control, which prevents them from receiving lower, firm-specific duties.

2.2 Datasets

We use the Chinese Customs Database (CCD) to obtain Chinese firm-product (HS 6-digit)-country-year level export and import data from 2000 to 2016.[21] For firm business information, we use the Annual Survey of Industrial Firms (ASIF) for the years 2000-2008, and the Annual Tax Survey (STA) for 2009-2016.[22] Both datasets are annual and provide a comprehensive set of financial variables. We match CCD with ASIF and STA based on firm name, zip code, and phone number using standard procedure in the literature (Brandt et al., 2012, 2017; Liu and Ma, 2020; Liu et al., 2021).

Notably, ASIF and STA include firm-level total subsidy revenue from the government and firm-level output, and we use the ratio of these two to measure a firm's subsidy strength (Aghion et al., 2015), referred to as the *subsidy rate*. To create alternative measures of a Chinese firm's political connection, we examine interest rate, tax rate, firm entertainment expense, and land transaction price the firm pays to the government.

Our analysis avoids issues arising from sampling and measurement differences across the ASIF and STA firm datasets. Our approach is primarily cross-sectional: We compare investigation outcomes for highly subsidized firms against those for less subsidized firms, both within investigation and within year, across investigations. Because we do not rely on panel data for individual firms, we bypass the known issue of different sampling methods between the STA and ASIF datasets (Brandt et al., 2023). To further confirm our findings, we focus on a single dataset in our robustness test.

We use the Temporary Trade Barriers (TTB) Database for information on global AD/CVD

[21] Section A.1 provides detailed descriptions of these datasets and variables.

[22] ASIF data is only available up to 2008. For subsequent years, we need to rely on STA data. Although different, STA provides similar information to ASIF. Both ASIF and STA datasets have been extensively used in economics research on China, with notable examples including Brandt et al. (2012), Chen et al. (2021), and Chen et al. (2025), among others. Brandt et al. (2023) use both datasets to construct a representative panel of Chinese firms, bridging the two data.

investigations targeting China, covering from the 1980s to current. For each investigation, the database provides key dates of the investigation procedure, the Harmonized System (HS) 6-digit codes of the investigated product, whether the case received an affirmative ruling, and the product-level AD/CVD duty if the ruling was affirmative.[23] Crucially, the database also lists the names of investigated firms that received firm-specific duties, along with their specific duty rates.

We link AD/CVD investigations to their affected products, the firms that exported those products, and relevant firm-specific information. We focus exclusively on the first AD/CVD investigation launched by a specific destination country against a particular product from China. This helps us avoid the confounding effect that prior AD/CVD investigations by the same country on the same product might have on the outcome of a current investigation (De Souza and Li, 2025). Each AD/CVD investigation may involve one or more products, and multiple firms might export each product. We defined the firms affected by an investigation as those that exported the products under investigation within the three years leading up to the AD/CVD investigation. We employ a novel matching algorithm based on firm names, linking firms that receive firm-specific duties in the TTB database with those in the CCD, ASIF, and STA datasets.[24]

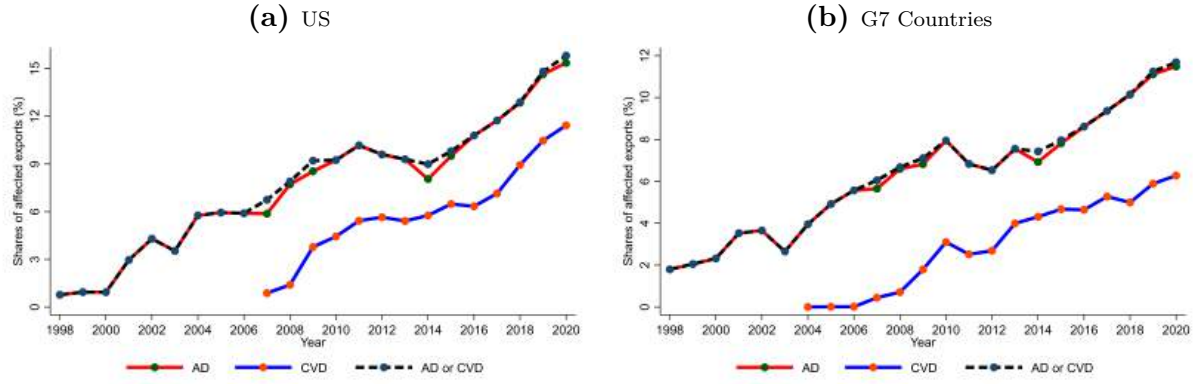


Figure 2: Shares of Chinese Exports to the US and G7 Countries Facing AD/CVD Duties

Notes: This figure shows shares of Chinese exports to US (left panel) and G7 countries (United States, Canada, the Great Britain, Japan, France, Germany, and Italy (right panel) facing AD/CVD duties. Source: Authors' calculation using TTB (Signoret et al., 2020).

Next we present descriptive facts about AD/CVD investigations against China and subsidies in China:

[23]Table A presents the number of Chinese exported products that have been targeted by each country.

[24]See Section A.2 for details of the matching algorithm used to link firm names in TTB with those in the Chinese databases.

Fact 1. *In 2020, 15% and 12% of Chinese exports to the US and G7 countries faced AD/CVD duties, with the affected share increasing over time (Figure 2).*[25]

Fact 1 highlights that a significant share of Chinese exports to advanced economies faces AD/CVD duties. Since these duties are imposed in addition to existing Most Favored Nation (MFN) tariffs and the recent trade war tariffs, they impose significant trade barriers for Chinese exporters.

Fact 2. *About 10% of exporters facing AD/CVD duties receive firm-specific duties. These firm-specific duties are lower than product-level duties.*

Figure 3 shows that about 10% of Chinese exporters subject to AD/CVD duties received firm-specific duties. Figure 4a shows that product duties average 145%, while firm-specific duties average 81%. Figure 4b plots firm-specific duties (y-axis) against the product-level tariff (x-axis) for each investigation. Visually, for each investigation, all firm-specific duties fall below the product tariff.

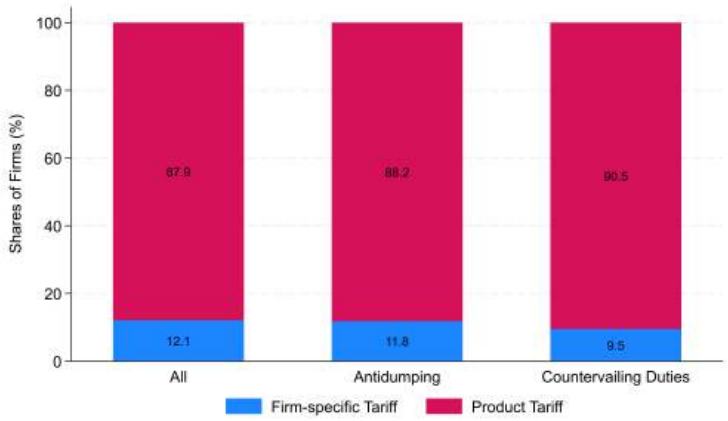


Figure 3: Shares of Chinese Exporters Affected by Firm-specific Duty and Product-level Duty

Notes: This figure shows the share of Chinese exporters subject to firm-specific versus product-level AD/CVD duties. The sample is restricted to Chinese exporters that exported the tariffed product in the three years preceding the AD/CVD investigation. Product tariff applies to firms that do not receive firm-specific tariff but exported the tariffed product.

Fact 3. *Subsidized exporters face higher AD/CVD duties compared to non-subsidized exporters.*

[25]To calculate this affected share, we use the trade value of the investigated product from the year preceding the investigation, following Bown (2024). In contrast, China's AD or CVD investigations on US imports peaked at around 7% in 2011-2012 but otherwise remained at a much lower level of 3-4% (see Figure A.1 in Appendix A).

Figure 5 displays the distribution of AD/CVD duties faced by subsidized and non-subsidized Chinese exporters. The figures show that subsidized exporters face a tariff distribution shifted to the right, suggesting higher duties. This pattern holds true for both large exporters (with above-median assets) and smaller exporters.

Fact 4. *SOEs receive higher subsidy rate than other firms.*

Figure 6 shows that Chinese SOEs generally receive a higher subsidy rate than non-SOE firms. Additionally, both distributions are heavily skewed to the right: while the average Chinese firm receives a modest subsidy rate (in 2016, the final year of the sample, SOEs had a subsidy rate of 13% and private firms 4%), some firms receive subsidy revenue as high as 115% of their output.

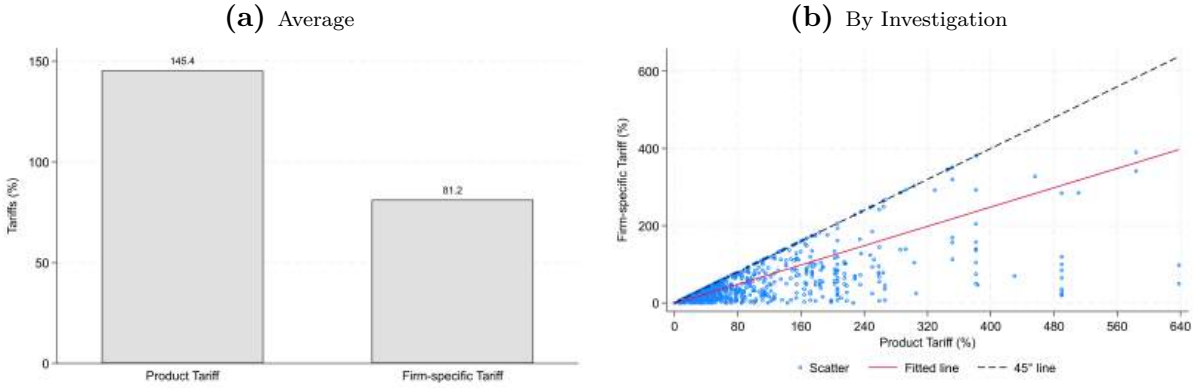


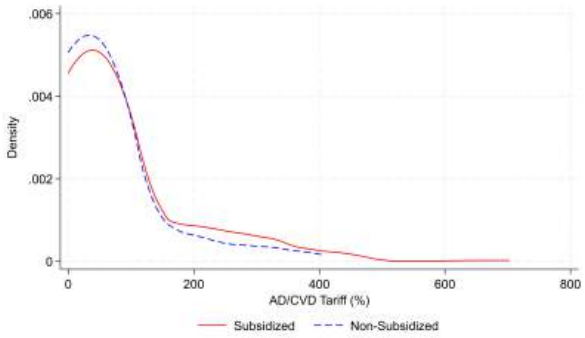
Figure 4: Firm-specific Duty is Lower than Product-level Duty

Notes: This figure compares firm-specific and product-level AD/CVD duty rates. Panel 4a reports average duty levels across all observations, highlighting the gap between the two duty types. Panel 4b plots the relationship between product-level and firm-specific duties at the case level. Each blue dot represents one investigation, with the product-level duty rate on the horizontal axis and the corresponding firm-specific duties included in the case on the vertical axis. The red solid line shows the fitted linear relationship; the black dashed line is the 45°line. All duty rates are expressed in percentage points.

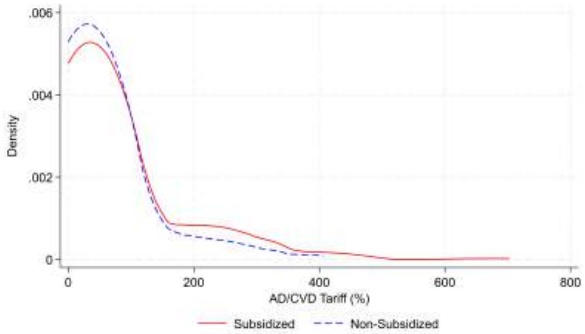
3 Impact of Industrial Subsidies on AD/CVD Investigations

In this section, we demonstrate that higher subsidy that firms receive leads to worse AD/CVD investigation outcome at every stage. Specifically, it results in: (1) a higher probability of affirmative investigation ruling; (2) higher AD/CVD duty; (3) a lower likelihood of receiving a firm-specific tariff; and (4) a higher firm-specific tariff if the firm does receive it. We also estimate the effect of subsidy on the expected AD/CVD tariff for an average firm in the economy.

(a) Overall



(b) Large firms



(c) Small firms

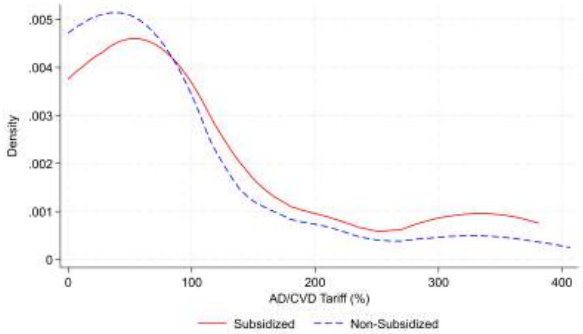


Figure 5: AD/CVD Duty Distribution for Subsidized and Non-subsidized Chinese Exporters

Notes: This figure compares the distribution of AD/CVD duty rates between subsidized and non-subsidized Chinese exporters. Panel (5a) presents the overall distribution, where the red solid line represents subsidized Chinese exporters and the blue dashed line represents non-subsidized Chinese exporters. Panels (5b) and (5c) show the distributions separately for large Chinese exporters (above-median assets) and small Chinese exporters (below-median assets), respectively.

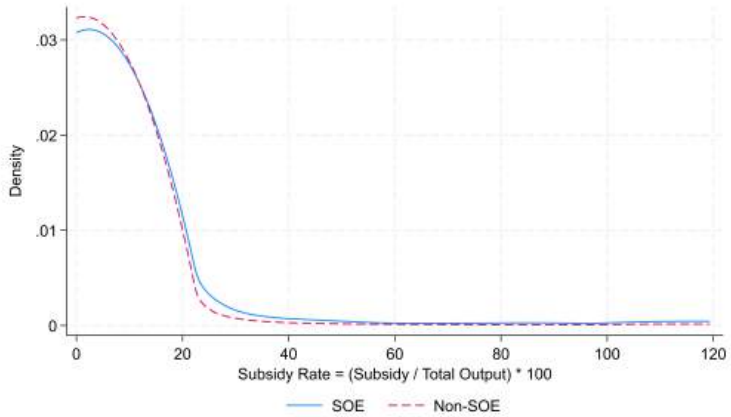


Figure 6: Distribution of Subsidy Rate for SOEs and Private Firms

Notes: This figure shows the distribution of the subsidy rate, which is defined as subsidies received as a percentage of a firm's total output. The blue solid line depicts the distribution for state-owned enterprises (SOEs), while the red dashed line represents private firms. To improve exposition, the distributions are winsorized at top and bottom 0.1%.

3.1 Subsidies Increase Probability of Affirmative AD/CVD Investigation Rulings

We exploit variation across investigations and products to examine how subsidies affect the probability of affirmative AD/CVD investigation rulings (i.e., investigations that conclude with a tariff). We compare investigated products sold by exporters that received more subsidies with those from exporters that received fewer subsidies, using the following specification:

$$Affirmative_{pi} = \beta_1 \, Subsidy \; Rate_{fi} + \beta_2 \, \log(Price_{fpi}) + \beta_3 \, SOE_{fi} + \gamma \, \mathbf{X_{fi}} + \lambda \, \mathbf{Z}_{pd(i)t(i)} + \delta_{p2d(i)t(i)} + \delta_{s(f)} + \varepsilon_{pi}. \quad (1)$$

i denotes an investigation, p denotes a product, and f denotes a firm. The dependent variable $Affirmative_{pi}$ equals one if investigation i targeting product p results in an affirmative determination, and zero otherwise.[26] Our main regressor, $Subsidy \; Rate_{fi}$, measures firm f's subsidy-to-output ratio, averaged over the three years preceding investigation i. The coefficient β_1 captures how the intensity of government support affects the probability of affirmative AD/CVD determinations.

We use the prior three-year average subsidy rate to mitigate reverse causality, addressing the possibility that higher foreign trade barriers might lead to increasing government support in the future. Our identifying assumption is that the government does not provide subsidies to firms *in anticipation of future* foreign AD/CVD investigations.

We will discuss alternative measures of government connection in Section 4.4. Beyond direct subsidies, governments may support firms in various other ways. These other forms of support might correlate with subsidies and affect foreign AD/CVD investigation outcomes. In Section 4.4, we control for an extensive set of these alternative government supports.

We include the firm-product level export price, $\log(Price_{fpi})$, and whether the firm is a state-owned enterprise, SOE_{fi}, as key controls, as both factors may correlate with subsidy rate and AD/CVD outcome. We compute $\log(Price_{fpi})$ as a three-year average before the investigation. This is an important control because less expensive products can create more competition in the foreign market, potentially triggering complaints from foreign domestic firms, which leads to AD/CVD investigations.[27] The SOE indicator is also crucial because SOEs receive higher subsidy rates (Fact 4) and are more likely to be targeted by

[26] We abstract the firm indicator f from the subscript on the left-hand side because the investigation outcome is measured at the investigation-product level. It is therefore common to all firms that export the specific product targeted by the investigation.

[27] We present the empirical evidence in Sections 4.1 and 4.2.

foreign AD/CVD actions according to the design of AD/CVD investigations. The vector $\mathbf{X}_{fi}$ includes additional firm characteristics: firm size (measured as the three-year average of log assets) and foreign ownership.

We control for product p-destination $d(i)$-year $t(i)$ characteristics, $\mathbf{Z}_{pd(i)t(i)}$, computed with import data from the BACI dataset (Gaulier and Zignago, 2010). These controls capture demand and supply factors that may affect the AD/CVD outcome.[28] They include country d's demand for product p by summing its imports from all countries except China, $c \in \mathcal{C}_{pdt}$: $\text{Demand}_{pdt} = \sum_{c \in \mathcal{C}_{pdt}} \text{IMP}_{pdct}$.[29] To measure supply-side factors, we use market concentration, calculated with the Herfindahl-Hirschman Index: $\text{HHI}_{pdt} = \sum_{c \in \mathcal{C}_{pdt}} \left(\frac{\text{IMP}_{pdct}}{\text{Demand}_{pdt}} \right)^2$.[30] We also include a trade-weighted average unit value to control for price level in each destination market.[31]

We include fixed effects at 2-digit HS code-destination-year level ($\delta_{p2d(i)t(i)}$) to absorb time-varying, destination-sector-specific shocks in destination markets that might influence both subsidy allocation and AD/CVD decisions. This fixed effect is critical to account for the heterogeneous implementation of WTO rules across countries. We also include the fixed effect for the Chinese exporting firm's industry ($\delta_{s(f)}$), defined using China's 2-digit industrial classification, to control for time-invariant differences across sectors in their political sensitivity and tendency to receive government support.

Table 1 shows that government subsidy significantly increases the probability of affirmative AD/CVD determination. Subsidies reduce Chinese exporters' costs relative to third countries, triggering AD/CVD duties. The most conservative estimate, Column 4, shows that a one percentage point increase in the subsidy-to-output ratio raises the probability of an affirmative determination by 0.4 percentage points. This magnitude also carries economic significance: an increase of one standard deviation in the subsidy rate (53 percentage points) leads to a 21-percentage-point increase in the probability of an affirmative ruling. The result is robust to the inclusion of various controls and fixed effects.

Export price also plays a crucial role in AD/CVD duty determination. The coefficient on price is consistently negative and highly significant, with a one-percent decrease in export prices associated with a 0.4-percentage-point increase in the probability of affirmative rulings. This finding is consistent with the legal framework of AD/CVD investigations, which

[28] Destination d and year t are both a function of investigation i, written as $d(i)$ and $t(i)$.

[29] We exclude China to avoid endogeneity concern arising from mechanical correlation.

[30] Aghion et al. (2015) shows that subsidies are more effective when directed at more competitive markets.

[31] Weighted Avg. $\text{UV}_{pdt} = \sum_{c \in \mathcal{C}_{pdt}} \left(\frac{\text{IMP}_{pdct}}{\text{Demand}_{pdt}} \right) \times \left(\frac{\text{IMP}_{pdct}}{\text{Quantity}_{pdt}} \right)$.

Table 1: Subsidies Increase Probability of Affirmative AD/CVD Investigation Rulings

Dep.Var.	$Affirmative_{pi}$			
	(1)	(2)	(3)	(4)
$Subsidy\ Rate_{fi}$ (%)	0.004**	0.005***	0.004**	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)
$\log(Price_{fpi})$		-0.005***	-0.005***	-0.005***
		(0.001)	(0.001)	(0.001)
SOE_{fi}			0.013***	0.009*
			(0.005)	(0.005)
N	32,515	30,530	30,530	30,530
adj. R^2	0.875	0.876	0.876	0.876
Other Firm Controls	No	No	No	Yes
pdt Controls	Yes	Yes	Yes	Yes
Firm's Industry FE	Yes	Yes	Yes	Yes
HS2×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned; "pdt Controls" refer to importing country demand, weighted average of unit value, and HHI, using import data for each product-destination from BACI. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

explicitly considers price levels when evaluating potential trade injuries.

SOEs are more likely to face affirmative AD/CVD rulings. The point estimate suggests that SOEs experience a 0.7-percentage-point higher probability of affirmative rulings, though this effect is estimated with less precision than subsidies. This pattern indicates that while investigating authorities target SOEs, they primarily react to government subsidies rather than the state ownership itself.

3.2 Subsidies Increase AD/CVD duties

Focusing on investigations that conclude with an affirmative ruling, we use the following equation to estimate how subsidies impact AD/CVD duties. Effectively, we compare the duties applied to products exported by firms receiving more subsidies against those from firms receiving fewer subsidies:

$$Duty_{fpi} = \beta_1\ Subsidy\ Rate_{fi} + \beta_2\ \log(Price_{fpi}) + \beta_3\, SOE_{fi} + \gamma\, \mathbf{X_{fi}} + \delta_{pd(i)t(i)} + \varepsilon_{fpi}. \quad (2)$$

The dependent variable, $Duty_{fpi}$, represents the AD/CVD duty rates. For firms specifically named in an AD/CVD investigation, $Duty_{fpi}$ is their firm-specific duty rate, which varies by firm f, p, and i. For firms exporting the same HS 6-digit product but not receiving a

Table 2: Subsidies Increase AD/CVD Duties

Dep.Var.	$AD/CVD\ Duty_{fpi}$ (%)			
	(1)	(2)	(3)	(4)
$Subsidy\ Rate_{fi}$ (%)	1.122***	0.326***	0.353***	0.356***
	(0.414)	(0.111)	(0.119)	(0.120)
$\log(Price_{fpi})$		-0.037	-0.032	-0.022
		(0.057)	(0.060)	(0.061)
SOE_{fi}			0.437	0.528
			(0.303)	(0.388)
N	34,971	31,856	29,306	29,306
adj. R^2	0.972	0.993	0.992	0.992
Other Firm Controls	No	No	No	Yes
HS6×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

firm-specific rate, $Duty_{fpi}$ takes the value of the broader product-level rate applied to all other non-named exporters, which varies by product p and investigation i.

We leverage the variation in subsidy rates across firms facing the same investigation to identify their impact on duty outcomes. Unlike our previous analysis, this regression includes fixed effects at the HS 6-digit product × destination × investigation-year level ($\delta_{pd(i)t(i)}$). This fixed effect absorbs all product-destination-year-level demand factors. As a consequence, both duty and subsidy rate variations are analyzed within a specific investigation-product, across different firms. All other right-hand-side variables retain their prior definitions.

Table 2 provides strong evidence that higher subsidy rates lead to increased AD/CVD duties. In the most basic specification (Column 1), which includes only 6-digit HS code × destination × investigation-year fixed effects, a one-percentage-point increase in the subsidy rate correlates with a 1.12-percentage-point increase in AD/CVD duties. This effect remains statistically significant but moderates to approximately 0.33-0.36 percentage points across specifications that progressively add controls for export prices, state ownership, and other firm characteristics (Columns 2-4). An increase of one standard deviation in the subsidy rate (70 percentage points) leads to a 23-percentage-point increase in duties.

Despite an economically meaningful coefficient, AD/CVD duties increase less than one-to-one with subsidies. The likely reason is that the investigating authority often lacks subsidy information for all investigated firms. Instead, they typically only obtain detailed subsidy information from firms that respond to questionnaires or appeal for firm-specific duties.

Including export price in Column 2 significantly reduces the subsidy coefficient's magni-

Table 3: Subsidies Reduce Probability of Receiving Firm-specific Duties

Dep.Var.	*Firm Duty Dummy*$_{fpi}$			
	(1)	(2)	(3)	(4)
Subsidy Rate$_{fi}$ (%)	-0.008**	-0.003*	-0.005**	-0.007***
	(0.004)	(0.002)	(0.002)	(0.002)
log(*Price*$_{fpi}$)		0.0004	0.0002	-0.0003
		(0.001)	(0.001)	(0.001)
SOE$_{fi}$			0.002	-0.013**
			(0.005)	(0.005)
N	40,226	36,774	32,448	32,448
adj. R^2	0.435	0.150	0.159	0.163
Other Firm Controls	No	No	No	Yes
HS6×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

tude. This suggests that higher AD/CVD duties also target firms that charge lower export prices, and that subsidies reduce these export prices.[32] State ownership modestly increases duty levels, with SOEs facing duty rates 0.5 percentage points higher than private firms.

3.3 Subsidies Reduce Probability of Receiving Firm-specific duties

Decomposing the aggregate effect of subsidies on AD/CVD duties documented in Section 3.2, this section demonstrates that subsidies reduce the likelihood of tariffed firms receiving the lower firm-specific tariff. When investigations conclude with duties, we compare the probability that firms receiving higher subsidies can acquire firm-specific duties relative to those receiving lower subsidies:

$$\begin{aligned} \textit{Firm Duty Dummy}_{fpi} = \beta_1\ \textit{Subsidy Rate}_{fi} + \beta_2\ \log(\textit{Price}_{fpi}) + \beta_3\, \textit{SOE}_{fi} \\ + \gamma\, \mathbf{X_{fi}} + \delta_{pd(i)t(i)} + \varepsilon_{fpi}. \end{aligned} \tag{3}$$

The dependent variable *Firm Duty Dummy*$_{fpi}$ equals one if firm f receives a firm-specific duty rate for product p in investigation i, and zero if it faces the product-wide rate. All other variables, including regressors and fixed effects, remain the same as in Equation (2).

Table 3 shows that a higher subsidy rate significantly reduces a firm's chance of re-

[32] See Section 4.1 for details.

ceiving the lower firm-specific AD/CVD duty. Across all specifications, the coefficient for $Subsidy\ Rate_{fi}$ remains negative and statistically significant. In our preferred specification (Column 4), a one-percentage-point increase in a firm's subsidy rate reduces its likelihood of receiving a firm-specific duty by 0.7 percentage points. This effect holds substantial economic meaning: a one-standard-deviation increase in the subsidy rate (70 percentage points) decreases the tariffed firm's probability of receiving the lower firm-specific duty by 50%.

The negative relationship between subsidy rate and the likelihood of receiving a firm-specific duty is consistent with the eligibility rule governments enforce during AD/CVD investigations. To qualify for firm-specific duties, firms must prove their operational independence from state influence. Higher subsidy rates can signal greater government involvement in a firm's operation, making it more difficult for them to establish this independence.

State ownership also reduces a firm's chance of receiving firm-specific duties. The negative and significant coefficient for SOE_{fi} in Column (4) shows that SOEs are 1.3% less likely to receive firm-specific rates. This supports the idea that investigating authorities are less likely to view SOE operations as independent of government control.

Together, these results demonstrate that subsidies affect not only the overall magnitude of AD/CVD duties, as shown in our previous analysis, but also their *type*. Firms with higher subsidy rates or direct state ownership face reduced likelihood of receiving firm-specific duty, suggesting that government support influences both the level and the type of AD/CVD duty imposed.

3.4 Subsidies Increase Firm-Specific duties

Using the sample of firms that receive firm-specific duties during affirmative AD/CVD investigations, we show that subsidies increase the firm-specific duty these firms receive. We estimate:

$$Firm\ Duty_{fpi} = \beta_1\ Subsidy\ Rate_{fi} + \beta_2\ \log(Price_{fpi}) + \beta_3\, SOE_{fi} + \gamma\, \mathbf{X_{fi}} + \delta_{pd(i)t(i)} + \varepsilon_{fpi}. \tag{4}$$

The dependent variable, $Firm\ Duty_{fpi}$, represents the level of firm-specific duty on firm f for product p in investigation i. Regressors and fixed effects are the same as in Equations (2) and (3). We focus on the sample of firms actually receiving a firm-specific duty in an affirmative investigation i.

Table 4 demonstrates that firm-specific duties increase more than one-to-one for the

Table 4: Subsidies Increase Firm-specific Duties

Dep.Var.	$Firm\ Duty_{fpi}$ (%)			
	(1)	(2)	(3)	(4)
$Subsidy\ Rate_{fi}$ (%)	4.047*	4.312*	4.276*	2.051
	(2.144)	(2.321)	(2.570)	(2.239)
$\log(Price_{fpi})$		1.508	1.475	1.427
		(1.132)	(1.209)	(1.184)
SOE_{fi}			4.057	-2.362
			(4.920)	(6.009)
N	3,192	927	880	880
adj. R^2	0.804	0.855	0.847	0.848
Other Firm Controls	No	No	No	Yes
HS6×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

firms that receive them. To qualify for a firm-specific duty, firms must submit detailed business information during the survey and appeal stages. The investigating government scrutinizes this information to determine an individual duty rate for the firm. As a result, among these firms, duties respond most strongly to their subsidy rates.

3.5 Overall Effect of Subsidy on Expected AD/CVD Duty Faced by an Average Firm

In this section, we ask: what is the subsidy effect on the AD/CVD duty that an average firm in the economy is expected to face? We employ a matched difference-in-differences approach. For firms exporting an investigated HS 6-digit product to the investigating country, we pair them with firms exporting never-investigated HS 6-digit products from the same HS 4-digit category to the same destination and in the same investigation year. We designate this combined set of investigated and paired firms as group g. Note that each group g uniquely corresponds to an investigation i. However, each investigation i may include many groups, as it may target multiple products. We estimate the following equation:

$$\begin{aligned} Duty_{fpgd} = \beta_1\, Subsidy\ Rate_{fg} + \beta_2\, \log(Price_{fpg}) + \beta_3\, SOE_{fg} + \gamma\, \mathbf{X_{fg}} \\ + \lambda\, \mathbf{Z}_{pd(g)t(g)} + \delta_g + \delta_{pd(g)} + \delta_{pt(g)} + \varepsilon_{fpgd}. \end{aligned} \tag{5}$$

Table 5: Overall Effects of Subsidies on AD/CVD Duties

Dep.Var.	$Duty_{fpgd}$ (%)				
	(1)	(2)	(3)	(4)	(5)
$Subsidy\ Rate_{fg}$ (%)	0.264	0.142**	0.137**	0.149**	0.156*
	(0.195)	(0.058)	(0.067)	(0.068)	(0.087)
$\log(Price_{fpg})$		-0.050*	-0.030	-0.030	-0.036
		(0.030)	(0.028)	(0.029)	(0.037)
SOE_{fg}			0.342*	0.411**	0.374
			(0.180)	(0.208)	(0.291)
N	68,666	61,023	52,629	52,629	39,943
adj. R^2	0.979	0.994	0.993	0.993	0.993
Other Firm Controls	No	No	No	Yes	Yes
pdt Controls	No	No	No	No	Yes
Group FE	Yes	Yes	Yes	Yes	Yes
HS6×Desti	Yes	Yes	Yes	Yes	Yes
HS6×InvestiYear	Yes	Yes	Yes	Yes	Yes

Notes: Matched sample pairs investigated firms with control firms to form groups. Control firms are those that exported non-investigated 6-digit products within the same 4-digit category to the initiating country no more than three years before the investigation. "Other Firm Controls" include "size" and "foreign"; "*pdt* Controls" refer to the level of foreign demand, HHI, and weighted average of unit value, using import data for each product-destination pair from the BACI dataset. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

$Duty_{fpgd}$ represents the AD/CVD duties faced by firm f in group g (formed for investigation i on product p, initiated by country d). This variable takes a value of 0 for the control group firms. The right-hand side regressors—$Subsidy\ Rate_{fg}$, $\log(Price_{fpg})$, SOE_{fg}, and controls $\mathbf{X_{fg}}$—are defined in the same way as the baseline. The only difference is notational: the subscript now uses group g instead of the previous investigation i.

The group fixed effect, δ_g, serves a similar purpose to the product-destination-year fixed effect (by absorbing common shocks associated with an investigation) used in prior specifications. We exploit variations in subsidies and AD/CVD duties within each group to identify the subsidy effect. Since each group g corresponds to an HS 4-digit product, we further control for HS 6-digit product-destination fixed effects ($\delta_{pd(g)}$) and HS 6-digit product-year fixed effects ($\delta_{pt(g)}$).

Table 5 shows that a higher subsidy rate leads to a higher expected AD/CVD duty for an average firm in the economy. The estimated coefficient is lower than in Table 2 (which focused on firms already facing AD/CVD duties) because not all subsidized firms are subject to foreign AD/CVD duties. Consistent with the findings for tariffed firms, firms that charge lower export prices and SOEs are expected to face higher AD/CVD duties.

Table B.1, which uses a similar specification but includes only the *investigated but non-tariffed* firms in its control group, shows the expected effect of a subsidy rate on an average

firm *facing an AD/CVD investigation*. A one-percentage-point increase in the subsidy rate leads to a 0.2-percentage-point increase in the expected AD/CVD tariff faced by these firms. This coefficient is lower than the one reported in Table 2 (which focused on firms already facing AD/CVD duties) because some investigations are ruled negative and not all investigated firms eventually face a duty. This coefficient is higher than the one reported in Table 5 because not all subsidized firms are targeted by an AD/CVD investigation.

Discussion. To summarize, a one-percentage-point increase in a firm's subsidy rate leads to a 0.16-percentage-point rise in the expected AD/CVD duty for an average firm in the economy. This increases to 0.2 percentage points for an average firm already undergoing an AD/CVD investigation, 0.36 percentage points for an average firm facing an affirmative AD/CVD investigation, and further to 2-4 percentage points among firms receiving a firm-specific duty.

The economy-wide average effect of subsidy on AD/CVD duty is moderate, considering the mean subsidy rate for SOEs (13%) and private firms (4%). This might explain why China continues to widely implement industrial policies that support many firms across many regions and sectors. The current strength of foreign AD/CVD retaliation, based on WTO institutions, appears insufficient to deter overall Chinese subsidy activity.

However, because the subsidy rate distribution is highly skewed, AD/CVD rules create very high trade barriers for firms receiving substantial subsidies. For example, a firm increasing its subsidy rate from the 5th percentile (0% subsidy rate) to the 99th percentile (115% subsidy rate) would expect to face an 18-percentage-point increase in foreign AD/CVD duties. If that firm is already subject to an affirmative AD/CVD ruling, this increase in subsidy rate would lead to a 40- percentage-point increase in duties.

AD/CVD investigations also create significant subsidy costs for firms that appeal for firm-specific duties. Besides the higher tariff-subsidy elasticity for these firms, they may also risk being disqualified from firm-specific duties entirely. Considering that a one percentage point increase in subsidy reduces the probability of receiving firm-specific duties by 0.7 percentage points (Table 3), and that the average product-level duty is 145% while the average firm-specific duty is 81% (Figure 4a), a one-percentage-point increase in the subsidy rate results in a 49-percentage-point increase in the expected duty faced by firms potentially receiving firm-specific duties.

4 Extensions and Robustness

In this section, we first confirm that subsidies reduce export prices, which cause greater injury in the importing country and motivate AD/CVD investigations. This justifies why export price should serve as an important control in previous analyses. Next, we show that while both export price and subsidy influence AD/CVD investigation outcomes, the decision to initiate an AD/CVD investigation depends solely on the export price, rather than directly on whether the exporter received a subsidy, which is consistent with WTO rules.

Furthermore, we document a spillover effect of subsidies, leading to higher AD/CVD duties for non-subsidized firms exporting the same investigated product. Next, we include an extensive set of alternative government connections as controls and confirm that they do not undermine the effect of subsidies on AD/CVD duties. In the end, we confirm that measurement or sampling differences between the two Chinese firm datasets (ASIF and STA) do not affect our results, by focusing on samples within each dataset.

4.1 Subsidies Decrease Export Prices

Export price should be controlled in previous analyses because subsidized products and firms are generally more price-competitive, which creates greater injury and motivates the importing country to implement stringent AD/CVD rules. To formally test this, we use the following panel regression to show the correlation. Due to sampling and measurement differences across the two Chinese firm-level datasets, we focus on the sample of firms never targeted by AD/CVD investigations, constructed from STA, which spans from 2009 to 2016.[33]

$$\log(Price_{fpdt}) = \beta_1 \, Subsidy \; Rate_{ft} + \beta_2 \, SOE_{ft} + \gamma \, \mathbf{X_{ft}} + \delta_{p2dt} + \delta_f + \varepsilon_{fpdt}. \tag{6}$$

$\log(Price_{fpdt})$ denotes the logarithm of export price for firm f, product p sold to destination d in year t.[34] $Subsidy\ Rate_{ft}$ measures the firm's subsidy-to-output ratio, averaged over the three years preceding t. As before, $\mathbf{X_{ft}}$ includes firm size, measured by the log of total assets averaged over the preceding three years, and an indicator for whether the firm is foreign-owned. HS2 $\times$ destination $\times$ year fixed effects (δ_{p2dt}) control for broad industry-specific demand shocks or any market-wide changes that might affect prices. Firm fixed effects (δ_f)

[33]Specifically, to construct this panel data, we match the Chinese Customs Database (CCD) with the Annual Tax Survey (STA) at the firm level. We then exclude firms that faced AD/CVD investigations.

[34]These prices are calculated using Free-on-Board (FOB) export statistics, meaning they do not include trade costs or tariffs incurred after the goods leave the port of origin.

Table 6: Subsidies Decrease Export Price

Dep.Var.	$\log(Price_{fpdt})$		
	(1)	(2)	(3)
$Subsidy\ Rate_{ft}$ (%)	-0.084***	-0.084***	-0.084***
	(0.004)	(0.004)	(0.004)
SOE_{ft}		-0.077	-0.072
		(0.048)	(0.047)
N	2,974,003	2,854,861	2,854,861
adj. R^2	0.563	0.562	0.562
Other Firm Controls	No	No	Yes
HS2×Desti×Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Notes: The sample is constructed by matching Chinese Customs Data (CCD) with Annual Tax Survey (STA) for 2009-2016 for firms that did not face AD/CVD investigations. "Other Firm Controls" include firm size, measured by the log of total assets averaged over the preceding three years, and an indicator for whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * $<$ 0.1, ** $<$ 0.05, *** $<$ 0.01.

account for all time-invariant firm characteristics that might affect pricing.

Table 6 shows that subsidies significantly reduce export prices: a one-percentage-point increase in subsidy rate leads to a 0.1 percentage decrease for the STA sample. This finding remains robust when the regression is run on the ASIF sample, which spans from 2000 to 2008 (Table B.2). Because lower export price causes greater injury in the destination market and triggers AD/CVD investigations, export price it should be an important control in previous regressions. This finding is consistent with Girma et al. (2009); Fan et al. (2015), who show that subsidies enhance firm export performance.

Acknowledging that subsidy intensity might be endogenous to price (the government might subsidize either more or less competitive firms in the foreign market), we also create an IV for subsidy rate. We describe the construction of this IV in Equation (11) in Section 5 and report the IV regression results in Table B.3. The findings remain robust even with the inclusion of the IV.

While previous analyses have shown that both export price and subsidy are important for AD/CVD investigation *outcomes*, export price is the most important determinant for the decision to *initiate* an investigation, which is consistent with WTO rules. We demonstrate this in the next section.

4.2 Subsidies Do Not Significantly Affect AD/CVD Investigation Probability

This section investigates the factors driving a government's *initiation* of an AD/CVD investigation. We show that, consistent with WTO AD/CVD rules, the likelihood of an investigation is not significantly affected by subsidies. Instead, it is more significantly affected by export prices. This occurs because the importing country's government initiates an investigation based on complaints from its domestic firms, which must show evidence of injury from import competition. At this initial stage, the government lacks information about exporters' subsidies; such details only become available later during the investigation phase, when surveys collect this information.

We estimate a matched difference-in-differences specification identical to Equation (5):

$$\begin{aligned} Investigation_{pg} = \beta_1 \, Subsidy \ Rate_{fg} + \beta_2 \, \log(Price_{fpg}) + \beta_3 \, SOE_{fg} + \gamma \, \mathbf{X_{fg}} \\ + \lambda \, \mathbf{Z}_{pd(g)t(g)} + \delta_g + \delta_{pt(g)} + \varepsilon_{pg}. \end{aligned} \tag{7}$$

We exploit variation across subsidies received by firms exporting different HS 6-digit products within the same HS 4-digit category to identify how subsidies affect the investigation probability. As in Section 3.5, we pair firms that export an investigated HS 6-digit product to an investigating country with firms exporting never-investigated HS 6-digit products from the same HS 4-digit category, in the same investigation year, and to the same destination country. We refer to this combined set of investigated and paired firms group g. $Investigation_{pg}$ denotes whether HS 6-digit product p (within the HS 4-digit category associated with group g) is investigated by investigation $i(g)$. Regressors and fixed effects for Equation (7) are the same as in Equation (5).

Table 7 shows that the subsidy rate does not significantly affect the probability of an AD/CVD investigation. Instead, export price has a more significant impact. This finding is consistent with WTO rules: the decision to start an AD/CVD investigation is based on domestic firms' complaints about import competition and resulting injury, which is primarily driven by lower export prices. Information about exporters' subsidies only becomes available at later stages of the investigation process.

Table 7: Subsidies Do not Significantly Affect AD/CVD Investigation Probability

Dep.Var.	$Investigation_{pg}$				
	(1)	(2)	(3)	(4)	(5)
$Subsidy\ Rate_{fg}$ (%)	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$\log(Price_{fpg})$		-0.001***	-0.001***	-0.001***	-0.001***
		(0.0002)	(0.0002)	(0.0002)	(0.0003)
SOE_{fg}			0.004***	0.001	0.001
			(0.001)	(0.001)	(0.001)
N	68,859	61,197	52,790	52,790	40,065
adj. R^2	0.981	0.984	0.984	0.984	0.983
Other Firm Controls	No	No	No	Yes	Yes
pdt Controls	No	No	No	No	Yes
Group FE	Yes	Yes	Yes	Yes	Yes
HS6×InvestiYear FE	Yes	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned; "pdt Controls" refer to importing country demand, weighted average of unit value, and HHI, using import data for each product-destination from BACI. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

4.3 Subsidies Increase AD/CVD Duties Faced by Non-subsidized Firms

We show that a subsidy received by an investigated firm increases the AD/CVD duties faced by other firms that also exported the investigated product, even if those other firms did not receive any subsidy. For these firms, AD/CVD duties are excessively applied at a level that cannot be justified by subsidies.

We use a specification similar to Equation (1), but we limit the sample to firms that received no subsidies in the three years prior to the investigation:

$$Duty_{fpi} = \beta_1 Subsidy\ Rate_{pi}^{ave} + \beta_2 \log(Price_{fpi}) + \beta_3\ SOE_{fi} + \gamma \mathbf{X_{fi}} + \lambda\, \mathbf{Z}_{pd(i)t(i)} + \delta_{p2d(i)t(i)} + \varepsilon_{fpi}. \tag{8}$$

$Subsidy\ Rate_{pi}^{ave}$ measures the average subsidy-to-output ratio among the subsidized and investigated firms within the same HS6-destination-investigation year triplet. Our identification exploits variation in the intensity of government support across different AD/CVD investigations: some cases involve heavily subsidized firms, others feature more modest subsidy rates. This variation allows us to test whether non-subsidized firms face higher duties if they exported the same investigated product as highly-subsidized firms.

Table 8: Impact of Subsidies on AD/CVD Duties Faced by Non-subsidized Firms

Dep.Var.	$Duty_{fpi}(\%)$				
	(1)	(2)	(3)	(4)	(5)
$Subsidy\ Rate_{pi}^{ave}(\%)$	10.281***	7.840***	6.431***	6.347***	9.856***
	(2.209)	(1.766)	(2.007)	(1.990)	(3.325)
$\log(Price_{fpi})$		-0.279	-0.270	-0.282	-0.174
		(0.188)	(0.210)	(0.219)	(0.265)
SOE_{fi}			0.998	1.898	2.572
			(1.968)	(1.862)	(2.804)
N	15,571	14,284	12,026	12,026	8,473
adj. R^2	0.919	0.961	0.954	0.954	0.943
Other Firm Controls	No	No	No	Yes	Yes
pdt Controls	No	No	No	No	Yes
HS2 × Desti × InvestiYear	Yes	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. "pdt Controls" refer to importing country demand, weighted average of unit value, and HHI, using import data for each product-destination from BACI. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

Table 8 shows substantial spillover effects of subsidies, leading to higher AD/CVD duties imposed on non-subsidized firms. Given that the standard deviation of the product-level average subsidy rate is 0.42 percentage points, our Column (5) estimate implies that a one-standard-deviation increase in the product-level average subsidy rate leads to a 4.1-percentage-point increase in AD/CVD duties faced by non-subsidized firms exporting the same product. The product-level duty is determined using survey information collected from a sample of firms that exported the investigated product, and it sets a baseline for firm-specific duties. Consequently, non-subsidized firms can easily face high duties if the investigating authority's survey sample includes heavily subsidized firms.

4.4 Alternative Measures of Government Connections

The impact of subsidies on AD/CVD outcomes remains robust when we include extensive alternative measures of government connections. While other forms of firm-government connections might correlate with subsidies, they do not critically drive the effect of subsidies on AD/CVD outcomes. Overall, subsidies and state-owned enterprise (SOE) status emerge as the most significant political connection factors that determine AD/CVD duties. This aligns with WTO AD/CVD rules, which specifically require information on subsidies and state ownership during investigations but do not ask for information about alternative political connections.

We consider the following alternative indicators of state support: interest rate, tax rate, entertainment expense rate, and land discount rate. We measure the interest rate as the ratio of a firm's interest expenditure to its current liabilities. The tax and entertainment expense rates are measured as the ratios of a firm's tax payable, and entertainment expense to its total output, respectively.[35] The land discount rate, detailed further in Section A.3, represents the discount a firm receives on its land purchase from the government compared to nearby control land parcels sold by the government to other firms.

Subsidy and Misallocation. We further consider theory-based output and capital misallocation measures. These measures provide a comprehensive indicator of the total distortions a firm experiences in the output and capital markets, combining effects from subsidies, other forms of favoritism, discrimination, and various market frictions. Following Hsieh and Klenow (2009), we measure a firm's output (τ^Y) and capital (τ^K) misallocation using its marginal revenue and marginal product of capital (see Section B.1 for details). We decompose the misallocation into components explained by the subsidy rate ($\widehat{\tau}^{Y,subsidy}$ and $\widehat{\tau}^{K,subsidy}$) and the remaining unexplained portions ($\tilde{\tau}^Y$ and $\tilde{\tau}^K$).[36]

Table 9 shows that, except for the subsidy rate, other measures of government connection, including the portion of output and capital misallocation that cannot be explained by the subsidy rate, do not systematically influence AD/CVD investigation outcomes. The effects of subsidy rate remain quantitatively similar to our baseline specifications. Furthermore, Table B.4 and B.5 show that the output and capital misallocation component that is attributed to subsidies significantly affects AD/CVD outcomes.

These results suggest that subsidies are the most critical drivers of AD/CVD outcomes, likely because the investigating government systematically collects this information during their surveys, aligning with WTO AD/CVD rules. To minimize foreign trade retaliation through AD/CVD measures, the exporter's government might consider alternative forms of support superior to direct subsidies.

[35] Similar to us, Cai et al. (2011) measures firm political connection with their entertainment expense.

[36] We regress τ^Y and τ^K on the subsidy rate across firms that faced AD/CVD duties. The regression predicts $\widehat{\tau}^{Y,subsidy}$ and $\widehat{\tau}^{K,subsidy}$. We then define $\tilde{\tau}^{Y,subsidy} = \tau^Y - \hat{\tau}^{Y,subsidy}$ and $\tilde{\tau}^{K,subsidy} = \tau^K - \widehat{\tau}^{K,subsidy}$.

Table 9: Impact of Different Forms of Government Support on AD/CVD Outcomes

Dep.Var.	$Affirmative_{pi}$	$AD/CVD\ Duty_{fi}$ (%)	$Firm\ Duty\ Dummy_{fpi}$	$Firm\ Duty_{fpi}$ (%)
$Subsidy\ Rate_{fi}$ (%)	0.006**	0.742***	-0.013***	4.005
	(0.002)	(0.271)	(0.003)	(7.376)
$Interest\ Rate_{fi}$ (%)	0.014	0.009	0.001**	0.870
	(0.041)	(0.040)	(0.001)	(0.763)
$Tax\ Rate_{fi}$ (%)	-0.060	0.064	-0.001	-1.088
	(0.065)	(0.054)	(0.001)	(1.257)
$Entertainment\ Expense\ Rate_{fi}$ (%)	-0.005	-0.042	-0.005	8.738
	(0.004)	(0.383)	(0.004)	(12.723)
$Land\ Discount\ Rate_{fi}$ (%)	-0.0004	-0.006	0.001	0.428
	(0.001)	(0.014)	(0.0004)	(3.648)
$\tilde{\tau}^K_{fi}$	-0.00004	0.004***	-0.00002	0.088
	(0.00003)	(0.001)	(0.00002)	(0.088)
$\tilde{\tau}^Y_{fi}$	0.0002*	0.003	-0.0001	-0.072
	(0.0001)	(0.008)	(0.0001)	(0.098)
SOE_{fi}	0.009	0.346	-0.021**	-1.592
	(0.007)	(0.533)	(0.008)	(8.255)
N	13,099	13,909	13,909	350
adj.R^2	0.886	0.989	0.168	0.849
Other Firm Controls	Yes	Yes	Yes	Yes
pdt(i) Controls	Yes	No	No	No
Firm's Industry FE	Yes	No	No	No
HS6×Desti×InvestiYear	No	Yes	Yes	Yes
HS2×Desti×InvestiYear	Yes	No	No	No

Notes: Table 9 presents the impact of various forms of government support on AD/CVD outcomes. $Subsidy\ Rate_{fi}$, $Tax\ Rate_{fi}$, and $Entertainment\ Expense\ Rate_{fi}$ denote the ratios of firm f's subsidies received, taxes payable, and entertainment expenses to the firm's total output, averaged over three years preceding investigation i, respectively. $Interest\ Rate_{fi}$ is calculated as the ratio of firm f's interest expenditure to its current liabilities over the same period. $Land\ Discount\ Rate_{fi}$ is defined as the difference between the firm f's land purchase cost and the average transaction amount within a 500-meter radius, divided by its total output, averaged over the years before investigation i. $\tilde{\tau}^Y$ and $\tilde{\tau}^K$ represent the unexplained portions of firm-level output and capital misallocation (τ^Y, τ^K) measured following Hsieh and Klenow (2009) using marginal revenue and marginal product of capital (Section B.1), after accounting for components explained by the subsidy rate ($\widehat{\tau}^{Y,subsidy}$, $\widehat{\tau}^{K,subsidy}$). "Other Firm Controls" include "log(Export Price)", "size", and "foreign", representing exporting price, firm size, and foreign ownership, respectively. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

4.5 Focusing on Investigations for which Firm Variables Come from the Same Dataset

While most of our cross-investigation analysis does not suffer from sampling and measurement differences across the two Chinese firm datasets (ASIF for 2000-2008 and STA for 2009-2016), we aim to further minimize any potential influence from the sample difference. We focus on investigations where all firm variables originate from a single dataset. To achieve this, we exclude the years 2010 and 2011 from our sample. If an investigation occurred in these years, we would need to rely on both datasets to construct a firm's subsidy rate, as

we use its average value during the three years prior to the investigation. As Table B.6 shows, our main results remain robust when excluding 2010 and 2011, which helps alleviate concerns about potential differences between the two datasets.

5 AD/CVD Duties Undermine Subsidy Benefit for Firm Performance

It remains a central question for industrial policy research as to whether subsidies offer significant benefits to firms. In this section, we show that the associated rise in foreign trade retaliation significantly offsets these benefits. Regressing firm outcomes on subsidies without accounting for this foreign trade retaliation creates an *omitted variable bias*. This bias may help reconcile the differences among previous studies regarding the estimated significance of industrial policies' benefits.

To identify how subsidies and the resulting AD/CVD duties affect firm growth, we leverage cross-investigation-firm variation with a sample of firms that faced AD/CVD investigations. We compare the subsequent revenue growth of firms that received more subsidies prior to the investigation to those that received fewer subsidies. We also compare growth in firms facing investigations that conclude with high duties against those facing low or no duties. Specifically, we consider the following specification:

$$\Delta \log(Revenue_{fi}) = \beta_1 \, Subsidy \ Rate_{fi} + \beta_2 AD/CVD \ Duty_{fi} + \beta_3 \, SOE_{fi} + \gamma \, \mathbf{X}_{fi} + \delta_{t(i)} + \varepsilon_{fi}. \tag{9}$$

The dependent variable, $\Delta \log(Revenue_{fi})$, represents the revenue growth for firm f after investigation i. Our baseline outcome variable is defined as the log difference in firm revenue over five years, $\Delta \log(Revenue_{fi}) = \log(Revenue_{f,t(i)+5}) - \log(Revenue_{f,t(i)})$, where $t(i)$ is the investigation year. We take 5-year growth as the baseline because AD/CVD duties typically last 5 years before they are reevaluated. As before, $Subsidy \ Rate_{fi}$ measures the average firm subsidy rate over the three years prior to the investigation, and $AD/CVD \ Duty_{fi}$ denotes the AD/CVD duty, which equals zero if the investigation concludes with a negative ruling. Other firm controls, $\mathbf{X}_{fi}$, are the same as in previous analyses. $\delta_{t(i)}$ denotes a year fixed effect.

We develop the following instruments for subsidy and AD/CVD duty to address potential endogeneity. It is well known that subsidies are endogenous to firm growth (Lane, 2020);

some are allocated to promote successful firms, others target young and vulnerable firms, and some are distributed based on political connections (which may positively or negatively correlate with firm growth). It is also well understood that AD/CVD duties are more likely to target competitive exporters (Steinbach and Khederlarian, 2022; De Souza and Li, 2025).

Instruments for Subsidy and AD/CVD Duty. We build the instrument for subsidy following Nekarda and Ramey (2011); Nakamura and Steinsson (2014); Auerbach et al. (2024), who studied the impact of government spending on industries/regions:

$$Z_{ft}^{\text{Subsidy}} = \underbrace{\frac{Subsidy_{f,t_0}}{\sum_{j\in(s(f),r(f))} Subsidy_{j,t_0}}}_{\text{Exposure: } f\text{'s Share in Region-City Total Subsidy in Initial Year}} \times \underbrace{\left[\frac{\sum_{j\in(s(f),r(f))} Subsidy_{j,t} - \sum_{j\in(s(f),r(f))} Subsidy_{j,t-1}}{\left(\sum_{j\in(s(f),r(f))} Subsidy_{j,t} + \sum_{j\in(s(f),r(f))} Subsidy_{j,t-1}\right)/2}\right]}_{\text{Shifter: Midpoint Growth Rate of Region-City Total Subsidy}}. \tag{10}$$

$$\text{IV}_{fi}^{\text{Subsidy}} = \frac{1}{3}\sum_{\tau=t(i)-3}^{t(i)-1} Z_{f\tau}^{\text{Subsidy}} \tag{11}$$

The shift-share instrument, Equation (10), is composed of an exposure which equals to firm f's share in total subsidy allocated to the 4-digit industry ($s(f)$)–city ($r(f)$) to which the firm belongs, computed using data from the initial year. It captures the firm's importance in the regional government's overall industrial policy. The shift component measures the industry-city's total subsidy growth, reflecting the regional government's industrial policy priorities.[37] We then average the shift-share instrument over the three years prior to the investigation to align its time frame with the regressors in Equation (11). The identifying assumption is that, conditional on firm characteristics and fixed effects, firms are differentially exposed to regional governments' overall industrial policies, and that their unobserved firm characteristics driving growth are uncorrelated with these aggregate shocks.

For duties, we construct an instrument based on the historical number of AD/CVD investigations initiated by the same destination country targeting the same HS 6-digit prod-

[37]We use the midpoint growth rate instead of the log growth rate, similar to Li (2023), to avoid missing values that arise from the log of zero.

uct, but excluding all investigations against China (Equation 12). This variable captures the destination country's underlying protectionist tendency toward the product, reflecting structural factors such as domestic industry interests or political pressure. Its relevance arises from the idea that products more frequently targeted in the past are more likely to receive high duties in future investigations. The exclusion of China and using historical nature strengthens the exogeneity assumption, as it ensures the instrument is not mechanically correlated with contemporaneous Chinese firm outcomes. Finally, we aggregate this instrument to the firm level:

$$\text{IV}_{f,i}^{\text{Duty}} = \sum_{p \in \mathcal{P}_{f,i}} \sum_{t < t(i)} \sum_{o \neq \text{CHN}} \mathcal{I}_{p,d(i),o,t} \tag{12}$$

Table 10: AD/CVD Duties Undermine the Subsidy Effect on Firm Performance

Dep. Var.	$\Delta \log(Revenue_{fi}) = \log(Revenue_{f,t(i)+5}) - \log(Revenue_{f,t(i)})$					
	OLS		2SLS			
	(1)	(2)	(3)	(4)	(5)	(6)
$Subsidy\ Rate_{fi}$ (%)	0.0948**	0.0958**	1.024*	1.275*	0.906*	1.160*
	(0.039)	(0.039)	(0.531)	(0.658)	(0.539)	(0.655)
$AD/CVD\ Duty_{fi}$ (%)		-0.000490**		-0.00581***		-0.00559***
		(0.000)		(0.001)		(0.001)
SOE_{fi}	0.0744	0.0749	-0.0928	-0.178	0.0141	-0.0740
	(0.071)	(0.071)	(0.172)	(0.212)	(0.138)	(0.166)
N	3773	3773	2115	2115	2113	2113
C-D F-stat			25.7	10.7	25.5	11.3
Other Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Investigation Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	No	No	No	Yes	Yes

Notes: This table presents that AD/CVD duties undermine the subsidy effect on log firm revenue growth over the next five years. $\Delta \log(Revenue_{fi}) = \log(Revenue_{f,t(i)+5}) - \log(Revenue_{f,t(i)})$. "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

Table 10 shows that the OLS estimates of Equation (9) lead to smaller estimated effects of subsidies on firm revenue growth. This finding is consistent with Branstetter et al. (2023), who shows that a large part of Chinese subsidies are allocated to government-connected firms and may negatively correlate with firm performance.

For the IV regression estimates, a one-percentage-point increase in a firm's subsidy rate leads to a 1.2% growth in firm revenue over five years, conditional on controlling for the associated rise in AD/CVD duties. However, this effect drops to 0.9% when the AD/CVD duty remains in the error term. This indicates that the AD/CVD duties resulting from firm subsidies significantly offset the subsidy's benefit by about 22%.

The instrument for the subsidy rate itself does not solve the omitted variable bias problem. As long as the instrument is relevant and affects the subsidy rate, it will induce higher foreign AD/CVD duties and create an omitted variable bias if the duty is left in the error term. In OLS regressions, we also find a higher coefficient on the subsidy rate if the AD/CVD duty is controlled for, although the magnitude difference is smaller than in the IV regression estimates.

Robustness Test. We find consistent effects of subsidies and AD/CVD duties on firm performance across different firm outcomes. Table B.7 shows that AD/CVD duties reduce the subsidy impact on five-year firm employment growth by 14% and TFP growth by 26%. When controlling for AD/CVD duties, a one-percentage-point increase in the subsidy rate is associated with a 1.1% increase in firm employment and a 0.08% increase in TFP growth in five years. However, if AD/CVD duties are not controlled for, these effects are reduced to 0.98% and 0.06% (insignificant), respectively.

These findings may help reconcile the differences in the literature regarding the estimated benefits of industrial policies. An older body of research, typically using cross-sector and cross-firm variations, generally found no significant benefits from industrial policies (Beason and Weinstein 1996; Harrison and Rodríguez-Clare 2010, among others). In contrast, more recent papers, which use variations from specific policy shocks and employ a difference-in-differences strategy, typically find significantly positive benefits (see the discussion in Juhász et al. 2023, among others).

We highlight a source of omitted variable bias in this older literature that pushes the estimated effect of industrial policy toward zero: if subsidies significantly lower domestic export prices and WTO agreements are active, foreign countries may retaliate with AD/CVD duties, which undermine the estimated benefits of industrial policies. The magnitude of this omitted variable bias should depend on the scale of the subsidy and whether the subsidy creates substantial import competition in the foreign country, which explains the diverse findings in the literature. If subsidies are implemented on a smaller scale, in smaller countries, or are more targeted at non-tradable sectors, they are likely to result in less foreign trade retaliation and, consequently, a smaller omitted variable bias.

Studies that use plausibly exogenous policy shocks likely compare firms facing similar subsequent foreign tariffs, which makes them less susceptible to this bias. This may explain why they estimate greater benefits. Despite this bias, the older literature remains relevant to policymakers. Its estimates may capture not only the benefits but also the associated costs, including foreign trade retaliation, thus offering insights closer to the net benefit of

these policies.

6 Conclusion

We uncover a cost of industrial policy that has previously been ignored by policy makers and researchers: under WTO rules, subsidies lead to adverse outcomes at all stages of an AD/CVD investigation. AD/CVD duties associated with these subsidies partially offset the positive effect of subsidies on firm revenue growth by 22%.

These empirical patterns may explain the simultaneous rise of industrial policies and trade protection measures in recent decades, as well as reconcile previous findings on whether subsidies significantly benefit firms. If subsidies significantly lower domestic export prices and WTO agreements are active, foreign countries may retaliate with AD/CVD duties, which undermine the estimated benefits of industrial policies.

The effectiveness of industrial policies depends on the extent of foreign trade retaliation they trigger. Policymakers, when designing industrial policies—especially those aimed at promoting exports—should account for how subsidies influence trade retaliation. To mitigate foreign trade retaliation, subsidies could target sectors that create less business loss in foreign countries. They may also consider non-subsidy support, which are less likely to result in foreign AD/CVD duties.

While these AD/CVD rules, through a formalized procedure, appear successful in creating significant trade barriers for heavily subsidized firms and those evaluated for firm-specific duties, they do not strongly deter the exporting country's overall subsidy activity. Not all subsidized firms are subject to AD/CVD investigations. For an average investigated firm, duties are not estimated to respond strongly to subsidies, possibly due to a lack of complete subsidy information for all firms that exported the investigated product. These issues remain open academic questions and motivate further reform of WTO rules.

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Online Appendix

Appendix A Sample Construction

Table A.1: Number of AD/CVD Investigations Against China and Affected HS6 Products

Country	# of either AD/CVD affected HS6	# of only AD-affected HS6	# of only CVD-affected HS6	# of both AD/CVD-affected HS6
Argentina	177	177	0	0
Australia	61	50	2	31
Brazil	137	137	0	9
Canada	105	45	1	61
Chile	8	8	0	0
Colombia	112	112	0	0
European Union	243	237	9	45
India	283	274	10	1
Indonesia	52	52	0	0
Israel	11	11	0	0
Jamaica	1	1	0	0
Japan	6	6	0	0
Malaysia	37	37	0	0
Mexico	85	85	0	0
New Zealand	16	16	0	0
Pakistan	60	60	0	0
Peru	93	93	0	0
Philippines	5	5	0	0
Russia	43	43	0	0
South Africa	56	56	1	0
South Korea	46	46	0	0
Taiwan	69	69	0	0
Thailand	65	65	0	0
Trinidad and Tobago	12	12	0	0
Turkey	150	149	0	1
USA	358	189	64	229
Ukraine	26	26	0	0
Uruguay	1	1	0	0
Venezuela	15	15	0	0
Total	2333	2077	87	377

Notes: The table reports the number of AD/CVD investigations against China and affected HS6 products by imposing country between 2000 and 2016, using the Global Anti-dumping Database (Signoret et al., 2020).

In this section, we first describe the key datasets: the Chinese Customs Database (CCD), the Annual Survey of Industrial Firms (ASIF), the Annual Tax Survey (STA), and the Temporary Trade Barriers Database (TTB). Next, we discuss our method for matching these datasets.

A.1 Datasets

Chinese Customs Database. We acquire the annual census of firm-product level export and import transactions in China, compiled by the Chinese Customs Office for the period

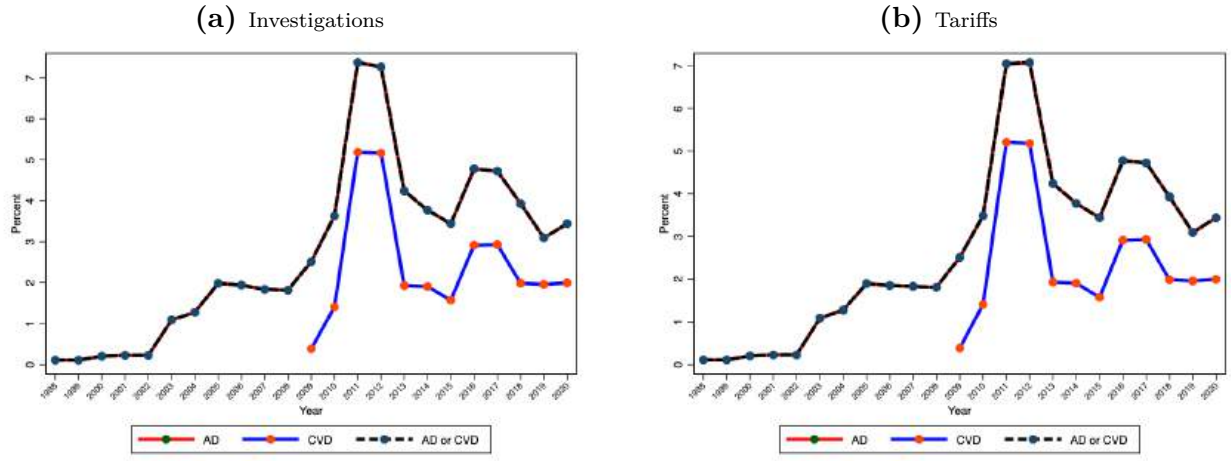

Figure A.1: Import Share from US Subject to China's AD/CVD

Notes: Figure A.1 illustrates the import share from the US subject to China's AD/CVD. The left panel represents the import share from the US subject to China's AD/CVD investigations, while the right panel shows the import share from the US subject to China's AD/CVD measures. Source: Authors' calculations using TTB and BACI.

2000-2016. This dataset offers comprehensive foreign trade statistics, capturing all export and import flows at the firm-product-country level, including both value and quantity details. Export values are reported on a free-on-board (FOB) basis, while import values include cost, insurance, and freight (CIF), all expressed in US dollars. Quantities are recorded in various units, such as kilograms, pieces, meters, liters, and carats.

Chinese customs data is available monthly from 2000 to 2006 and annually from 2007 to 2016. To ensure consistency across the entire period, we aggregate the monthly data into annual data. The dataset uses the Harmonized System (HS) code for product classifications, providing data at the 8-digit level. Since international comparability is only standardized up to the 6-digit level, we aggregate all HS 8-digit codes to HS 6-digit. This aggregation simplifies matching with the TTB. Furthermore, to account for changes in classification over time, we harmonize all HS6 codes to the HS 1996 version using official UN concordance tables. This dataset forms the basis for determining whether a firm faces AD/CVD measures, based on its export destination and product.

Annual Survey of Industrial Firms and Annual Tax Survey. For firm-level business statistics, we combine two administrative sources: the Annual Survey of Industrial Firms (ASIF), maintained by China's National Bureau of Statistics (NBS), and the Annual Tax Survey (STA), compiled by the China State Taxation Administration.

The ASIF dataset covers 2000–2008 and includes all state-owned enterprises (SOEs) and non-state firms with annual sales exceeding 5 million RMB (approximately USD 0.73

million). Starting in 2009, we use the STA dataset. STA includes both industrial and service-sector firms and consistently includes all large private firms (with revenues above 400 million RMB or USD 56 million), listed companies, and SOEs. Additionally, a group of "focus firms" receiving special tax treatment are always surveyed. For medium and small firms, the data annually incorporates them through a stratified sampling method based on their 2-digit industry and size (see Brandt et al. 2023 for details). To ensure comparability between the two datasets, we use 2008—a year available in both ASIF and STA—as a benchmark to validate the consistency of key firm-level variables.

Crucially for our analysis, we link this ASIF-STA panel with CCD at the firm-year level. We implemented a matching algorithm based on firm names, zip codes, and phone numbers to create a reliable crosswalk between them, which is a standard method in the literature (Brandt et al., 2012, 2017; Liu and Ma, 2020; Liu et al., 2021).

We primarily measure industrial policy using the ratio of total subsidy revenue to output at the firm-level, following Aghion et al. (2015). Both the ASIF and STA surveys report these variables annually. These subsidies include direct fiscal transfers, innovation grants, and export-related incentives.

We also construct alternative indicators of state support, which include interest rate, tax rate, entertainment expense rate, and land discount rate. The first indicator is defined as the ratio of a firm's interest expenditures to its current liabilities. Tax rate and entertainment expense rate are ratios of a firm's taxes payable, and entertainment expenses to its total output, respectively. Our land discount rate is the discount a firm receives on a land purchase relative to nearby control parcels, with further details in Section A.3.

We develop a comprehensive matching procedure that links firm-specific duties from the TTB dataset to Chinese exporters in CCD. This requires reconciling English-language firm names reported by foreign investigating authorities with Chinese firm names in trade data. We implement a robust name-matching algorithm—detailed in Appendix A.2-to address this challenge. Despite the complexities of cross-language identification, we successfully match 2,772 unique Chinese firms subject to firm-specific duties, substantially expanding the scope of firm-level coverage relative to earlier studies such as Felbermayr and Sandkamp (2020). The resulting dataset combines firm-specific and product-level duties within a unified framework, allowing us to quantify the heterogeneous effects of foreign AD/CVD measures on firms within the same product and destination market.

Temporary Trade Barrier Database. We use information on AD/CVD investigations from the TTB (Signoret et al., 2020). This database comprehensively documents temporary

trade barrier usage by over 30 countries from the 1980s through 2019.[38] TTB systematically collects investigation case-level information based on official records from investigating authorities.

We focus on AD and CVD investigations targeting Chinese exports between 2000 and 2016. These were the most common form of tariff increase against China during this period.[39] Each case represents a unique country-product pair and includes investigation dates, affected HS 6-digit products, the type of duties imposed, and their levels. During our sample period, 813 AD/CVD cases were initiated against Chinese products, and about 80% of these resulted in imposed duties. On average, these duties were substantially higher than those applied to other exporters, reflecting increased scrutiny of Chinese firms in global trade enforcement.

AD/CVD investigations follow a multi-stage process, typically lasting 8 to 13 months, and can lead to provisional measures and final duties. These duties usually remain in effect for five years and may be extended through sunset reviews. While legal procedures vary slightly across jurisdictions, WTO rules—the Anti-Dumping Agreement and the Agreement on Subsidies and Countervailing Measures—govern these investigations, ensuring broad procedural consistency.[40]

A distinct feature of the TTB database is its firm-level detail. In these instances, we observe not only whether duties were imposed on a product but also which specific Chinese firms faced investigation and their assigned rates. This allows us to leverage a key institutional feature: AD and CVD duties can take the form of either product-wide rates or firm-specific rates. Product-wide rates act as default duties for firms not individually investigated, not qualifying for firm-specific tariff, or those failing to cooperate with the investigating government—and typically rely on incomplete or adverse information ("facts available). In contrast, cooperating exporters who submit detailed cost and pricing data (for AD) or subsidy information (for CVD) receive firm-specific rates. Firms demonstrating operational independence from government control—a crucial factor for non-market economies like China—usually receive lower, tailored duty rates.

This variation in duty exposure across firms within the same investigation forms the

[38]Temporary trade barriers include AD, CVD, and safeguards. We focus on AD/CVD because safeguards were not frequently used.

[39]As shown in Appendix Table A.1, the TTB dataset covers 2,333 country-product pairs subject to AD/CVD actions against China between 2000 and 2016. They span 961 distinct HS 6-digit products and involve 29 investigating economies. The top five users initiated over 50% of all cases, and the top ten accounted for 75%. While traditional actors like the United States and European Union remain prominent, emerging economies such as India, Argentina, Turkey, and Brazil have increasingly used AD/CVD measures.

[40]See Blonigen and Prusa (2016) for detailed reviews.

core of our empirical strategy and represents a key innovation of this paper. Most of the literature relied on product-level AD/CVD rates. In contrast, we systematically use firm-level differences in assigned duties to examine how trade barriers affect firms operating in the same product market differently.

A.2 Matching Firms Receiving Firm-specific Duties in TTB with Chinese Datasets

We followed these steps to identify the firms affected by AD/CVD investigations and match them with export information from CCD. The TTB database includes the 6-digit HS product code for each investigation. We pinpoint the product and investigation year in the CCD, then define the Chinese firms that exported the investigated product during the three years before the investigation as the firms affected.

For firms listed in the TTB database as receiving firm-specific duties, we obtain their names and match them with firm names in the CCD. This presents a challenge because TTB lists firm names in English, while CCD lists them in Chinese. We use the following steps to translate the English names to Chinese and then conduct the name matching:

First, we extracted individual firm names from the TTB database. We split TTB entries with multiple names into separate rows, each containing a single name, to simplify translation. Then, we used two main translation methods. Our first approach involved entering the English names into search engines like Baidu and Bing to find Chinese names from the top results. When available, we prioritized information from authentic Chinese firm registration platforms such as Tianyancha and Qichacha, as they offer highly reliable official Chinese firm names. Our second method utilized a database from the China Trade Remedy Information website, which directly maps English firm names to their Chinese equivalents.

We combined the results from both methods to create an initial translation sample. Next, we merged this sample with the Chinese Customs data using the full firm names. We kept exact matches. If a match was not exact, we removed firm name suffixes and attempted another merge. If matching still failed, we manually verified the translations for accuracy before a final matching attempt. We excluded fuzzy matches because even small differences in Chinese names—for example, the characters ‘‘得” and ‘‘德” in ‘‘中山得堡鞋材有限公司” and ‘‘中山德堡鞋材有限公司” have the same pronunciation (“de”) but represent entirely different firms—often indicate distinct entities, making such matches unreliable.

A.3 Constructing Land Price Distortion Index

We aim to capture the favor that firms receive from the government through access to cheaper land. In China, the government owns all land, and firms pay to acquire the usage right. While the government generally "sells" most land to firms through an auction process, Chen and Kung (2019), among others, document that politically connected firms can acquire similar land at a lower price.

We measure the discount a firm receives from the government on the land it acquires ("land discount rate") in a way similar to Chen and Kung (2019). We obtain land transaction data from the China Land Market website.[41] We then match firms in these land transaction records to our other datasets by name. For land parcel l acquired by firm f, we calculate the land discount rate as follows: $(land\ price_l - land\ price_a) \times area_l / total\ output_f$. Here, $land\ price_l$ is the price of the specific plot, while $land\ price_a$ represents the average price of all plots located within a 500-meter radius of the target plot and within the same province (see Figure A.2). The terms $area_l$ and $total\ output_f$ denote the plot's area and the firm's total output, respectively. This calculation provides the ratio of the discount value the firm receives on land l to its total output. A lower value of this distortion index indicates a higher subsidy. By aggregating this measure across all parcels l that firm f acquires, we derive the firm-level land discount rate.

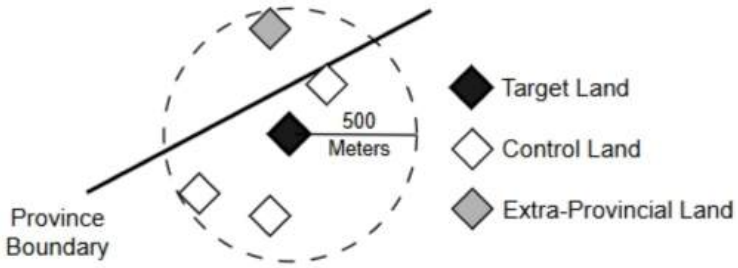

Figure A.2: Target and Control Land

Notes: This figure illustrates our method for measuring land price distortion. We compare the price of "Target Land"—land acquired by firms facing AD/CVD investigations—to the price of "Control Land." Control land is located within a 500-meter radius of the target land but was not purchased by firms facing AD/CVD investigations. We exclude land parcels not located in the same province as the target land to ensure that both target and control land are subject to the same provincial land regulation policies.

[41] See https://www.landchina.com.

Appendix B Empirical Results

Table B.1: Overall Effects of Subsidies on AD/CVD Duties (Investigated Firms)

Dep.Var.	$Duty_{fpi}$ (%)			
	(1)	(2)	(3)	(4)
$Subsidy\ Rate_{fi}$ (%)	0.881***	0.211**	0.218**	0.224**
	(0.336)	(0.087)	(0.096)	(0.098)
$\log(Price_{fpi})$		-0.033	-0.031	-0.025
		(0.043)	(0.046)	(0.048)
SOE_{fi}			0.481*	0.564*
			(0.288)	(0.338)
N	47,015	43,205	39,671	39,671
adj. R^2	0.974	0.994	0.993	0.993
Other Firm Controls	No	No	No	Yes
HS2×Desti×InvestiYear	Yes	Yes	Yes	Yes

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

B.1 Subsidy and Misallocation

A concern in our analysis is that the observed subsidy may not fully capture the extent of government favors firms receive. While explicit subsidies appear in the data, firms might also benefit from implicit support, such as preferential credit access, regulatory advantages, or informal advantages.

To address this, we construct firm-level implied output (τ_f^Y) and capital (τ_f^K) misallocation measures, following Hsieh and Klenow (2009):

$$1+\tau_f^Y = \frac{\sigma}{\sigma-1}\frac{w_s L_f}{(1-\alpha_s)\,P_s Y_f}, 1-\tau_f^K = \frac{\alpha_s w_s L_f}{(1-\alpha_s)\,r_s K_f} \tag{B.1}$$

where f denotes a firm and s denotes the firm's industry. From Equation (B.1), a firm receiving government favors tends to have a higher τ_f^Y and τ_f^K. As the favored firm generates revenues from both sales ($P_s Y_f$) and government support, they do not require high sales to justify the input cost. This suggests that τ_f^Y can be a useful proxy for implicit government support. Government favors reduce the cost of using capital, leading to a higher τ_f^K.

To take the measure to the data, we rely on ASIF for 2000–2008 and STA for 2009–2016. $w_s L_f$ and $r_s K_f$ represents the labor and capital compensation of firm f, calculated as

Table B.2: Subsidies Decrease Export Price (2000-2008)

Dep.Var.	$\log(Price_{fpdt})$		
	(1)	(2)	(3)
$Subsidy\ Rate_{ft}$ (%)	-0.391***	-0.390***	-0.389***
	(0.013)	(0.013)	(0.013)
SOE_{ft}		-0.029	-0.027
		(0.022)	(0.022)
N	4,766,167	4,703,355	4,703,355
adj. R^2	0.618	0.618	0.618
Other Firm Controls	No	No	Yes
HS2×Desti×Year FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes

Notes: The sample is constructed by matching Chinese Customs Data (CCD) with Annual Survey of Industrial Firms (ASIF) for 2000-2008 for firms that did not face AD/CVD investigations. "Other Firm Controls" include firm size, measured by the log of total assets averaged over the preceding three years, and an indicator for whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

reported wage payments and interest expenses multiplied by an adjustment factor to align labor share in firm-level data with the aggregate labor share in the Chinese input-output table. The term $P_s Y_f$ corresponds to value-added as recorded in the firm data. We set the elasticity of substitution to $\sigma = 3$ as in Hsieh and Klenow (2009) and assign the capital share α_s based on the corresponding industry in the United States.

Next, we regress the output and capital distortion measure, τ_f^Y and τ_f^K, on the firm's observed subsidy rate to obtain the component that can be predicted by the subsidy rate: $\widehat{\tau}_f^{Y,subsidy}$ and $\widehat{\tau}_f^{K,subsidy}$. The regression is conducted across firms among the firms that faced AD/CVD duties. Specifically, we acquire a positive coefficient on the subsidy rate, reflecting that firms receiving more subsidies receive more favor on output and capital market. In the end, we calculate the components in output and capital misallocation that cannot be predicted by the subsidy rate: $\tilde{\tau}_f^{Y,subsidy} = \tau_f^{Y,subsidy} - \widehat{\tau}_f^{Y,subsidy}$ and $\tilde{\tau}_f^{K,subsidy} = \tau_f^{K,subsidy} - \widehat{\tau}_f^{K,subsidy}$.

Table B.3: Subsidies Decrease Export Price (IV Regression)

Dep.Var.	$\log(Price_{fpdt})$					
	ASIF			STA		
	(1)	(2)	(3)	(4)	(5)	(6)
$Subsidy\ Rate_{ft}$ (%)	-1.118*	-1.159*	-1.169*	-0.143***	-0.140***	-0.140***
	(0.576)	(0.616)	(0.636)	(0.047)	(0.046)	(0.046)
SOE_{ft}		-0.030	-0.029		-0.017	-0.018
		(0.036)	(0.037)		(0.046)	(0.046)
N	1,943,020	1,920,863	1,920,863	1,346,623	1,291,619	1,291,619
C-D F-stat	2304.09	2143.56	2045.68	11155.11	12745.68	12721.78
Other Firm Controls	No	No	Yes	No	No	Yes
HS2×Desti×Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The sample is constructed by matching Chinese Customs Database (CCD) with Annual Survey of Industrial Firms (ASIF) for 2000-2008, and Annual Tax Survey (STA) for 2009-2016 for firms that did not face AD/CVD investigations. IV for the subsidy rate is constructed with Equation (11) in Section 5. "Other Firm Controls" include firm size, measured by the log of total assets averaged over the preceding three years, and an indicator for whether the firm is foreign-owned. Robust standard errors clustered at the 4-digit industry-city level are reported in parentheses below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

Table B.4: Subsidy-Predicted Output Misallocation Increases AD/CVD Duty

Dep.Var.	$AD/CVD\ Tariff_{fpi}$			
	(1)	(2)	(3)	(4)
$\widehat{\tau}_{fi}^{Y,subsidy}$	0.847***	0.382***	0.405***	0.417***
	(0.303)	(0.122)	(0.137)	(0.138)
$\log(Price_{fpt}^{ave})$		-0.065	-0.060	-0.049
		(0.064)	(0.072)	(0.074)
SOE_{fi}			1.423***	1.636***
			(0.492)	(0.525)
N	34,067	30,826	27,128	27,128
adj. R^2	0.959	0.986	0.983	0.983
Other Firm Controls	No	No	No	Yes
HS6×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01. Independent variable is $\widehat{\tau}_{fi}^{Y,subsidy}$, which is the predicted value from regressing τ_{fi}^{Y} on $Subsidy\ Rate_{fi}$.

Table B.5: Subsidy-Predicted Capital Misallocation Increases AD/CVD Duty

Dep.Var.	AD/CVD Duty$_{fpi}$			
	(1)	(2)	(3)	(4)
$\widehat{\tau}_{fi}^{K,subsidy}$	1.031***	0.466***	0.493***	0.508***
	(0.369)	(0.148)	(0.167)	(0.169)
log $price_{fpi}$		-0.065	-0.060	-0.049
		(0.064)	(0.072)	(0.074)
SOE_{fi}			1.423***	1.636***
			(0.492)	(0.525)
N	34,067	30,826	27,128	27,128
adj. R^2	0.959	0.986	0.983	0.983
Other Firm Controls	No	No	No	Yes
HS6×Desti×InvestiYear FE	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01. Independent variable is $\widehat{\tau}_K^{subsidy}{}_{fi}$, which is the predicted value from regressing τ_{fi}^K on $Subsidy\ Rate_{fi}$, where τ_{fi}^K is computed as the implied capital misallocation in Hsieh and Klenow (2009).

Table B.6: Subsidies Increase AD/CVD Tariffs (Firm Information From the Same Dataset)

Dep.Var.	$Affirmative_{pi}$		$AD/CVD\ Tariff_{fi}$ (%)		$Firm\ Tariff\ Dummy_{fpi}$		$Firm\ Tariff_{fpi}$ (%)	
$Subsidy\ Rate_{fi}$ (%)	0.005**	0.005**	0.328**	0.325**	-0.005**	-0.007***	2.409	0.995
	(0.002)	(0.002)	(0.146)	(0.149)	(0.002)	(0.002)	(1.948)	(1.649)
log($Pirce_{fpi}$)	-0.004***	-0.004***	-0.059	-0.045	0.001	0.000	0.883	0.727
	(0.001)	(0.001)	(0.071)	(0.073)	(0.001)	(0.001)	(1.150)	(1.147)
SOE_{fi}	0.009*	0.007	0.701*	0.787	0.001	-0.013**	4.858	0.692
	(0.005)	(0.005)	(0.423)	(0.507)	(0.006)	(0.006)	(4.967)	(5.721)
N	37,013	32,409	25,048	25,048	25,048	25,048	743	743
adj. R^2	0.864	0.868	0.991	0.991	0.166	0.170	0.858	0.859
Other Firm Controls	No	Yes	No	Yes	No	Yes	No	Yes
pdt(i) Controls	Yes	Yes	No	No	No	No	No	No
Firm's Industry FE	Yes	Yes	No	No	No	No	No	No
HS6×Desti×InvestiYear	No	No	Yes	Yes	Yes	Yes	Yes	Yes
HS2×Desti×InvestiYear	Yes	Yes	No	No	No	No	No	No

Notes: "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. To ensure the firm data are from the same dataset (do not span ASIF and STA), we exclude firms investigated in 2010 and 2011. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.

Table B.7: AD/CVD Duties Undermine the Subsidy Effect on Firm Employment and TFP

Dep. Var.	$\Delta \log(Employment_{fi})$				$\Delta \log(TFP_{fi})$			
	OLS		2SLS		OLS		2SLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Subsidy\ Rate_{fi}$ (%)	0.0121	0.0136	0.983**	1.141*	0.00745*	0.00750*	0.0641	0.0867*
	(0.030)	(0.030)	(0.489)	(0.585)	(0.004)	(0.004)	(0.047)	(0.049)
$AD/CVD\ Duty_{fi}$ (%)		-0.000671**		-0.00366***		-0.0000194		-0.000523***
		(0.000)		(0.001)		(0.000)		(0.000)
SOE_{fi}	-0.0498	-0.0490	-0.312**	-0.366**	-0.00559	-0.00561	-0.00478	-0.0125
	(0.056)	(0.056)	(0.158)	(0.185)	(0.007)	(0.007)	(0.014)	(0.017)
N	3777	3777	2117	2117	3753	3753	2107	2107
C-D F-stat			25.7	10.7			25.6	10.7
Other Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Investigation Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	No	No	No	No	No	No	No

Notes: This table presents that AD/CVD duties undermine the subsidy effect on log firm employment growth and TFP (Levinsohn and Petrin, 2003) over the next five years. $\Delta \log(Employment_{fi}) = \log(Employment_{f,t(i)+5}) - \log(Employment_{f,t(i)})$ and $\Delta \log(TFP_{fi}) = \log(TFP_{f,t(i)+5}) - \log(TFP_{f,t(i)})$. "Other Firm Controls" include firm size (measured with log asset averaged over three years before investigation) and whether the firm is foreign-owned. Robust standard errors clustered at the firm level are reported in parenthesis below the coefficients. Asterisks denote significance levels * < 0.1, ** < 0.05, *** < 0.01.