

The Limits of Liberalization: WTO Entry and Chinese State-Owned Firms

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Abstract

Does state ownership reduce the effectiveness of trade agreements? We examine the case of China, which is not only the world's largest trading nation but also lends active support to its SOEs, potentially distorting global trade. Using Chinese import data disaggregated by firm ownership, we analyze how state-ownership conditions the response to entry into the WTO. We demonstrate that after WTO entry, tariff cuts have a larger effect on private compared to SOE trade. We then show that state ownership alone does not block the liberalizing effects of the WTO. For most industries, SOEs display a commercial orientation that is similar to private firms. However, where strategic goods targeted by industrial policy hold a large share of bilateral trade, lowering tariffs has no impact on SOE trade. In short, the effect of WTO liberalization depends on the countervailing force of domestic industrial policy, rather than state ownership alone.

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1 Introduction

State-owned enterprises (SOEs) make up an increasingly substantial portion of the global economy, driven by the growth of emerging economies and the internationalization of supply chains. In 2014, SOEs comprised almost a quarter of Fortune 500 companies (PricewaterhouseCoopers 2015). These firms are not only consequential in size, they have also become influential global economic actors, engaged in sectors that are internationally traded and contested (OECD 2016). Many of the largest emerging economies retain significant state-ownership; the eight countries with the largest shares of SOEs in their economies together make up a fifth of world trade (Kowalski, Büge, Sztajerowska et al. 2013).¹ This changing composition of international trade has generated concerns over potential economic distortions. This paper brings new empirical evidence to bear on the degree to which trade rules can change SOE behavior.

Does state-ownership conflict with market liberalization? One perspective places the ownership question as the fundamental problem that contradicts free trade rules. By nature, a state-owned firm holds non-market objectives ranging from national security to the pursuit of development policies. Their privileged access to favorable terms for regulatory policy and capital set unfair competitive conditions with other firms. This suggests that only the elimination of state-ownership could resolve tensions in the trade regime. Another perspective contends state-owned firms aggregate capital through state support but otherwise conduct themselves as commercial actors that respond to prices. This latter view underlies the application of trade rules today. The World Trade Organization admonishes that SOEs must operate on the basis of commercial considerations without discriminating against other enterprises or imposing quotas, subsidies, or other measures that would nullify tariff concessions.² These rules, designed when SOEs consisted of Amtrak and the United States Postal Service or the Australian and Canadian wheat boards, now confront new state-owned actors that represent major trade players.

¹Malaysia, Indonesia, India, Thailand, Russia, Brazil, Norway, Saudi Arabia and the United Arab Emirates.

²Article XVII of GATT 1994.

In principle, trade rules regulate SOEs. There are two channels through which WTO membership could exert a disciplinary effect on SOEs. The first is a price effect, where the reduction of tariffs exposes all domestic firms, including SOEs, to greater market competition. The second is an institutional effect, where WTO rules prohibiting discriminatory policies place the trading behavior of SOEs on a level playing field with private and foreign firms. To the extent these forces succeed, SOE trade should be indistinguishable from private trade. Despite the practical and theoretical significance of this issue, however, there has been little scholarship about the effect of the WTO on SOE behavior.

This paper tests the limits of liberalization in the context of government intervention. We argue that the liberalizing effect of the WTO depends on the countervailing force of domestic industrial policy and firm ownership. Governments join the trade regime to bring on external pressure for market-oriented reform. At the same time, they use active industrial policy to build industries that can survive in global competition. SOEs fall on both sides of this government strategy as some will be winnowed out and others fostered for growth. Through industrial policy, governments choose where to let the price mechanism induce commercial behavior by SOEs and where to intervene to support getting prices wrong in an industry of strategic value. As a result, there is a bifurcated response in which SOEs exposed to markets respond to WTO entry similarly to private firms, but SOEs targeted by industrial policy will behave quite differently. The combination of industrial policy targeting and state ownership blocks the liberalizing effects WTO membership. While WTO entry triggers the *strengthening* of industrial policy, it does so for a sub-set of SOEs. We expect to observe heterogeneity across firm-types in response to liberalization with both private and market-oriented SOEs changing their trade patterns while strategic sector SOEs form the category that will be unaffected by trade rules.

We examine the question of SOE trade and WTO entry by analyzing China as a critical case. China's entry into the WTO in 2001 was arguably the most important turning point in the world trading system since the formation of the WTO in 1995. Not only is China now

the world's largest trading state (Monaghan 2014), its SOEs continue to be active in many segments of the economy including the large manufacturing sector. From 2001 to 2019, the number of Chinese SOEs among the Fortune 500 grew from ten to eighty-nine firms, and their total revenue at \$6.39 trillion now exceeds the GDP of either Japan or Germany.³ These SOEs interact with the global economy through both trade and outward investment, and have taken a prominent role in implementing the state's 'Belt and Road Initiative' (Godement and Kratz 2015). Along with their size as global actors, Chinese SOEs prompt international concern. Trade friction over China's economic governance has emerged across multiple fronts as the United States has imposed unilateral tariffs and joined with other countries to bring several legal cases to the WTO that shape international jurisprudence over SOEs.⁴ Some argue that the state capitalism of "China Inc" is incompatible with global trade rules (Wu 2016).

In the empirical analysis we investigate the effects of WTO entry on state-owned and private trade flows from 1993 to 2012. We examine the period before and after China's entry into the WTO in 2001 using a dataset of bilateral trade disaggregated by firm ownership. Given the role of tariff reductions as the primary form of liberalization, we use changes in tariff rates weighted by composition of trade as our measure of WTO liberalization pressures. Our statistical analysis estimates a standard gravity model of bilateral imports with comparison of imports by private and SOE firms across all of China's trade partners. An interaction term between tariffs and strategic industry trade tests the role of industrial policy in conditioning the responsiveness of private and state-owned firms to liberalization. We further analyze import flows at the product-level for a subset of strategic industries for the 2003-2008 period, as an additional validation of the main findings.

Our analysis shows that contrary to common expectations, SOEs are not immune from liberalization. Instead, where the import share of products in strategic industries is low, there

³Firms listed at <https://fortune.com/global500/2019/search/> accessed 1 June 2020.

⁴See for example the WTO dispute brought by the US against China's anti-dumping and countervailing duties (DS379), which resulted in clarification in WTO case law over the definition of a 'public body' within the WTO Agreement.

is no statistical difference between the commercial orientation of SOE and private imports: in both types of firm trade, lower tariffs in the WTO period brought an increase in imports. As the share of strategic products in imports increases, however, this tariff-responsiveness of SOEs becomes attenuated. In contrast, the private firm counterparts in these same strategic sectors remain sensitive to tariff changes, further underlining our argument that it is the interaction between ownership and industrial policy that limits liberalization.

We place China and SOE policy within a broader continuum of scholarship on industrial policy. First, China resembles other governments like Japan and Korea that have pursued a mixed strategy of liberalization and protection to manage global markets. SOEs facilitate this industrial policy strategy within a multilateral rules system that has lowered tariffs and removed other instruments of state intervention. Second, state capitalism resembles embedded liberalism as a compromise between the pursuit of market reform and flexibility to pursue social goals. Where the United States and Europe carved out exceptions in the trade regime for textiles and agriculture and use temporary safeguards to shelter political constituencies, the strategic policies of China support resource sectors and technology development. Governments pursue policy goals not restricted to market efficiency alone.

Section 2 discusses how the WTO exerts pressures for liberalization, and section 3 presents our argument about how governments use the combination of state ownership and industrial policy to moderate the impact of the WTO. We introduce our data on trade flows disaggregated by firm ownership and measurement of industrial policy targeting in section 4 and present our analysis in section 5.

2 Trade Rules on SOEs and China's WTO Entry

WTO entry imposes the “price effect” of tariff liberalization at the border and the “institutional effect” of rules to regulate government policies behind the border. Neither calls for complete liberalization or privatization. This reflects a long-existing tension between the desire to establish a common set of trading rules that would bind all countries and ensure

a level playing field for international commerce, and the wish to allow flexibility for developing countries to pursue policies more suited to their stage of development, including the enactment of industrial policies ranging from import substitution to export promotion. The establishment of the WTO in 1995 generated debate over whether the more binding rules of the WTO would constrain domestic policy space in ways that interfere with the economic growth strategies of developing country governments (Amsden and Hikino 2000; Wade 2003; Shadlen 2005; Weiss 2005).

China's entry into the WTO in 2001 brought this debate to the fore as the largest developing country confronted new commitments on state intervention in the economy. Some, such as Qin (2004), point to the commitments in China's accession protocol that went above and beyond the obligations of existing WTO members. In the process of meeting these demands, stake-holders in government and private sector engaged with international economic law in a way that would embed transnational law as a new construct in Chinese economic policy (Shaffer and Gao 2020). Others, such as Levy (2017) and Wu (2016), argue that these terms were not strong enough to alter the entrenched form of state-led capitalism in China. Even after two decades of economic reforms, China's accession negotiations confronted a state that relied on high levels of state intervention, which was rooted in the planned economy and supported a large state-owned sector. China's trading system in the 1990s was split between a liberalized export promotion regime dominated by foreign firms, and an insulated import substitution regime dominated by SOEs. The authority to trade was controlled by licenses, most of which were issued to SOEs. While this trade licensing scheme was expanded widely in the 1990s to about six or seven thousand firms (mostly SOEs), the trading authority of each SOE was narrowly restricted to specific products and regions. The result of this system was that SOEs faced little competition and trading decisions were influenced by administrative guidance rather than price signals (Naughton 1999). With WTO entry, China pledged to liberalize trading rights to *all* firms, thereby extending the ability to trade to many private firms for the first time.

WTO rules are ownership-neutral insofar as they apply equally to all actors engaged in trade. SOEs are directly regulated only through GATT Article XVII on State Trading (and indirectly through the Agreement on Subsidies and Countervailing Measures). Article XVII specifies that (a) SOEs act in a non-discriminatory manner in their trade-related purchases or sales; and (b) that they “make any such purchases or sales solely in accordance with commercial considerations.”⁵ Given China’s legacy of state planning, specific attention was given to the issue of SOEs in China’s protocol of accession and other documents related to its WTO entry. China agreed to (a) eliminate subsidies to SOEs; (b) ensure that SOEs operate only on commercial considerations; (c) *not* influence the commercial decisions of SOEs; and (d) to provide greater transparency with notifications to the WTO on the pricing and purchasing behavior of SOEs. The Working Party Report on China’s WTO accession stipulates these commitments in a legally binding document.⁶ The government reserved state trading rights for a list of imports and exports, which were largely agricultural goods and commodities.⁷ Together, these SOE commitments reinforce the emphasis that SOEs must act on a commercial basis free from government interference.

Our paper examines the liberalization of trade flows in response to WTO rules. Specifically, we investigate whether WTO entry shifts the trading behavior of private and state-owned firms towards a more commercial basis. The WTO does not mandate a fixed level of market share or trade balance. Instead, its market-oriented rules operate under an assumption that lowering tariffs will alter firm behavior through a shift in prices. Therefore the most direct evidence of a “WTO effect” to promote the commercial orientation of private and/or SOE trading behavior would appear in the form of imports increasing in response to tariff reductions.⁸ But government intervention through industrial policy might nullify any tariff

⁵The legal provisions have been clarified through WTO case law (Mastromatteo 2017).

⁶For more details see Levy (2017); Qin (2004)).

⁷For imports, China reserved state trading rights over: wheat, corn, rice, soybean oil, palm oil and other vegetable oils, sugar, tobacco, crude oil, processed oil, chemical fertilizer and cotton.

⁸The definition of commercial orientation that we employ here is that firms are sensitive to differences in price levels and respond in accordance to profit maximization principles. The *legal* interpretation of commercial orientation may well deviate from this layman’s definition, and indeed the WTO dispute settlement panel and

impact of WTO accession. In that case, we would observe a lack of response in trade flows to tariff reductions, suggesting that firms are responding to government – rather than market – signals.

3 Explaining Patterns of State-led Liberalization

Our theory of state-led liberalization explains how governments direct and contain market competition within an era of trade liberalization. Building on Hsueh (2011), we argue that the Chinese government holds dualistic goals. On the one hand, the Chinese state sought to use external pressure as a credible commitment to advance its market-oriented economic reform program. Lowering trade barriers would discipline SOEs, weeding out those unable to compete on a level playing field. On the other hand, the state simultaneously sought to promote strategic sectors important to national security. SOEs served as vehicles to pursue these industrial policy goals, and the government *strengthened* SOEs to compete in a more open competitive environment. In state-led liberalization, the government chooses where to apply external pressure and domestic support in order to both weed out weak firms and build strong competitors. These policies mediate how firms respond to the incentives set by entry into the WTO.⁹

As the government moved from a planned economy to a market economy, it sought to achieve the best of both worlds. The dualistic goals of the government reflected market rationality with an emphasis on efficiency, and plan rationality with an emphasis on effectiveness. Where Johnson (1982, p. 21) in his classic formulation of the developmental state model contrasts the trade-offs between the two approaches of market rationality and plan rationality as pursued by the United States and Japan, states hope to maximize growth and pursue its Appellate Body have taken a fairly broad interpretation of what constitutes commercial orientation (See Mastromatteo (2017).

⁹Hsueh (2011) argues that China responded to external liberalization by relinquishing state control over industries of low strategic value while re-regulating strategic industries. In contrast, this paper focuses on trading patterns across firm ownership types, as well as variation in behavior *within* SOEs.

policy goals. The challenge is how to balance the inherent tensions between letting markets rule versus guiding firm behavior. This problem is parallel to the bureaucratic administration dilemma to manage for results based on outcomes and values to uphold policy (Mei and Pearson 2017). For trade policy, the Chinese government can offset WTO external pressure with state direction of firms through the powerful combination of industrial policy and state ownership. Markets set incentives for most trade, but the state retains control for exercising policy autonomy where it deems necessary.

WTO entry locked in the transformation of the Chinese economy to allow for a growing role by the private sector. By refocusing its industrial policy, China opted for limited liberalization. The ambiguity over the definition of “commercial considerations” in GATT Article XVII permits a wide range of behavior while allowing state trading rights for a subset of industries deemed ‘strategic’ to the national interest. These gaps de facto created exceptions akin to the escape clauses, safeguards and other mechanisms designed to provide flexibility for selective compliance with trade rules.¹⁰ At the same time, internal incentives to discipline SOEs and external demands by other member states set bounds on the number of strategic sectors. If the government designated all industries as strategic, imports would fail to enter and induce competition.

Official policy developments signaled these competing goals. During Premier Zhu Rongji’s visit to the US in 1999, he noted that “if China wants to join the WTO, wants to be integrated in the international community, then China must play by the rules of the game. . . . (WTO) concessions might bring about a very huge impact on China’s national impact on some state-owned enterprises, and also on China’s market. . . . (but) the competition arising from such impact will also promote a more rapid and more healthy development of China’s national economy” (The White House 1999). This reflected the leadership’s desire to use WTO entry to advance reform that would have been resisted by domestic interest groups, including SOEs (Pearson 2001). That same year, however, the government re-affirmed state ownership as the “principal component” of the economy and called for continued SOE control in specific

¹⁰See Sykes (1991); Rosendorff and Milner (2001).

areas: industries with links to national security, natural monopoly industries, public goods and services industries, “pillar” industries and the “backbone enterprises” of new high-tech industries (CCP Central Committee 1999). In December 2001, the same month of China’s formal WTO accession, vice premier Wu Bangguo announced the need to create 50 large SOEs with international competitiveness, noting that it was “an important strategy to cope with the impacts brought about by the country’s accession to the WTO” (Fu 2001). Official media emphasized the opportunities for Chinese exports but also warned that WTO entry would “inevitably bring challenges to China’s SOEs, and they should move to turn the pressure into impetus for their further reform” (Xinhua 2001).

Through state ownership, the government calibrates the degree of commercial orientation. Tariff liberalization pressures firms to adjust in response to new prices and take advantage of lower cost imports. But as the largest shareholder, the Chinese government can block this channel of influence through multiple tools. Party-appointed executives, preferential licensing, direct subsidies and indirect support through lending from state institutions offer multiple points of leverage to influence SOE governance and enable deviation from profit maximization (e.g. Capobianco and Christiansen 2011; Hsieh and Song 2015; Lin, Hu, and Fuchs 2018). These industrial policies determine when SOEs follow commercial incentives or ignore market signals. For SOEs in strategic industries, the government steers them away from commercial orientation. In this way, industrial policy paired with state ownership manages liberalization. Therefore, we expect that:

1. WTO entry strengthens the commercial behavior of private firms. Following WTO entry, higher tariff levels will reduce imports and lower tariff levels will increase imports.
2. The degree to which WTO entry shifts SOEs towards a commercial orientation depends on industrial policy. The relationship between tariffs and imports is conditional on the share of strategic industries in bilateral imports.

4 Data for Testing Firm Ownership Impact on Trade

Trade Flows Disaggregated by Ownership

The main outcomes of interest in this study are China's bilateral private and SOE imports with its trading partners from 1993 to 2012, before and after China's WTO entry in 2001. Bilateral trade data on the annual value of Chinese imports by partner country and firm ownership type was obtained from the General Administration of Customs.¹¹ We exclude the trade flows of foreign and joint venture firms because (as explained in Section 2) these enterprises operated under a separate and already highly liberalized trade regime in China's pre-WTO period.

Figure 1 shows the average value of SOE and private imports and exports measured at the bilateral level across all of China's trade partners from 1993 to 2012. The impact of WTO entry, which liberalized trading rights to all firms – including domestic private firms – is readily evident. While private trade is negligible in the pre-WTO period, both imports and exports expanded rapidly after 2001. Additionally, the rate of increase in private exports far outstrips import growth. In contrast, the impact of WTO entry on SOE imports and exports is less discernible from this visual inspection of average trends. Although there is not a noticeable change in the trend at the year 2001, SOE imports steadily increase and remain higher than those of private firms.¹²

¹¹See Davis, Fuchs, and Johnson (2019) for a description of the data, which was purchased from Customs Info, a government-owned company licensed to distribute official customs data. Following the Chinese government's classification, SOEs are defined as those enterprises for whom the government owns 50% or more of the equity share. While the data does not allow us to distinguish between the trading behavior of central versus subnational SOEs, we assess the potential influence of these differences in ownership in a product-level analysis across three industries with different SOE ownership structures in Section 5.

¹²Also noteworthy is the sharp drop for private and SOE trade (less so for private imports) in 2008 brought on by the global financial crisis, followed by the recovery of trade flows in 2009 with the Chinese government's half-trillion stimulus.

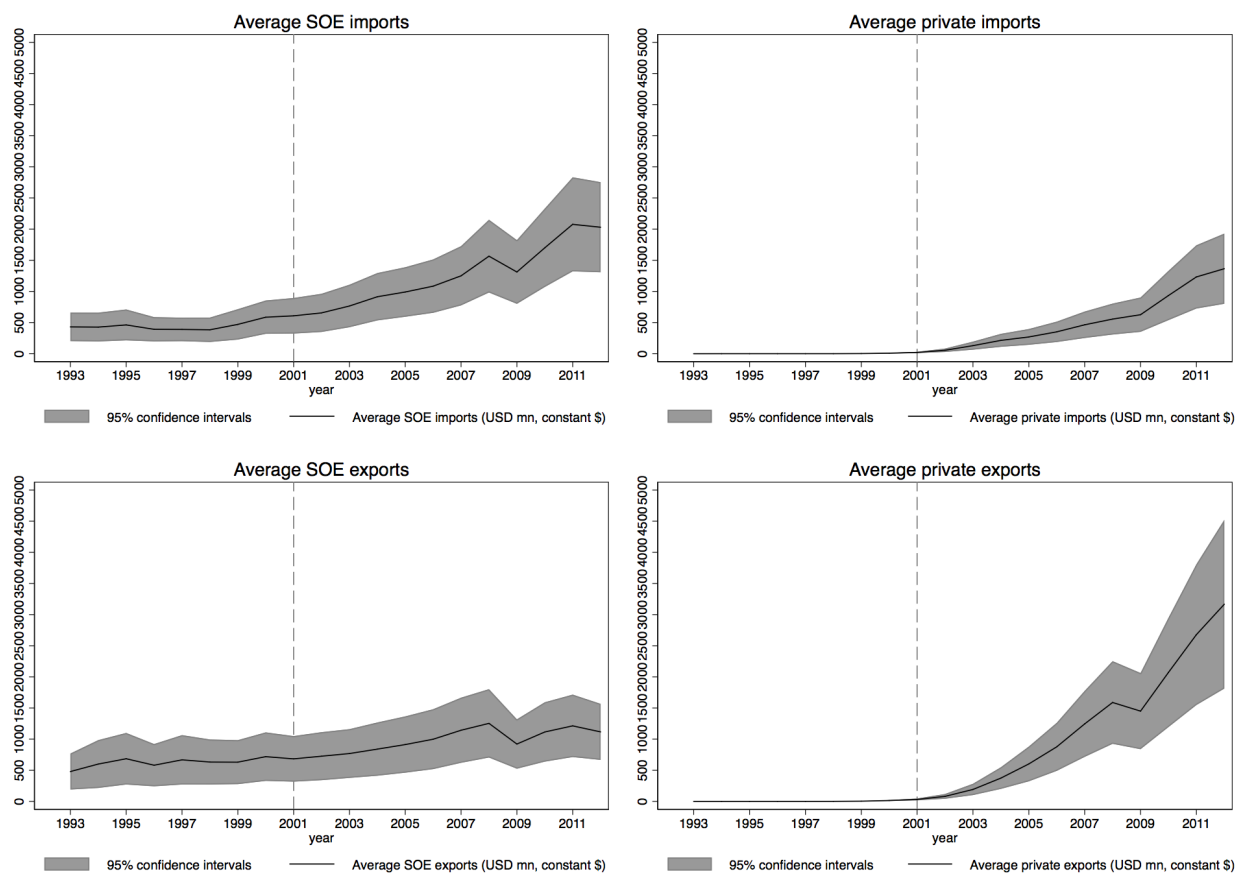


Figure 1: Comparing SOE and Private Trade Trends (Imports and Exports, 1993-2012)

The tariff liberalization that accompanied China's WTO entry provides an important test of whether or not WTO membership has shifted the trading behavior of SOEs towards greater commercial orientation in accordance with relevant WTO Articles and China's commitments in its Protocol of Accession. China's WTO entry negotiations were focused on reducing Chinese tariffs imposed on imports rather than WTO member tariffs on Chinese exports, which were already fairly low. To illustrate this difference, Figure 2 shows the average change in China's MFN import and export tariffs over time. While import tariffs dropped sharply in the years following 2001, average export tariffs remained fairly constant in the post-WTO entry years.¹³

¹³Note that while tariffs were declining even in the 1990s, these early reductions took place in the context of a dualistic trading regime described in Section 2. Foreign firms enjoyed low tariff rates in a liberalized trading

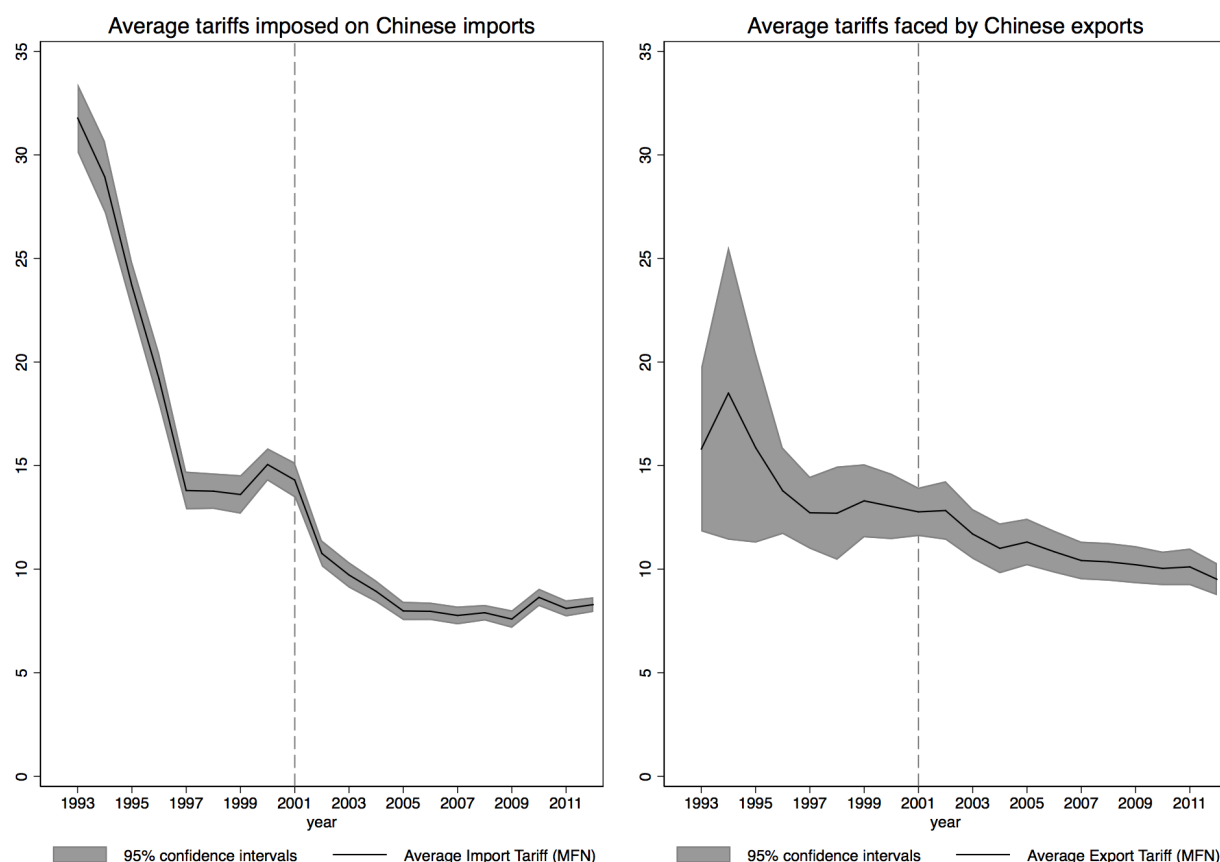


Figure 2: Over-time change in import tariffs compared to export tariffs
(Tariffs are in percentages)

The tariff cuts on imports were largely exogenous to Chinese domestic political economy. Existing research finds no relationship between the size of China's WTO tariff cuts and industry-level characteristics such as productivity (Brandt, Van Biesebroeck, Wang et al. 2017) or SOE and export share (Tan 2020). This exogeneity can be largely attributed to the power dynamics of China's WTO accession negotiations. As the decision to admit China into the WTO club lay with existing members, the terms of China's entry reflect the political and commercial considerations of powerful members such as the US and Europe, rather than domestic Chinese interest groups. This is more generally true as well – Pelc (2011) explains regime while domestic firms (primarily SOEs) operated under higher tariffs and non-tariff barriers in the form of strong administrative guidance.

that under the asymmetric bargaining conditions of applying to join the WTO, the terms of accession for all entrants are a function of the domestic export interests of the members rather than the applicant.

We examine the impact of tariffs on SOE and private sector trading behavior. As our main explanatory variable, we use the weighted average of bilateral MFN tariffs imposed by China on its imports from each of its trading partners. Our analysis focuses on import responses to the price signals from tariff levels with comparison across SOE and private trade flows before and after WTO entry.¹⁴

Measuring Industrial Policy and Strategic Trade

We assess the response of Chinese private and SOE trade to economic liberalization in the context of industrial policy to promote strategic industries. Contrary to conventional wisdom, state ownership is not synonymous with industrial policy, and the distribution of SOE ownership ranges across both strategic industries and those not targeted as strategic. This variation allows us to test whether the tariff elasticity of import flows depends on the share of strategic industry trade in the bilateral trade relationship. We define such “strategic trade” based on the desire of the Chinese government not just to promote strategic high-tech industries such as aviation and automobiles but also those that are consequential to national security interests. These include security industries such as armaments, economic ‘life-line’ industries such as telecommunications, coal and power generation as well as the security of basic food and raw materials such as grain, cotton, oil and metals.

In order to measure the presence of strategic industries in dyadic trade flows, we rely on

¹⁴Tariff data disaggregated at the product-level and by trading partner was downloaded from the World Bank’s World Integrated Trade Solution (WITS). For each bilateral trading relationship, the 6-digit product-level tariff was first multiplied by the import value of that product as a share of overall imports. Each trade-weighted product-level tariff was then summed to produce an average weighted tariff value by year and trading partner. We also provide analysis of all models run on an unweighted tariff measure as a robustness check shown in the appendix.

Chinese policy documents that specify such strategic industries. First, the products reserved for state trading are listed in Annex 2 (by HS code) in China's Protocol of Accession. Second, in 2005 and 2006, the Chinese state listed several 'strategically important sectors' that comprise the "vital arteries of the national economy" over which the state needed to maintain "absolute control": Armaments, power generation and distribution, petrochemicals and oil, telecommunications, coal and public transportation. Additionally, the state noted nine additional "pillar" industries that were deserving of support, in which important "backbone" enterprises would maintain strong controlling power: Equipment manufacturing, automotive, electronic information, construction, steel, non-ferrous metals, chemicals, surveying and design, and high-tech industries. These are sectors for which the state desires to have strong 'champion' SOEs, but for which private sector (domestic and foreign) participation is allowed (Leutert 2016). Our definition of strategic industries therefore includes goods for which state trading rights have been reserved and those identified as important for national interest.¹⁵ We then generate dyadic country-year measures of the share of strategic products in China's overall value of imports with each of its trading partners. The unit of analysis is therefore the country-year dyad (and not product-level trade flows).¹⁶ Examining national industrial policies and Five-Year Plans from 1989, 1991, 1994, 1996, 2001, 2005, 2006 and 2011, we find that the industries which the Chinese government has deemed to be of national strategic importance has stayed fairly consistent over time. This coding of strategic industries is similar to the approach taken in Huang, Li, Ma et al. (2017).¹⁷

¹⁵The HS codes for these strategic industries were identified by searching for products containing words related to each industry on a website providing searchable HS codes (<https://www.foreign-trade.com/reference/hscod.htm>).

¹⁶Country-specific product-level data on the value of bilateral imports was downloaded from WITS.

¹⁷For example, a 1994 national industrial policy listed very similar industries as requiring policy support: transport, telecommunications, construction, electronics, machine-building, petrochemicals, automobile, energy (including oil and petroleum) and power generation (State Council 1994). Similarly, high-tech industries such as biotechnology and pharmaceuticals have been emphasized as a priority not just in current policies but as far back as the State Council's 1989 industrial policy. We adopt a time-invariant definition of the industries which constitutes strategic trade because the strategic trade variable is interacted with the time-varying tariff variable in some of the specifications. A time-invariant definition therefore allows for a clearer identification of

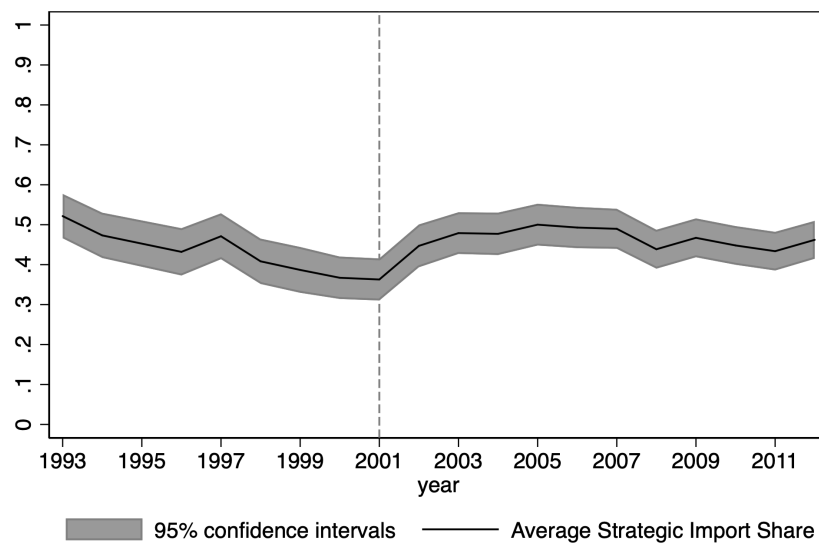


Figure 3: Average share of strategic products in imports

Figure 3 shows the trend-line for the average share of strategic products in China's imports over time across all of its trading partners. Figure 4 shows variation across select countries in the share of strategic trade in imports and the value of that strategic trade. China's imports from Nigeria are largely dominated by strategic products (e.g. oil) and the value of that trade has stayed fairly constant in the pre-WTO and WTO periods. In contrast, the value of China's strategic imports from the US has risen steadily in the WTO period while the share of strategic trade in imports has steadily declined from around 60% - reflecting the overall expansion of exports in non-strategic sectors from these countries to China despite an increase in the absolute value of strategic trade.

There is variation among both strategic and non-strategic industries in the degree to which SOE imports dominate trade. Figure 5 shows the change in SOE import share from 2003 to 2012 for those industries whose shares of imports by SOEs was greater than 40% at the start of the period. While SOE import shares remain high for strategic and monopoly industries such as armaments, aviation and tobacco, in the non-strategic industries such as whether changes in trade flows are being driven by changes in tariff levels or in industrial policy. (While the definition of strategic trade is time-invariant, the share of strategic trade in each bilateral trading relationship is time-varying.)

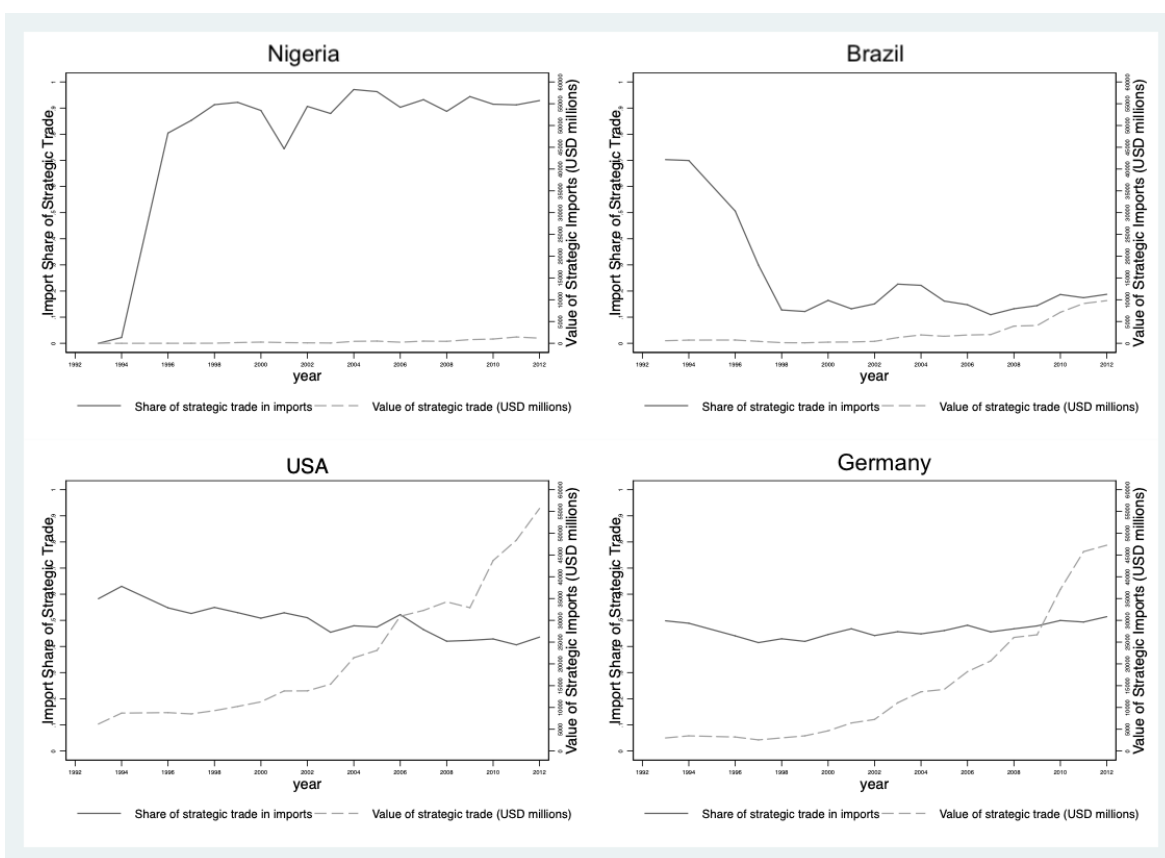


Figure 4: Cross-country trends in strategic import shares

furniture and bedding, SOE imports still comprise a substantial share of total imports (20 %). This industry level data is only available for the period after 2003, so our full analysis examines total trade for the purpose of comparing patterns before and after WTO entry, while a later analysis hones in on product- level trade.

Model Specification

In order to focus our analysis on the effect of strategic trade share on imports, we include country fixed effects for China's trade partners. This means we hold China as the importer fixed, and leverage within-country variation in strategic trade share by its trade partners. There are potential endogeneity concerns with the strategic trade variable, as SOE dominance in a particular Chinese industry is not randomly assigned. However, our data is structured as

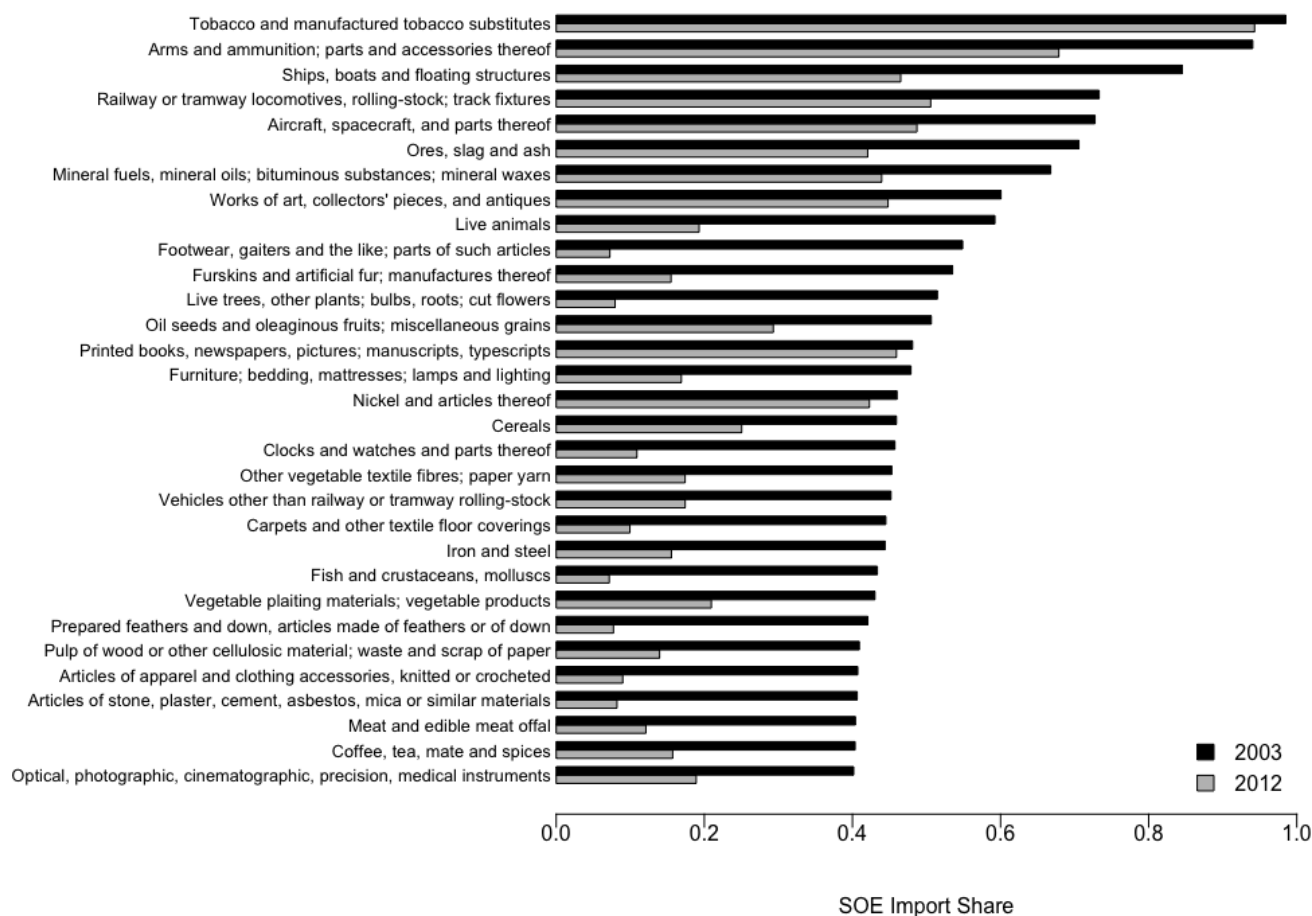


Figure 5: Industries with SOE import shares >40% in 2003, compared to shares in 2012

bilateral trade flows, thereby mitigating endogeneity issues as the share of strategic imports in a particular trading relationship is more likely to be driven by partner factor endowments and shifts in global demand and supply exogenous to the underlying political and economic conditions that drive the distribution of SOEs across Chinese industries. One may also be concerned that tariff policies vary for strategic industries, but we find that there is no statistically significant difference between the size of the tariff cut imposed on strategic versus non-strategic industries.¹⁸

¹⁸The size of the average WTO tariff cut was calculated as the difference between average tariff levels in 2001 less average tariff levels in 2012, the end of our period of analysis. Strategic industries experienced an average 5.4 percent reduction relative to a 6 percent average tariff cut in non-strategic industries, and the difference is not statistically significant in a comparison of means test (p-value = 0.48).

We employ the basic gravity model commonly used in trade literature in order to test our hypotheses regarding private versus SOE trade responses to changes in tariff levels. Seemingly Unrelated Regressions (SURs) are used to model private and SOE trade (imports), where the simultaneous estimation of two equations allows us to test whether the coefficients on our key explanatory variables differ between SOE and private trade (see Davis, Fuchs, and Johnson (2019) for a similar approach). WTO entry brought multi-dimensional changes to China's economic and trading system, ranging from the elimination of non-trade barriers such as quotas and licensing to the strengthening of the rule of law and disclosure of economic information. Given the extensive nature of WTO-related reforms, we assess differences in private and SOE trading behavior in the pre-WTO and WTO periods by employing sub-sample analysis, splitting the data into pre-WTO (1993-2001, number of partner countries=150) and WTO (2002-2012, number of partner countries=157). Z-tests are then used to assess the differences between coefficients in the pre-WTO versus WTO analyses. In our baseline model, we estimate a system of equations as follows:

$$imports_{SOE,it} = \beta_0 + \beta_1 tariff_{it} + \beta_2' X_{it} + \eta_i + \tau_t + \epsilon_{it} \quad (1)$$

$$imports_{private,it} = \tilde{\beta}_0 + \tilde{\beta}_1 tariff_{it} + \tilde{\beta}_2' X_{it} + \tilde{\eta}_i + \tilde{\tau}_t + \tilde{\epsilon}_{it} \quad (2)$$

where i represents a partner country and t a year in the 1993-2012 period. X represents a vector of control variables as follows: a partner country's GDP and (logged) population using data from the World Development Indicators (WDI), which measures a country's economic and potential market size respectively; a Polity2 variable from the Polity IV Project that measures the country's level of democracy (where 21, the highest value in the index, represents a full democracy); and a UN ideal point distance variable that measures the foreign policy distance between China and its partner countries based on their voting record in the UN General Assembly roll call votes (Bailey, Strezhnev, and Voeten 2017), which has been used

to evaluate the effects of political relations on SOE versus private trade (Davis, Fuchs, and Johnson 2019).

Building on the baseline specification of model 1, we then incorporate industrial policy in two additional specifications. Model 2 adds the share of strategic products in overall imports from a country as a covariate, while model 3 adds an interaction term between tariffs and the strategic import share variable. All specifications include partner country fixed effects (η_i) and year fixed effects (τ_t), with standard errors clustered by country. We further run a product-level analysis for a shorter time period in the WTO years (2003-2007) to validate our findings at a more granular level.

5 Empirical Analysis of Chinese Imports Before and After WTO Entry

Table 1 presents the results for Chinese private and SOE imports in the pre-WTO period (1993-2001) while Table 2 presents the results for the WTO period (2002-2012). Column (1) shows the results for the baseline analysis that only includes tariffs as the main explanatory variable, without taking strategic trade into account. Column (2) adds the share of strategic products in bilateral imports as an additional explanatory variable, and Column (3) adds an interaction term between import tariffs and the import share of strategic products.

We find a questionable relationship between tariffs and imports in the pre-WTO period when trade was heavily influenced by administrative guidance. SOE imports have a negative relationship with tariffs in the first model, but the result is not robust to including the strategic trade variable. Private imports exhibit little correlation with tariffs in the first models. The severe policy distortions bearing down on private trade prior to WTO entry are evident in the counter-intuitive result of Column 3 where private trade shows a significant positive coefficient for the weighted MFN tariff measure, suggesting that if anything private imports increase with *higher* tariff levels. Except for a minority of private firms that had official trading licenses, private firms were by and large shut out of trade prior to WTO

Table 1: Sub-Sample analysis of Imports: Pre-WTO period

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	-0.0563** (0.0276)	-0.0435 (0.0277)	-0.0420 (0.0413)
(log) Political relations (UNGA)	-0.1504* (0.0835)	-0.1600* (0.0954)	-0.1603* (0.0968)
(log) GDP	1.3308 (1.7153)	-0.3632 (1.5835)	-0.3638 (1.5810)
(log) Population	9.1828*** (3.3562)	9.4928*** (3.5445)	9.5259*** (3.3568)
Polity	-0.0847 (0.0582)	-0.0539 (0.0616)	-0.0537 (0.0623)
Import Share of Strategic Trade		1.6385*** (0.5470)	1.6805* (0.9642)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			-0.0033 (0.0645)
Private			
Weighted MFN Tariff	0.0100 (0.0240)	0.0282 (0.0284)	0.0983*** (0.0302)
(log) Political relations (UNGA)	0.1320 (0.2973)	0.0124 (0.2940)	-0.0025 (0.2900)
(log) GDP	4.0510 (2.8110)	3.6585 (2.9372)	3.6260 (2.7452)
(log) Population	-10.7887 (8.2228)	-13.0467 (8.2470)	-11.4539 (8.0921)
Polity	-0.0057 (0.1130)	0.0164 (0.1187)	0.0258 (0.1194)
Import Share of Strategic Trade		1.4300* (0.8640)	3.4557*** (1.0377)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			-0.1569*** (0.0404)
Number of observations	1181	1057	1057
Wald test p-value (Tariffs)	0.034	0.031	0.003
Wald test p-value (Strategic Trade)		0.847	0.198

Note: Table shows results of Seemingly Unrelated Regression estimates of logged SOE and private import flows from 1993 to 2001, including country and year fixed effects and with standard errors clustered by country.

accession by China so this result is based on a marginal number of traders who followed administrative guidance over profit maximization even as private firms.

Table 2 reveals a stark difference in the pattern of trading behavior of both private and SOE imports in the WTO period. We find a strong negative relationship between tariffs and private imports, where lower tariffs are associated with higher private imports across all three specifications in Columns (1) to (3). As for SOE imports, it appears initially in Columns (1) and (2) that there is no relationship between tariffs and SOE imports in the

WTO period. That is, that WTO entry did not shift the behavior of SOEs towards greater commercial orientation. However, Column (3) shows that once we take the interactive effects of strategic trade into account, that SOE imports *do* respond in a commercial manner to tariffs levels. Column (3) further shows that the sensitivity of SOE imports to changes in tariff levels is conditional on the presence of trade in strategic products. When the share of strategic imports in a bilateral trading relationship is zero, SOE imports exhibit a commercial orientation in that they are higher at lower tariffs levels, similar to private imports. Indeed, the Wald p-value for the comparison of the *Tariff* coefficient for SOE and private trade moves from being highly significant in Columns (1) and (2) to insignificant in Column (3).¹⁹

Figure 6 summarizes the results on the tariff variable for private and SOE imports in the pre-WTO and WTO periods. WTO entry has an unambiguous effect on shifting private imports towards a commercial orientation, where private imports increase at lower tariff levels. WTO entry appears to have no effect on the relationship between tariffs and SOE imports, until we take into account presence of strategic trade and the interactive relationship between tariffs and strategic trade. Once that is done, we observe that both SOE and private imports behave in similar commercially oriented ways to tariffs.

The coefficient on the interaction term is positive and significant for SOE imports, indicating that this negative relationship between tariffs and SOE imports becomes attenuated as the share of strategic products in imports increases. Figure 7 summarizes the average marginal effects of this interactive relationship for private and SOE imports in the pre-WTO and WTO periods. The top right-hand figure shows that the more that SOE imports are in strategically important sectors, the less they behave in commercially oriented ways to shifts in tariff levels. In contrast, there is no such interactive relationship between tariffs and strate-

¹⁹We do not include the Wald p-value for the interaction term as this requires a joint interpretation that includes the base terms. The interaction term is best understood through the graphs displaying the marginal effect of tariffs at different levels of strategic import shares.

Table 2: Sub-Sample analysis of Imports: WTO period

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	0.0003 (0.0170)	-0.0158 (0.0144)	-0.1824*** (0.0473)
(log) Political relations (UNGA)	-0.2480*** (0.0822)	-0.2417*** (0.0749)	-0.2152*** (0.0719)
(log) GDP	-0.7597 (1.2366)	-1.5723 (1.2155)	-1.6376 (1.2088)
(log) Population	5.6654** (2.2458)	5.8542*** (2.2944)	6.4116*** (2.4399)
Polity	-0.0529 (0.1039)	-0.0693 (0.1114)	-0.0904 (0.1072)
Import Share of Strategic Trade		2.6598*** (0.7627)	1.2744 (0.8059)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.2143*** (0.0554)
Private			
Weighted MFN Tariff	-0.0729*** (0.0229)	-0.0755*** (0.0234)	-0.1839*** (0.0704)
(log) Political relations (UNGA)	-0.1331 (0.1184)	-0.1321 (0.1179)	-0.1148 (0.1198)
(log) GDP	1.8355 (1.4698)	1.7079 (1.5243)	1.6654 (1.5283)
(log) Population	4.3400 (3.2077)	4.3697 (3.2143)	4.7326 (3.3108)
Polity	0.0305 (0.0576)	0.0279 (0.0562)	0.0141 (0.0571)
Import Share of Strategic Trade		0.4177 (0.7004)	-0.4844 (0.8539)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.1395 (0.0872)
Number of observations	1650	1650	1650
Wald test p-value (Tariffs)	0.001	0.006	0.984
Wald test p-value (Strategic Trade)		0.004	0.076

Note: Table shows results of Seemingly Unrelated Regression estimates of logged SOE and private import flows from 2002 to 2012, including country and year fixed effects and with standard errors clustered by country.

gic trade for private imports. The WTO period is associated with a negative relationship between tariffs and private imports regardless of the share of strategic products in imports, as shown in the bottom right-hand figure. In short, while WTO entry shifted some SOE trade towards a greater commercial orientation, it simultaneously strengthened the role of SOE imports in strategic trade. This reflects the dualistic policy intent of the Chinese government in WTO entry, using external economic forces to bring greater market discipline on SOEs, while simultaneously intensifying the role of SOEs in strategic sectors.

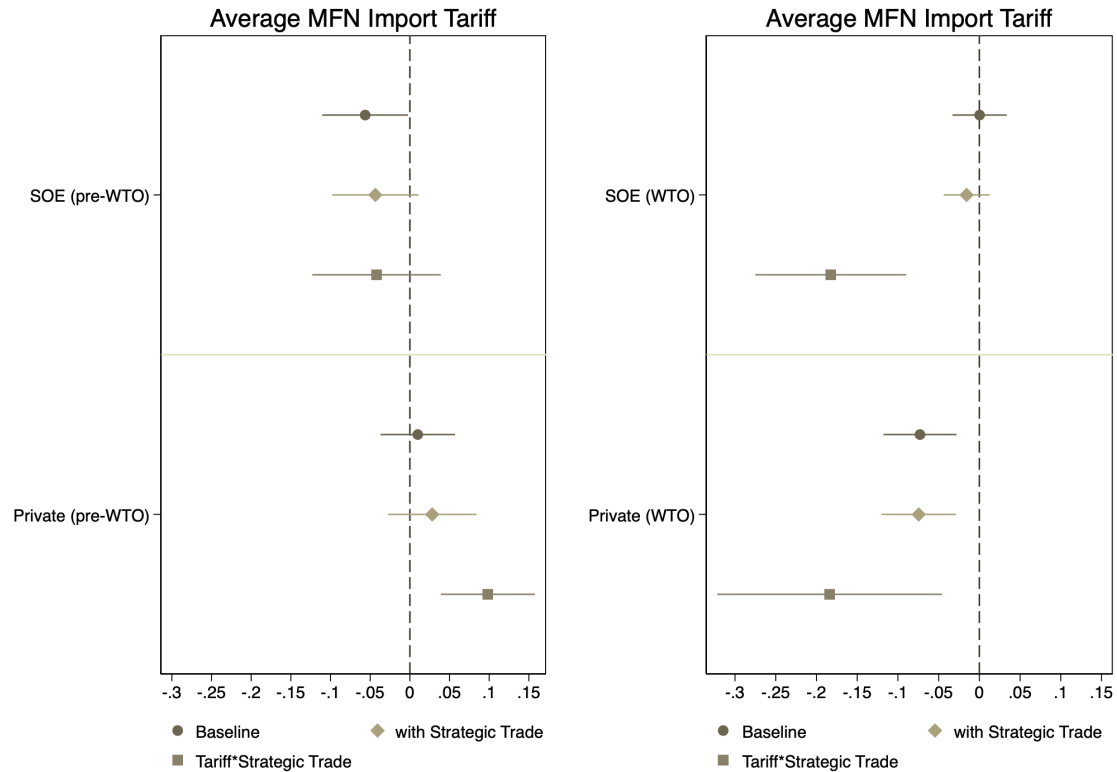


Figure 6: Coefficient estimates of tariff variable from Columns (1), (2) and (3) in Tables 1 and 2
Bars show 95% confidence intervals

Table 3 presents the results of z-tests on the coefficients of the tariff and strategic import share variables in Column (3) across the pre-WTO and WTO sub-sample analyses, to assess if the differences in import trends between the two periods are statistically significant. The table shows a significant difference in the relationship between tariffs and imports after WTO entry for both private imports and SOE imports. The difference in the interactive relationship between tariffs and strategic trade is also significant for both private and SOE imports.

Product-Level Analysis

We utilize a subset of product-level data from the 2003-2008 period to test country-level findings at a more granular level.²⁰ This data is comprised of country-dyad ownership-specific

²⁰Based on checks with China Customs, reliable product-level data is not available prior to 2003.

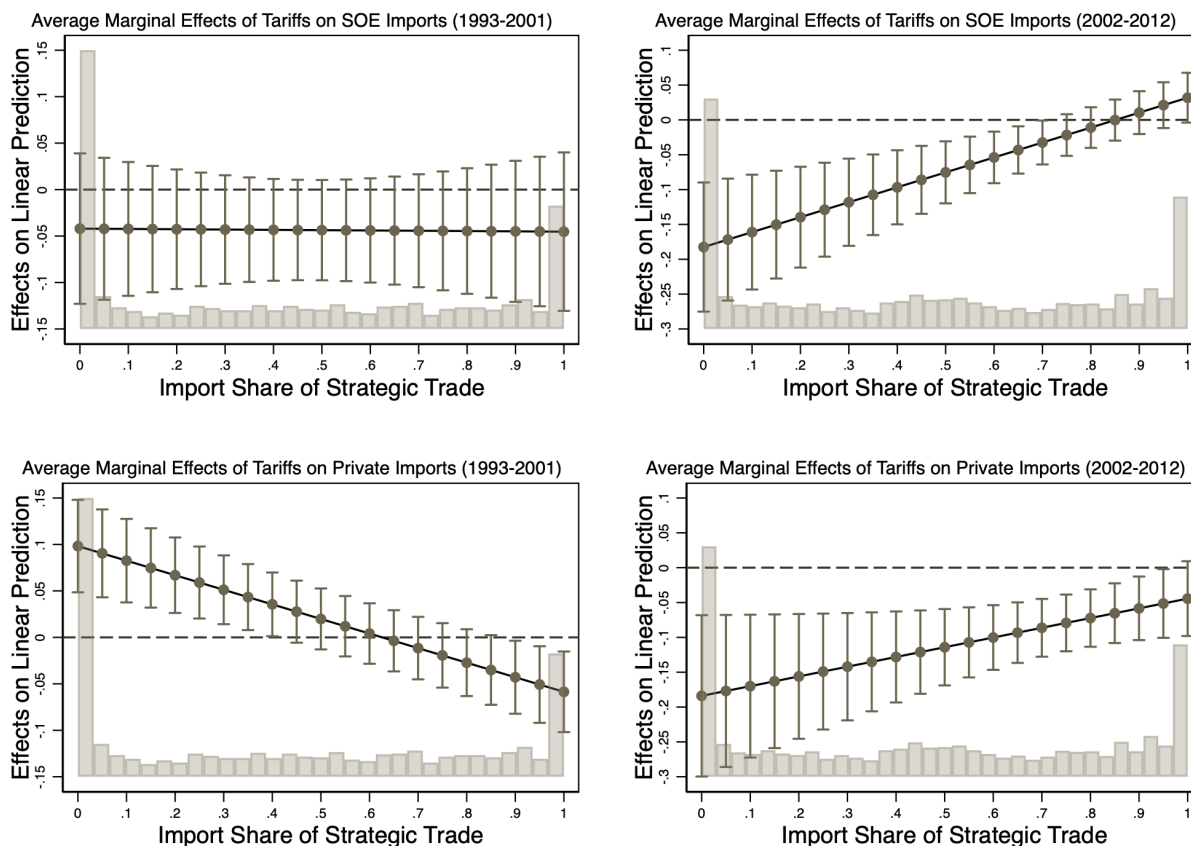


Figure 7: Marginal Effects of Tariffs as Import Share of Strategic Trade Increases
 Bars show 95% confidence intervals. Histograms show the distribution of the strategic trade variable; skewness in the data is evident as many country-year observations have zero share of strategic imports. Later robustness checks will add a control for observations in this category of zero strategic trade share.

import flows (as with the dataset utilized in the main analysis), but further disaggregated into product-level imports at the HS 4-digit level. While the time period assessed is entirely post-WTO entry, it nonetheless captures the most important period where tariffs were being systematically liberalized according to China's accession schedule. The product-level analysis further allows us to add controls for industry characteristics, to address the possibility that SOE and private import flows might be differentially affected by the relative size and dominance of SOEs in an industry, and the level of subsidies targeted at different industries.

Table 3: Testing pre-WTO and WTO differences (Imports)

Test	Z-Score	P-Value
SOE: Tariff	2.2359	0.0127
SOE: Strategic Trade	0.3232	0.3733
SOE: Tariff*Strategic Trade	-2.5592	0.0052
Private: Tariff	3.6839	0.0001
Private: Strategic Trade	2.9319	0.0017
Private: Tariff*Strategic Trade	-3.0842	0.0010

We assess whether the same heterogeneity in SOE importing behavior shows up at the product level, looking at two ends of the spectrum of industries classified as strategic by the Chinese state. At one end are the commodities reserved for state trading due to national concerns ranging from food security to taxation, and at the other lies industries deemed strategic for their technology content and national security implications. As the Chinese government reserved specific product lines for state-trading, we are able to distinguish between products that have been reserved for state-trading and products in the same industry that have not been given the same protection. We specifically analyze trading flows in the tobacco industry, a sector often referred to as the “last bastion of the planned economy” whose monopoly status has been protected by law since the 1990s (Wang 2009).

The tobacco industry’s national value derives from the government’s reliance on tobacco taxes as a source of revenue, and the importance of supporting agriculture incomes in China’s rural regions. As a result, trade in tobacco products is highly dominated by SOEs and there are close to zero private imports over our period of analysis. Focusing on these SOE import flows in the tobacco industry, we compare patterns among different tobacco products: China reserved its state-trading rights over the import of cigarettes, cigars and tobacco leaf in its WTO accession protocol, but these reservations did not extend to other inputs into the manufacture of tobacco products, such as cigarette paper and filters. Figure 8 shows the tariff coefficient estimates for SOE imports of these two groups of products in the tobacco industry: while import flows in state-traded tobacco are insensitive to changes in tariff levels, both SOE imports for cigarette paper and filters are sensitive to tariffs.²¹ These results

²¹The model specification is similar to the main country-level analysis, except that we estimate the SOE

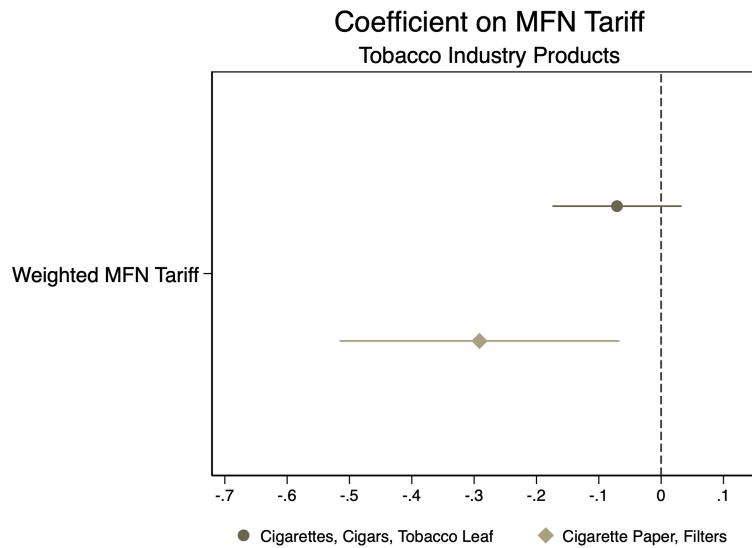


Figure 8: Comparing Tariff Responses in State-Traded Imports (Cigarettes, Cigars and Tobacco Leaf) versus Imports of Non-Strategic Inputs (Cigarette Paper, Filters)
Bars show 95% confidence intervals.

indicate that even in an industry entirely dominated by state-ownership, such as with tobacco, SOE importing behavior is not uniform. State trading insulates tobacco from commercial pressures, while the SOEs engaged in trading cigarette paper adjust their sourcing of imports according to tariff rate changes.

Next we examine the automotive sector to assess the pattern for high-tech strategic industries. The strategic importance placed on this sector dates back to the Mao era and continued into China's reform period, with automotive development stressed as a national priority in the Eighth Five-Year Plan (1991-1995). The industry was given a national "pillar" status in a 1994 automotive industrial policy issued by the State Council, and priority placed on developing a small number of highly capable SOE groups. The focus on SOEs continued into and private import equations separately, due to the fact that the data is more sparse at the product-level. For this same reason, we also use a linear year trend instead of year fixed effects. For all estimations, we add three industry-level control variables: the sectoral share of total output; the SOE share of sectoral output; and the subsidy share of sectoral output. For tobacco, only SOE flows are estimated as private flows are close to zero. The list of products analyzed is shown in appendix Section A.1.

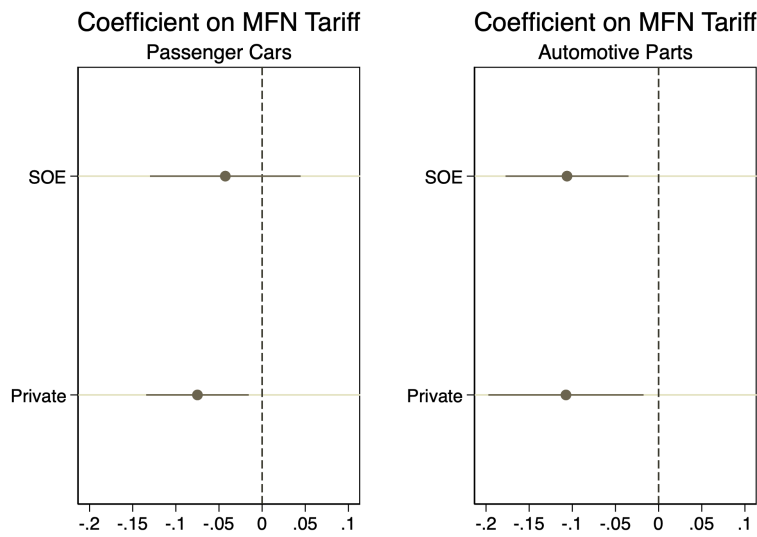


Figure 9: Comparing Tariff Responses in Final versus Intermediate Product Imports in the Automotive Industry.
Dots show coefficients on tariff variable for SOE and Private imports for subsample of data on passenger cars (left panel) versus imports for subsample of data on automotive parts (right panel)
Bars show 95% confidence intervals.

the WTO period, with the 11th Five-Year Plan in 2006 emphasizing the need to raise the competitiveness of automotive state-owned champions. Our hypothesis here is that while the state likely places a high strategic importance on the finished product of passenger vehicles, the strategic importance of intermediate goods – such as automotive parts – is likely to be lower. This priority on passenger vehicles is reflected in official industrial policy, which restricts foreign investment in passenger vehicles to joint ventures with Chinese SOEs, while no such restriction is placed on automotive parts (State Planning Commission 1997). Indeed, the government recognizes that importing auto parts to lower input costs could support the goal of improving the overall competitiveness of the passenger car industry. Our findings, summarized in Figure 9, show that SOE imports are not sensitive to tariff levels for finished motor vehicles but sensitive for intermediate auto parts, while the private sector is tariff-sensitive for both finished and intermediate products.²²

²²We exclude automotive engines from the analysis as this product is a highly strategic input.

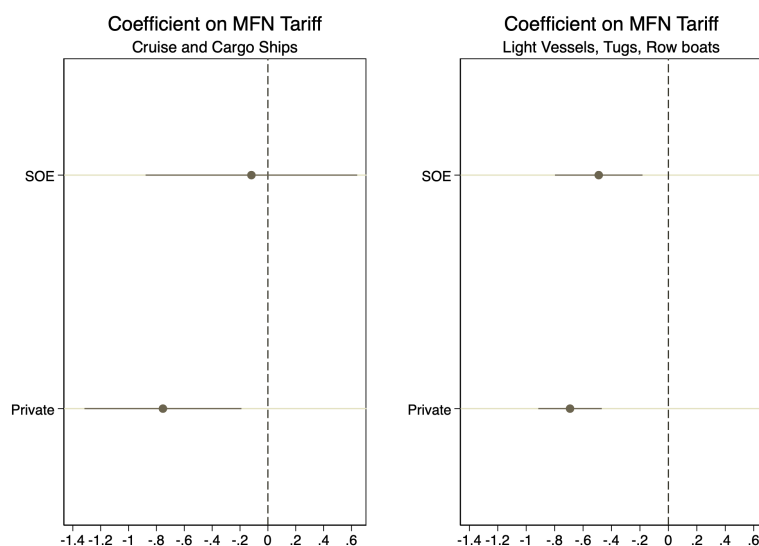


Figure 10: Comparing Tariff Responses in Strategic versus Non-Strategic Imports in the Shipping Industry

Dots show coefficients on tariff variable for SOE and Private imports for subsample of data on cruise and cargo ships (left panel) versus imports for subsample of data on light vessels, tugs and rowboats (right panel). Bars show 95% confidence intervals.

We run the same analysis for the shipping industry, an industry considered strategic not just due to its technology content but also its direct relevance to national defense. The development of China's shipbuilding capabilities has been a national priority since the 1950s as emphasized in the First Five-Year Plan (1953-57) and has remained "a mainstay of the socialist economy" into the post-Mao reform years (quoted in Moore (2002) p. 186). The development of the shipping industry has continued to be emphasized in policy documents issued in China's WTO period, such as in the 2006 11th Five-Year Plan. Here, we compare the tariff responses in highly strategic shipping products with potential military dual use applications, such as cruise ships and cargo ships, to tariff responses in low-end shipping products such as tugs and row boats. As with the automotive industry, we find (as shown in Figure 10) that SOE imports are insensitive to tariff levels for cruise ships and cargo ships but sensitive to tariffs for tugs and row boats. In contrast, private imports are sensitive to tariff levels for both types of products.²³

²³The full regression output for these product-level analyses are in appendix A.1.

In some cases, state ownership of firms in China is held at the local government level. We can assess whether this distinction matters in the disaggregated product analysis because the three strategic industries we examine vary greatly in the share of centrally-owned versus subnationally-owned SOEs. About 80% of SOEs in the tobacco sector are centrally owned in our period of analysis, while the central share of SOEs in the automotive industry is much lower, at about 20%. The share of central SOEs in the shipping industry lies at around 50%. Despite differences in the form of state ownership, our findings show the same pattern of sensitivity to tariff changes in non-strategic products but not for strategic products. While not a conclusive test, this suggests that the hand of the state to intervene for strategic goals operates through both local and central government levels.

Robustness Checks

We use placebo tests to assess the alternative explanation that the shift towards more commercial behavior was driven by SOE reforms launched in the mid-1990s, rather than WTO entry. Tariffs had already begun to fall prior to China's entry into the WTO (see Figure 2). We repeat our main analysis while varying the cut-off year for splitting the sample. While the main analysis split the sample into pre-treatment (1993-2001) and treatment years (2002-2012) using WTO entry in 2001 as the cut-off, the placebo tests run through all alternative cut-off years (e.g. replace 2001 cut-off with 1997 to create an alternate 'treatment' sample for 1998-2012). If domestic SOE reform drove commercial orientation, tariffs would have a significant effect for sub-samples that move forward the cut-off year to include the late 1990s. Figure A1 shows that the shift in the tariff coefficient estimate only occurs in WTO years (2001-2012 and later). This underscores that tariff cuts alone could not induce commercial behavior in SOE trade. Rather, the combination of tariff cuts and the institutional commitments of WTO entry induce greater commercial orientation in SOE trade.

We explore the sensitivity of our results to particular trading partners to assure that the results are not driven by the disproportionate influence of one of the major economies such as the US. We re-estimate all of the models on a sample that sequentially drops each of the

major exporters to China across different geographic regions: US, Germany, Japan, Australia and Brazil. We also test for dropping all EU member countries. The results are consistent with the full sample (see appendix Tables A7 and A8 for non-U.S. results). Due to the unique politics surrounding OPEC countries and trade in oil, we estimate the same models on a sample that omits the major oil exporters (see Tables A9 and A10 in the appendix).²⁴ The main conclusions remain consistent, which provides assurance that our findings are not driven by any single large economy or the special nature of oil dependence.²⁵

Another concern with the analysis on SOE imports is that the results on the interactive effect between tariffs and the import share of strategic trade might be driven by the high share of country-year observations for which the share of strategic trade in imports is zero. Therefore as another robustness check, we re-run the imports analysis by controlling for observations where the import share of strategic trade is zero (adding a dummy variable that takes the value 1 if the share of strategic imports is zero). The results can be found in Tables A11 to A12 in the appendix, showing that the results are not affected by the skewed distribution of strategic imports.

We use weighted tariffs so that tariff cuts for a product with a greater share of overall imports are weighted more than similar cuts for a product that is hardly traded. In order to address any endogeneity concerns that might arise from this use of weights, we re-run the analysis using unweighted effectively applied tariffs. The results, shown in Tables A13 and A14 in the appendix, offer assurance that the main findings are not being driven by the weighting of tariffs.

²⁴Oil exporters are measured as those countries whose gross oil export revenues are larger than 10% of GDP (Colgan 2010).

²⁵The exclusion of oil states also highlights the fact that some of the inconsistency for the population covariate between SOE and private imports in the main analysis was driven by a small number of oil states.

6 Conclusion and Implications

Our analysis of Chinese imports shows that firms exhibit greater commercial orientation after entry into the WTO. We observe high responsiveness to WTO tariff reductions by private firms. The impact of WTO entry on SOE trading behavior is more nuanced as these firms also face the Chinese government's dualistic goals for WTO membership. Where the government sought external pressure to drive forward domestic reforms, even SOEs show sensitivity to tariff movements. But the state limited liberalization through guidance that counteracted the tariff reduction for a narrower set of strategic sectors.

The degree to which WTO entry brought about more market discipline on SOEs depends on the countervailing force of industrial policy. Using a dataset of trade flows disaggregated by firm ownership, our analysis demonstrates how the sensitivity of SOE imports to tariff levels interacts with the share of strategic trade in the structure of bilateral trade. When Chinese imports from a trading partner are largely comprised of non-strategic products, SOE imports decline at higher tariff levels as one would expect from a profit-maximizing firm. This market-oriented behavior, however, weakens as the share of strategic products in overall imports increases. When the share of strategic products in imports increases to about 70% and above, tariffs cease to have an effect on SOE imports. This relationship reflects the role of SOEs as a conduit through which the government implements its industrial policy, much of which involved “getting prices wrong” in pursuit of non-market objectives ranging from national security to the promotion of key ‘economic lifeline’ industries.

These findings bear important implications for current debates around the future of global trade governance. Trade policies have always tried to balance liberalization and protection. Even as global rules enforce open access to markets, states continue to intervene in support of important industries. The challenge of this balancing act grows more difficult with the emergence of China as a major economic power with significant elements of state control in its economy. While China insists it should be treated as a market economy, many WTO members remain reluctant to do so. China has been unable to prevail in the WTO dispute

case on market economy status, but demands that other countries recognize its status as a market economy as a condition for concluding a preferential trade agreement or receiving aid.²⁶ The US government has raised new proposals to reduce the acceptability of non-market economy policies in the WTO and as a condition in its own preferential trade agreements.²⁷ This paper has shown that neither side is right because the Chinese economy cannot be easily classified as either fully market-oriented or non-market oriented.

While a vigorous debate has emerged around whether or not WTO rules constrain the ‘policy space’ of developing countries, we move beyond dichotomous answers. China’s trading behavior in the WTO period arises from divergent forces that both embrace and resist market forces (Tan 2020). We argue that industrial policy intervenes to shape *how* the WTO impacts behavior. Compared to the pre-WTO period where government intervention affected the operation of *all* sectors, Chinese industrial policy in the WTO period has become more targeted.

The multilateral trading system allows state trading enterprises to engage in trade, so long as they abide by the principle of non-discrimination and operate on a commercial basis. More recent trade agreements such as the CPTPP retain the emphasis on exhorting commercial behavior by SOEs while adding special clauses on SOE transparency (Cimino-Isaacs 2016). Alongside concern with state intervention in the economy, states support the possibility for SOEs to operate within a liberal trade regime. Nor have they given up industrial policy goals. This combination turns SOEs into the last remaining buffer between markets and domestic policy goals for many emerging states. To the extent that SOEs respond to market incentives at the behest of their masters, trade negotiations should hone in on industrial policy rather than state ownership or broader categorizations of market versus non-market

²⁶The complaint filed by China against the EU in 2017, WTO DS516, “European Union — Measures Related to Price Comparison Methodologies,” was suspended at China’s request in May 2019, with wide speculation that the preliminary ruling decisively rejected the Chinese claims.

²⁷In the USMCA Article 32.10, parties reserve the right to terminate the agreement if any party concludes a preferential agreement with a non-market economy.

economies. Our results show the circumstances under which WTO membership can encourage commercial orientation – as well as the limits of such liberalization.

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A Appendix

A.1 Product-Level Analysis

Table A1: Imports of Cigars, Cigarettes and Tobacco Leaf state-traded vs Filters and Cigarette Paper

	Cigarettes, Cigars, Tobacco	Cigarette Paper, Filters
Weighted MFN Tariff	-0.0708 (0.0508)	-0.2913** (0.1111)
(log) Political relations (UNGA)	0.2942 (0.2193)	0.5442 (0.4856)
(log) GDP	0.0193 (2.8884)	4.5934 (4.5987)
(log) Population	22.8602** (8.6842)	-11.2621 (17.1013)
Polity	-0.1158 (0.1021)	-0.0370 (0.0610)
Sector Share of Total Output (%)	-0.4884 (1.3386)	1.1092 (2.3657)
SOE share of Sectoral Output (%)	0.0008 (0.0286)	0.0373 (0.0227)
Subsidy share of Sectoral Output (%)	-0.0372 (0.5293)	-8.3524** (3.8318)
Number of observations	157	225

Note: Table shows results of separate regression estimates of logged SOE import flows from 2003 to 2008 for subsamples of different tobacco industry products, with country fixed effects and a linear year trend, and with standard errors clustered by country.

Table A2: Imports of Passenger Cars

	SOE	Private
Weighted MFN Tariff	-0.0427 (0.0430)	-0.0749** (0.0291)
(log) Political relations (UNGA)	0.6877 (1.0290)	0.1745 (2.6665)
(log) GDP	2.8636 (9.7279)	-13.8327 (11.9179)
(log) Population	-24.2191 (41.2453)	23.9629 (32.5810)
Polity	0.2452*** (0.0893)	0.1708 (0.4981)
Sector Share of Total Output (%)	-4.8707 (41.7683)	-6.3196 (34.5915)
SOE share of Sectoral Output (%)	0.1209 (1.0888)	0.1380 (0.8556)
Subsidy share of Sectoral Output (%)	-2.3641 (22.3080)	-5.0652 (17.8648)
Number of observations	147	122

Note: Table shows results of separate regression estimates of logged SOE and private import flows from 2003 to 2008 for subsample of passenger car imports, with country fixed effects and a linear year trend, and with standard errors clustered by country.

Table A3: Imports of Automotive Parts

	SOE	Private
Weighted MFN Tariff	-0.1061*** (0.0358)	-0.1074** (0.0453)
(log) Political relations (UNGA)	-0.0181 (0.1216)	-0.2279 (0.1845)
(log) GDP	0.3292 (3.3889)	-2.1411 (3.7210)
(log) Population	-4.5867* (2.5547)	-2.0250 (1.8330)
Polity	0.0481 (0.0495)	0.0577 (0.0558)
Sector Share of Total Output (%)	4.4173*** (0.5879)	4.1499*** (0.9231)
SOE share of Sectoral Output (%)	-0.2797*** (0.0457)	-0.3480*** (0.0587)
Subsidy share of Sectoral Output (%)	-5.2484** (2.2269)	0.4994 (1.6861)
Number of observations	408	400

Note: Table shows results of separate regression estimates of logged SOE and private import flows from 2003 to 2008 for subsample automotive part imports, with country fixed effects and a linear year trend, and with standard errors clustered by country.

Table A4: Imports of Cruise and Cargo Ships

	SOE	Private
Weighted MFN Tariff	-0.1183 (0.3713)	-0.7532** (0.2658)
(log) Political relations (UNGA)	-1.7683 (2.9779)	-0.9607 (5.4548)
(log) GDP	-7.7166 (8.2803)	-47.1773* (25.3925)
(log) Population	1.4452 (22.7469)	49.5896 (57.8180)
Polity	-0.0704 (0.0575)	84.7214 (64.7072)
Sector Share of Total Output (%)	-10.6008** (4.0908)	-2.3428 (9.4127)
SOE share of Sectoral Output (%)	0.0445 (0.0296)	0.0260 (0.0622)
Subsidy share of Sectoral Output (%)	1.3504** (0.5546)	-2.8772 (2.5921)
Number of observations	109	50

Note: Table shows results of separate regression estimates of logged SOE and private import flows from 2003 to 2008 for subsamples of cargo and cruise ship imports, with country fixed effects and a linear year trend, and with standard errors clustered by country.

Table A5: Imports of Light Vessels, Tugs, Row Boats

	SOE	Private
Weighted MFN Tariff	-0.4898*** (0.1494)	-0.6917*** (0.1091)
(log) Political relations (UNGA)	1.7430** (0.7397)	-0.7393* (0.4001)
(log) GDP	5.5424 (8.4129)	-13.3486 (14.4393)
(log) Population	10.0525 (14.3729)	-17.3168 (22.5046)
Polity	0.1513 (0.1046)	0.3044 (0.2055)
Sector Share of Total Output (%)	12.4417*** (2.1908)	14.2740*** (2.1377)
SOE share of Sectoral Output (%)	-0.0020 (0.0182)	-0.0552*** (0.0160)
Subsidy share of Sectoral Output (%)	0.9065 (0.5902)	1.8222** (0.7434)
Number of observations	127	127

Note: Table shows results of separate regression estimates of logged SOE and private import flows from 2003 to 2008 for subsample of low-end shipping product imports, with country fixed effects and a linear year trend, and with standard errors clustered by country.

Table A6: List of Products Tested in Tables 1 to 5

HS Code	Table A1 Column 1: Tobacco Products Reserved for State Trading
2401	Tobacco, unmanufactured; tobacco refuse
2402	Cigars, cheroots, cigarillos and cigarettes; of tobacco or of tobacco substitutes
2403	Manufactured tobacco and manufactured tobacco substitutes n.e.c; homogenised or reconstituted tobacco; tobacco extracts and essences
	Table A1 Column 2: Cigarette Paper, Filters
4813	Cigarette paper, whether or not cut to size or in the form of booklets or tubes
5601	Wadding of textile materials and articles thereof; textile fibres, not exceeding 5 mm in length (flock), textile dust and mill neps
5502	Artificial filament tow
	Table A2: Passenger Cars, Automotive Industry
8703	Motor cars and other motor vehicles; principally designed for the transport of persons (other than those of heading no. 8702), including station wagons and racing cars
	Table A3: Auto Parts, Automotive Industry
8707	Bodies; (including cabs) for the motor vehicles of heading no. 8701 to 8705
8708	Motor vehicles; parts and accessories, of heading no. 8701 to 8705
	Table A4: Cruise and Cargo Ships, Shipping Industry
8901	Cruise ships, excursion boats, ferry-boats, cargo ships, barges and similar vessels for the transport of persons or goods
8906	Vessels; other, including warships and lifeboats, other than rowing boats
	Table A5: Row Boats, Tugs, Light Vessels, Shipping Industry
8903	Yachts and other vessels; for pleasure or sports, rowing boats and canoes
8904	Tugs and pusher craft
8905	Light-vessels, fire-floats, dredgers, floating cranes, other vessels; the navigability of which is subsidiary to main function; floating docks, floating, submersible drilling, production platforms
8907	Boats, floating structures, other (for e.g. rafts, tanks, coffer-dams, landing stages, buoys and beacons)

A.2 Placebo Tests

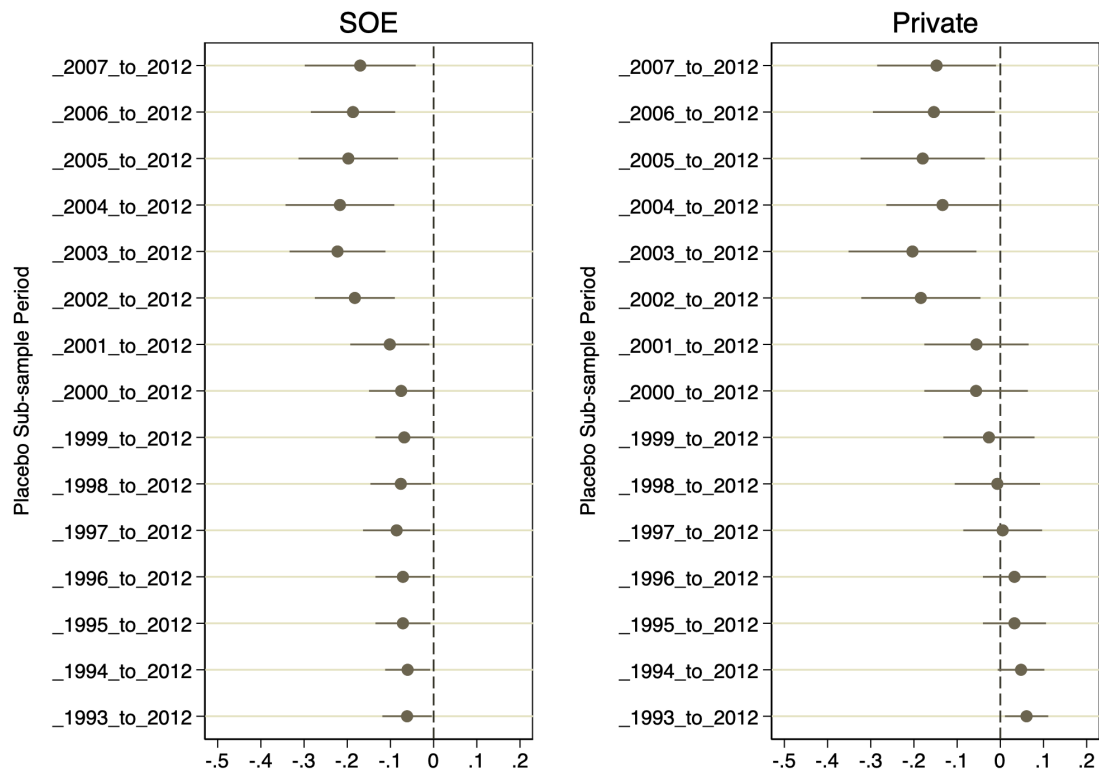


Figure A1: Coefficient estimates of MFN tariff, across different placebo treatment periods

A.3 Dropping Major Economies - USA (with Year Fixed Effects)

Table A7: United States Dropped : Sub-Sample analysis of Imports (Pre-WTO period)

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	-0.0564** (0.0276)	-0.0435 (0.0277)	-0.0420 (0.0413)
(log) Political relations (UNGA)	-0.1502* (0.0836)	-0.1597* (0.0956)	-0.1600* (0.0969)
(log) GDP	1.3322 (1.7150)	-0.3617 (1.5832)	-0.3623 (1.5808)
(log) Population	9.1812*** (3.3543)	9.4914*** (3.5426)	9.5240*** (3.3562)
Polity	-0.0848 (0.0582)	-0.0540 (0.0616)	-0.0538 (0.0623)
Import Share of Strategic Trade		1.6385*** (0.5471)	1.6802* (0.9643)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			-0.0032 (0.0645)
Private			
Weighted MFN Tariff	0.0100 (0.0240)	0.0282 (0.0284)	0.0986*** (0.0302)
(log) Political relations (UNGA)	0.1398 (0.2980)	0.0185 (0.2948)	0.0040 (0.2907)
(log) GDP	4.0945 (2.8026)	3.7054 (2.9333)	3.6765 (2.7406)
(log) Population	-10.9013 (8.2370)	-13.1640 (8.2610)	-11.5713 (8.1050)
Polity	-0.0071 (0.1129)	0.0151 (0.1186)	0.0245 (0.1192)
Import Share of Strategic Trade		1.4340* (0.8650)	3.4709*** (1.0388)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			-0.1577*** (0.0404)
Number of observations	1172	1049	1049
Wald test p-value (Tariffs)	0.034	0.031	0.003
Wald test p-value (Strategic Trade)		0.850	0.195

Table A8: United States Dropped : Sub-Sample analysis of Imports (WTO period)

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	0.0004 (0.0170)	-0.0157 (0.0144)	-0.1824*** (0.0473)
(log) Political relations (UNGA)	-0.2480*** (0.0822)	-0.2416*** (0.0749)	-0.2150*** (0.0719)
(log) GDP	-0.7975 (1.2429)	-1.6094 (1.2221)	-1.6746 (1.2154)
(log) Population	5.6634** (2.2432)	5.8522** (2.2916)	6.4096*** (2.4371)
Polity	-0.0531 (0.1039)	-0.0695 (0.1114)	-0.0907 (0.1072)
Import Share of Strategic Trade		2.6602*** (0.7627)	1.2748 (0.8059)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.2143*** (0.0554)
Private			
Weighted MFN Tariff	-0.0728*** (0.0229)	-0.0753*** (0.0234)	-0.1837*** (0.0703)
(log) Political relations (UNGA)	-0.1331 (0.1184)	-0.1321 (0.1178)	-0.1148 (0.1197)
(log) GDP	1.7839 (1.4785)	1.6568 (1.5329)	1.6144 (1.5368)
(log) Population	4.3372 (3.2033)	4.3668 (3.2099)	4.7294 (3.3062)
Polity	0.0302 (0.0577)	0.0276 (0.0563)	0.0138 (0.0572)
Import Share of Strategic Trade		0.4165 (0.7001)	-0.4847 (0.8542)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.1394 (0.0871)
Number of observations	1639	1639	1639
Wald test p-value (Tariffs)	0.001	0.006	0.986
Wald test p-value (Strategic Trade)		0.004	0.076

A.4 Dropping Oil States

Table A9: Oil States dropped: Sub-Sample analysis of Imports (Pre-WTO period)

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	-0.0537*	-0.0469	-0.0543
	(0.0288)	(0.0285)	(0.0439)
(log) Political relations (UNGA)	-0.0782	-0.0886	-0.0877
	(0.1021)	(0.1106)	(0.1111)
(log) GDP	-1.0281	-1.5909	-1.6145
	(2.0322)	(2.2516)	(2.2611)
(log) Population	10.5348**	10.9805**	10.7476**
	(4.2926)	(4.5157)	(4.1944)
Polity	-0.0897	-0.0586	-0.0594
	(0.0638)	(0.0719)	(0.0726)
Import Share of Strategic Trade		1.1468*	0.9116
		(0.6582)	(1.1251)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.0161
			(0.0687)
Private			
Weighted MFN Tariff	0.0152	0.0310	0.1008***
	(0.0246)	(0.0290)	(0.0315)
(log) Political relations (UNGA)	0.4307	0.2333	0.2251
	(0.3061)	(0.2961)	(0.2886)
(log) GDP	2.8165	2.4938	2.7165
	(3.3604)	(3.4344)	(3.3324)
(log) Population	-14.9648	-16.0650*	-13.8730
	(9.2463)	(9.1386)	(8.9748)
Polity	-0.0787	-0.0479	-0.0397
	(0.1290)	(0.1365)	(0.1374)
Import Share of Strategic Trade		1.4809	3.6948***
		(1.0166)	(1.2093)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			-0.1518***
			(0.0423)
Number of observations	949	851	851
Wald test p-value (Tariffs)	0.035	0.023	0.001
Wald test p-value (Strategic Trade)		0.792	0.073

Table A10: Oil States dropped: Sub-Sample analysis of Imports (WTO period)

	(1)	(2)	(3)
SOE			
Weighted MFN Tariff	0.0132 (0.0185)	-0.0060 (0.0156)	-0.1744*** (0.0491)
(log) Political relations (UNGA)	-0.1857** (0.0916)	-0.1939** (0.0840)	-0.1644** (0.0799)
(log) GDP	-0.5823 (1.1564)	-1.5153 (1.1647)	-1.5351 (1.1815)
(log) Population	13.3235*** (3.8589)	13.4885*** (3.8386)	14.7129*** (3.9390)
Polity	0.0397 (0.0581)	0.0322 (0.0472)	-0.0004 (0.0508)
Import Share of Strategic Trade		2.9540*** (0.8540)	1.5212* (0.8996)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.2168*** (0.0577)
Private			
Weighted MFN Tariff	-0.0714*** (0.0250)	-0.0774*** (0.0253)	-0.1829** (0.0736)
(log) Political relations (UNGA)	-0.1071 (0.1347)	-0.1097 (0.1314)	-0.0912 (0.1341)
(log) GDP	-0.4282 (1.6360)	-0.7185 (1.6566)	-0.7309 (1.6540)
(log) Population	15.0947*** (4.8905)	15.1461*** (4.8994)	15.9134*** (4.8881)
Polity	-0.0301 (0.0691)	-0.0324 (0.0666)	-0.0528 (0.0665)
Import Share of Strategic Trade		0.9192 (0.7530)	0.0212 (0.8682)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade			0.1358 (0.0888)
Number of observations	1337	1337	1337
Wald test p-value (Tariffs)	0.000	0.002	0.915
Wald test p-value (Strategic Trade)		0.019	0.166

A.5 Controlling for Observations with Zero Strategic Trade Share

Table A11: Controlling for Zero Strategic Trade: Sub-Sample analysis of Imports
(Pre-WTO period)

	(2)	(3)
SOE		
Weighted MFN Tariff	-0.0443 (0.0274)	-0.0433 (0.0408)
Import Share of Strategic Trade	1.1729** (0.5887)	1.2004 (0.9900)
Zero strategic imports	-0.9330* (0.4766)	-0.9323* (0.4764)
(log) Political relations (UNGA)	-0.1610* (0.0973)	-0.1612 (0.0986)
(log) GDP	-0.5159 (1.5736)	-0.5163 (1.5719)
(log) Population	9.5017*** (3.4742)	9.5230*** (3.2800)
Polity	-0.0518 (0.0611)	-0.0517 (0.0618)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade		-0.0021 (0.0642)
Private		
Weighted MFN Tariff	0.0272 (0.0280)	0.0967*** (0.0299)
Import Share of Strategic Trade	0.8587 (1.0116)	2.8945** (1.1620)
Zero strategic imports	-1.1449* (0.6885)	-1.0897 (0.6626)
(log) Political relations (UNGA)	0.0112 (0.2937)	-0.0035 (0.2899)
(log) GDP	3.4710 (2.8846)	3.4479 (2.6964)
(log) Population	-13.0358 (8.2319)	-11.4573 (8.0743)
Polity	0.0189 (0.1163)	0.0280 (0.1170)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade		-0.1555*** (0.0402)
Number of observations	1057	1057
Wald test p-value (Tariffs)	0.032	0.003
Wald test p-value (Strategic Trade)	0.797	0.266

Table A12: Controlling for Zero Strategic Trade: Sub-Sample analysis of Imports (WTO period)

	(2)	(3)
SOE		
Weighted MFN Tariff	-0.0144 (0.0140)	-0.1748*** (0.0447)
Import Share of Strategic Trade	2.2672*** (0.8113)	0.9666 (0.8536)
Zero strategic imports	-1.7782*** (0.6502)	-1.6326*** (0.6188)
(log) Political relations (UNGA)	-0.2300*** (0.0716)	-0.2054*** (0.0689)
(log) GDP	-1.2536 (1.1931)	-1.3425 (1.1885)
(log) Population	5.5357*** (2.1386)	6.0980*** (2.2894)
Polity	-0.0801 (0.1148)	-0.0996 (0.1111)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade		0.2062*** (0.0531)
Private		
Weighted MFN Tariff	-0.0735*** (0.0236)	-0.1729** (0.0690)
Import Share of Strategic Trade	-0.1217 (0.7006)	-0.9278 (0.8758)
Zero strategic imports	-2.4429*** (0.9140)	-2.3526*** (0.8983)
(log) Political relations (UNGA)	-0.1160 (0.1085)	-0.1007 (0.1105)
(log) GDP	2.1457 (1.4092)	2.0906 (1.4217)
(log) Population	3.9322 (3.0218)	4.2807 (3.1119)
Polity	0.0130 (0.0561)	0.0010 (0.0571)
Weighted MFN Tariff $\times$ Import Share of Strategic Trade		0.1278 (0.0855)
Number of observations	1650	1650
Wald test p-value (Tariffs)	0.008	0.980
Wald test p-value (Strategic Trade)	0.004	0.062

A.6 Using Unweighted Effectively Applied Tariffs

Table A13: Unweighted Tariffs: Sub-Sample analysis of Imports (Pre-WTO period)

	(1)	(2)	(3)
SOE			
Average Effectively Applied Tariff	-0.0891*	-0.0628	-0.0662
	(0.0470)	(0.0472)	(0.0576)
(log) Political relations (UNGA)	-0.1655*	-0.1699*	-0.1680*
	(0.0859)	(0.0966)	(0.0990)
(log) GDP	0.9626	-0.6880	-0.6713
	(1.8600)	(1.6746)	(1.6792)
(log) Population	8.7030**	9.2071**	9.1144***
	(3.4636)	(3.6298)	(3.4232)
Polity	-0.0848	-0.0522	-0.0526
	(0.0614)	(0.0629)	(0.0634)
Import Share of Strategic Trade		1.6724***	1.5110
		(0.5101)	(1.2521)
Average Effectively Applied Tariff $\times$ Import Share of Strategic Trade			0.0099
			(0.0696)
Private			
Average Effectively Applied Tariff	0.0047	0.0217	0.0717**
	(0.0305)	(0.0311)	(0.0298)
(log) Political relations (UNGA)	0.1308	0.0126	-0.0159
	(0.2966)	(0.2933)	(0.2882)
(log) GDP	4.0739	3.8370	3.5919
	(2.7953)	(2.9376)	(2.7799)
(log) Population	-10.6484	-12.6853	-11.3187
	(8.2074)	(8.2452)	(8.1089)
Polity	-0.0069	0.0123	0.0180
	(0.1130)	(0.1187)	(0.1181)
Import Share of Strategic Trade		1.2946	3.6750***
		(0.8592)	(1.1744)
Average Effectively Applied Tariff $\times$ Import Share of Strategic Trade			-0.1461***
			(0.0550)
Number of observations	1181	1057	1057
Wald test p-value (Tariffs)	0.052	0.074	0.024
Wald test p-value (Strategic Trade)		0.718	0.195

Table A14: Unweighted Tariffs: Sub-Sample analysis of Imports (WTO period)

	(1)	(2)	(3)
SOE			
Average Effectively Applied Tariff	-0.0706 (0.0536)	-0.0685 (0.0485)	-0.1981** (0.0892)
(log) Political relations (UNGA)	-0.2412*** (0.0869)	-0.2372*** (0.0810)	-0.2343*** (0.0813)
(log) GDP	-0.9273 (1.2740)	-1.8644 (1.2950)	-1.6646 (1.2180)
(log) Population	4.9698** (2.0378)	5.3597** (2.1585)	5.4560** (2.1755)
Polity	-0.0325 (0.0999)	-0.0589 (0.1086)	-0.0620 (0.1028)
Import Share of Strategic Trade		2.7824*** (0.8214)	0.8549 (1.2703)
Average Effectively Applied Tariff $\times$ Import Share of Strategic Trade			0.2515** (0.1085)
Private			
Average Effectively Applied Tariff	-0.1764*** (0.0638)	-0.1764*** (0.0638)	-0.1842* (0.1029)
(log) Political relations (UNGA)	-0.1677 (0.1323)	-0.1678 (0.1326)	-0.1676 (0.1326)
(log) GDP	1.5413 (1.5527)	1.5633 (1.6049)	1.5754 (1.5788)
(log) Population	3.5752 (2.9636)	3.5660 (2.9553)	3.5719 (2.9660)
Polity	0.0165 (0.0613)	0.0172 (0.0607)	0.0170 (0.0604)
Import Share of Strategic Trade		-0.0655 (0.6991)	-0.1819 (1.4025)
Average Effectively Applied Tariff $\times$ Import Share of Strategic Trade			0.0152 (0.1481)
Number of observations	1509	1509	1509
Wald test p-value (Tariffs)	0.181	0.146	0.910
Wald test p-value (Strategic Trade)		0.000	0.478