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Tariff Pass-through: The Case of China's WTO Accession

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Keywords: Tariff, Pass-through, WTO accession
JEL Classification: F13, F14

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Abstract

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1. Introduction

Tariff pass-through, defined as the elasticity of tariff-inclusive import prices concerning tariffs, is a variable of central interest in trade. It is a key determinant of the effects of trade liberalization on trade volumes, factor prices, and welfare. It is also essential to the design of optimal trade policies. How large is the tariff pass-through? What factors determine pass-through? Unfortunately, international economists have not yet reached a consensus on these important questions.

In a recent survey, Fajgelbuam and Khandelwal (2021) summarized nine studies that directly estimate tariff pass-through before 2019. Most studies conclude that tariff pass-through is incomplete. i.e., the tariff-inclusive price decreases by less than 1% when the tariff rate falls by 1%. Furthermore, research on export supply and import demand elasticity suggests that tariff pass-through is incomplete (Romalis, 2007; Broda and Weinstein, 2006; Broda et al., 2008; Soderbery, 2015; Irwin and Soderbery, 2021). In addition, the vast literature on exchange rate pass-through typically reveals an incomplete pass-through of exchange rate shocks to export or import prices (Burstein and Gopinath, 2014). These results are consistent with the textbook theory of the effects of tariffs on a large country, where the importer can manipulate the terms of trade by leveraging its market power. However, recent studies on the US–China trade war of 2018–2019 have dealt a heavy blow to the conventional result of incomplete pass-through. Several studies utilizing various data sources and methodologies find that tariff pass-through is nearly complete for both US imports from China and US exports to China.[2] Given that both the US and China are major players in global trade, the finding of complete pass-through challenges the standard trade theories. Therefore, it begs the question of how large the tariff pass-through is for a country as large as China. Unfortunately, except for the period of the US–China trade war, there is still a paucity of empirical evidence on this topic.[3]

This article provides additional evidence of tariff pass-through in China. Instead of examining the recent US–China trade war, we will examine an earlier event in which China experienced drastic tariff changes: its entry into the World Trade Organization (WTO) in 2001. China's average tariff rate decreased from 15% in 2000 to 10% in 2005, with substantial heterogeneity across products. We use monthly trade data at the firm-level to provide direct estimates of tariff pass-through into import prices. First, we provide reduced-form estimates of tariff pass-through by exploiting the variations tariff changes across products. Second, guided by a simple theoretical model under the

[2] Amiti et al. (2019, 2020), Fajgelbaum et al. (2020), and Cavallo et al. (2020) used product-level trade unit value data to document complete pass-through for US imports of a wide variety of products. Meanwhile, Flaaen et al. (2020) found complete pass-through for the washing machine sector in the US, and Amiti et al. (2019) and Fajgelbaum et al. (2020) also found complete pass-through of US exports to China. Using firm-level data from one province, Jiao et al. (2021) found a complete pass-through for Chinese exports to the US.

[3] Han et al. (2016) investigated the tariff pass-through into urban consumer prices in China and found that it is incomplete. As consumer prices include both domestic and imported goods as well as domestic distribution costs, incomplete pass-through is not surprising.

constant elasticity of substitution (CES) demand system and a general supply function, we structurally estimate export supply and import demand elasticity in China to inform the tariff pass-through determinants. We also look at how the pass-through rate varies in relation to China's global import market power. Our reduced-form estimates indicate that the tariff pass-through is complete for China's imports during the WTO accession period. This result is consistent with the recent evidence of full pass-through for Chinese imports during the US–China trade war. The structural estimation of supply and demand elasticity demonstrates that Chinese importers are confronted with a horizontal export supply curve, which also implies complete pass-through. The complete pass-through result is robust across ownership types and product end-use. More surprisingly, the tariff pass-through and China's market share in global imports are not correlated. Even for products where China accounts for more than 30% of global imports, we still find a complete pass-through of tariffs into import prices.

The rest of the paper is structured as follows. Section 2 presents a simple theoretical model of tariffs, prices, and trade. This will lay the groundwork for subsequent structural estimation. Section 3 introduces empirical strategies. Section 4 describes the context and data. Section 5 presents the baseline results, performs robustness checks, and discusses the role of China's market power in global imports. Lastly, Section 6 concludes the paper.

2. Theoretical Framework

Consider a world with two countries: China and the rest of the world.[4] The preferences of Chinese consumers are represented by a constant elasticity of substitution (CES) utility function

$$U = (\sum_g m_g^{\frac{\rho-1}{\rho}})^{\frac{\rho}{\rho-1}}, \qquad (1)$$

where m_g is the import quantity of good g. $\rho > 0$ is the elasticity of substitution across products and is also the import demand elasticity. Utility maximization determines the import demand of product g:

$$m_g = p_g^{-\rho} P^{\rho-1} E, \qquad (2)$$

where p_g is the tariff-inclusive price of product g, E is total expenditure, and P is the CES price index defined by

$$P = (\sum_g p_g^{1-\rho})^{\frac{1}{1-\rho}}. \qquad (3)$$

[4] We consider all countries except China as a whole because we focus on the impact of MFN tariffs, which apply uniformly to all WTO member countries.

Taking logs of equation (2) yields the estimable demand equation:

$$\ln m_g = -\rho \ln p_g + (\rho - 1) \ln P + \ln E . \tag{4}$$

We now introduce tariffs into the economy. Product *g* imports are subject to an ad-valorem tariff rate of τ , and the tariff-inclusive price can be expressed as

$$\ln p_g = \ln(1+\tau_g) p_g^* , \tag{5}$$

where p_g^* is the tariff-exclusive price and is endogenous to the supply and demand conditions in the world market.

On the supply side, we assume a general export supply function:

$$p_g^* = z m_g^{\ \omega} , \tag{6}$$

where *z* is a supply shifter and $\omega > 0$ represents the inverse export supply elasticity.

Combining equations (2) and (6), taking logs, and differentiating with respect to tariffs, we obtain the elasticity of import quantity and prices to tariffs.

$$\frac{\partial \ln p_g^*}{\partial \ln(1+\tau_g)} = \frac{-1}{1+1/\omega\rho} \tag{7}$$

$$\frac{\partial \ln m_g}{\partial \ln(1+\tau_g)} = \frac{-1}{\omega+1/\rho} \tag{8}$$

Equations (7) and (8) are our key theoretical predictions.

Equation (7) illustrates the key determinants of the tariff-exclusive price response to tariff changes. We obtain several predictions. First, when supply elasticity is not infinite (i.e., $\omega \neq 0$), an increase in tariffs reduces the import price exclusive of tariffs. In this instance, the exporter absorbs a portion of the tariff changes, resulting in an incomplete tariff pass-through. Second, a larger supply elasticity (i.e., smaller ω) is associated with a higher pass-through rate (i.e., fewer changes in p_g^*). A greater supply elasticity suggests that the exporter possesses a greater market power. As a result, the exporter absorbs a smaller portion of the tariff changes and passes on a greater portion of the tariff costs to consumers. Third, when the supply elasticity approaches infinite (i.e., ω approaches 0), the price response approaches 0. In this case, the exporter modifies factory prices minimally, and the tariff pass-through is complete.

Similarly, equation (8) reveals the determinants of the import quantity response to tariff changes. An increase in tariff reduces import quantity, and the response is increasing in both supply and demand elasticity.

The theoretical model demonstrates that supply and demand elasticities are the most important determinants of the degree of tariff pass-through and quantity response. These parameters will be estimated structurally in the empirical study.

3. Empirical Strategy

3.1 Reduced-form Estimation

To identify the tariff effects, we estimate the following equation at the firm-product–month level:

$$\Delta \ln y_{fpt} = \alpha + \beta \Delta \ln(1+\tau_{pt}) + \nu_{fp} + \eta_t + \varepsilon_{fpt}, \qquad (9)$$

where f is firm, p is Harmonized System (HS) eight-digit product, and t denotes month. The outcome variable $\Delta \ln y_{fpt}$ includes log changes in import value, import quantity, and tariff-exclusive and tariff-inclusive import price. The key independent variable $\Delta \ln(1+\tau_{pt})$ is the log change of 1 plus the tariff rate. Meanwhile, the coefficient of interest, β, captures the elasticity of the outcome variables with respect to tariffs. The effects are determined by comparing the changes in outcome across products with varying degrees of tariff adjustments. The inclusion of firm-product fixed effects and time fixed effects captures the impact of firm-product-specific characteristics and macroeconomic shocks. Standard errors are clustered at the HS eight-digit product level.

Equation (9) captures the contemporaneous effects of tariff changes on imports. One concern is that tariffs may have lasting effects. Literature on exchange rate pass-through also finds that pass-through rates vary in the short and long term (Campa and Goldberg, 2005). To estimate the long term impacts of tariff changes, we estimate the following event-study equation:

$$\Delta \ln y_{fpt} = \alpha + \sum_{s=0}^{11} \beta_s \Delta \ln(1+\tau_{p,t-s}) + \nu_{fp} + \eta_t + \varepsilon_{fpt} \qquad (10)$$

In addition to the contemporaneous tariff change τ_{pt}, we further include 11 lags of month-to-month tariff changes. All other variables are identical to equation (9). This equation allows imports to be affected by all tariff changes within the previous year. The long-run effects of tariff changes are estimated by adding the coefficients before all tariff changes: $\sum_{s=0}^{11} \beta_s$. We report this long-run effect in Section 5.1.

3.2 Estimation of Supply and Demand Elasticity

The theoretical section shows that supply and demand elasticities determine the pass-through rate and the quantity elasticity to tariffs. Zoutman et al. (2018) and Fajgelbaum et al. (2020) showed the possibility of simultaneously estimating supply and demand

elasticities using a single instrument: tariff change. The central concept is that the quantity demanded depends on the price inclusive of tariffs, whereas the quantity supplied depends on the price exclusive of tariffs. Therefore, the price variations in tariff-inclusive and tariff-exclusive terms can be used to identify both the supply and demand elasticities. Specifically, from equations (2) and (6), we estimate the following demand and supply equations:

$$\Delta \ln m_{fpt} = \alpha - \rho \Delta \ln p_{fpt} + v_{fp} + \eta_t + \varepsilon_{fpt}, \quad (11)$$

$$\Delta \ln p^*_{fpt} = \alpha + \omega \Delta \ln m_{fpt} + v_{fp} + \eta_t + \varepsilon_{fpt}. \quad (12)$$

Equation (11) is a demand equation that relates changes in import quantity to changes in price inclusive of tariffs. Equation (12) is a supply equation that relates tariff-exclusive price changes to import quantity changes. Following Fajgelbaum et al. (2020), we use product level tariff changes $\Delta \ln(1+\tau_{pt})$ as instruments for $\Delta \ln p_{fpt}$ and $\Delta \ln m_{fpt}$ in equations (11) and (12), respectively. For both equations, we include firm-product fixed effects (v_{fp}) and time fixed effects (η_t).

4. Background and Data

4.1 China's WTO Accession and Tariff Reduction

China joined the WTO on December 11, 2001, and committed to binding all import tariffs at an average of 9%. Although China had previously reduced tariffs, average tariffs in 2000 remained high at 15%, with a large standard deviation of 9%. After the WTO accession, China gradually lowered its import tariffs during 2002–2005, in accordance with its tariff reduction commitments. In 2005, the average tariff rate was reduced to 9.8% and remained relatively stable thereafter (Figure 1). A notable feature of the tariff reduction is China's commitment to reduce not only the average tariff rate but also the cross-product dispersion of tariff rates. Therefore, products with a higher initial tariff rate experienced a greater reduction in tariffs. The correlation between the change in tariffs from 2000 to 2006 and the initial tariff rate in 2000 is −0.7. As shown in Table 1, some products experienced a tariff reduction of approximately 50 percentage points, whereas over 10% of products experienced no tariff reduction at all. We will exploit such cross-product variations in tariff changes for identification purposes.

4.2 Data

The primary data source is the universe of Chinese firms' monthly trade transaction data in 2000–2006. We focus on this period because China's tariff liberalization after

joining the WTO mostly occurred between 2002 and 2005. The General Administration of Customs of China collects and maintains the data, which include trade value and quantity by firm, product (HS eight-digit), destination (origin) country, and trade mode. We restrict the sample to ordinary trade imports since other trade modes, particularly processing trade, are not subject to tariffs (Dai et al., 2016). We clean the data by dropping observations whose price ratio between two consecutive months is smaller than 1/3 or larger than 3 to alleviate outliers' effect on results.[5]

We augment the trade data with China's applied tariff rate at an HS eight-digit level, also obtained from the General Administration of Customs of China.

5. Results

5.1 Baseline Results

Table 2 provides the estimation results for equation (9). As shown in column 1, following a 1-percentage-point reduction in tariffs, the price exclusive of tariffs decreases by 0.055%, and the coefficient is not statistically significant. Therefore, we cannot reject the hypothesis that the tariff cut is passed through completely to import prices. Column 2 shows that import value increases by 0.8% following a 1-percentage-point tariff reduction. Column 3 displays an increase of 0.75% in imports.

The finding of a quantity elasticity less than 1 is unexpected, given that the literature typically finds demand elasticity to be greater than 1 (Broda and Weinstein, 2006). One explanation is that equation (9) only captures the contemporaneous effect of tariffs, whereas the full impact of tariffs takes time to materialize. Therefore, we estimate equation (10) and report the sum of coefficients before all contemporaneous and lagged changes in tariffs. In column 1, tariff-exclusive prices still do not fluctuate significantly with tariff changes, even after one year of the tariff cut. This indicates that pass-through is still complete for a one year horizon. However, the value and quantity elasticities increase significantly to 2.7 and 2.8, respectively. The scope of responses is generally consistent with the existing literature.

Table 3 reports the results of demand and supply elasticity estimation. We use tariffs as instruments for both the demand and supply equations, as explained in Section 3. Columns 1 and 2 show the results of regressing log changes of tariff-inclusive prices and import quantity against log tariff changes. These are the first-stage results. For 1 percentage point of tariff cut, the tariff-inclusive price decreases by 1.03%, and we cannot reject that the elasticity is statistically equal to 1. This confirms the complete pass-through result in Table 2. Columns 3 and 4 report the second-stage result of equations (11) and (12). The inverse export supply elasticity is estimated to be 0.074, which is statistically insignificant. Therefore, we cannot reject the hypothesis that the

[5] Our baseline results include all importing firms, including both manufacturers and trade intermediaries. We also experimented with conducting the entire analysis on a sample that excluded all trade intermediaries. The results are similar.

export supply elasticity is infinite and that the export supply curve is horizontal. The infinite supply export elasticity is consistent with the complete pass-through rate reported in column 1. We obtain an import demand elasticity of 0.79 in column 4. As previously explained, the small magnitude of demand elasticity may have been driven by the first-difference specification, which captures only the contemporaneous effects of tariffs.

The complete pass-through result is consistent with recent evidence regarding the US–China trade conflict. Specifically, Fajgelbaum et al. (2020) examined how the prices of US exports to China adjust in response to China's retaliatory tariffs in 2018–2019. Our analysis differs from theirs in several respects. First, we focus on a different period and the impact of MFN tariffs as opposed to tariffs imposed on a specific trading partner.[6] Second, we utilize data at the firm-product level, whereas they utilize data at the product level. Third, we compare price changes across products, whereas they exploit the variation across trading partners. Lastly, we focus on tariff reductions, whereas they focus on tariff increases. Interestingly, despite all of these disparities, the complete pass-through result from their study is also observed here.

5.2 Robustness Checks

We perform a series of robustness tests on the complete pass-through result. First, we check whether complete pass-through exists between firms with distinct ownership. We distinguish foreign-invested enterprises (FIE), state-owned enterprises (SOE), and private firms. FIEs may be involved in transfer pricing, so their prices may be less indicative of market power. The decision-making of SOEs is typically regarded as being less market-driven. However, columns 1–3 of Table 5 indicate that the complete pass-through results hold true regardless of the firm's ownership structure. Following a 1-percentage-point reduction in tariffs, the coefficient in column 3 suggests that private firms increased their tariff-exclusive import price by 0.17%. This magnitude of response is the largest of the three ownership types, consistent with our hypothesis that private firms' price responses should be more sensitive to market conditions. However, the point estimate is not statistically significant. Second, we conduct separate pass-through regressions for each type of product categorized by its final use: agricultural goods, intermediate inputs, capital goods, and consumer goods. Amiti et al. (2019,2020) find tariff pass-through is different across product end-use, particularly for steel, for US imports during the US–China trade war. However, results in columns 4–7 shows that for China's WTO accession period, all product groups have complete pass-through. Consumer goods exhibit the largest price response (coefficient= −0.16), whereas the responses for all other types of goods are extremely limited.

Third, China's tariff changes in 2002–2005 strictly followed its tariff reduction commitments made to the WTO in December 2001. Therefore, the tariff reduction in later years may have been anticipated by firms, and firms may delay imports to take

[6] Arguably, the reduction of MFN tariffs following WTO membership should be viewed as a permanent shock, whereas the imposition of tariffs during the US–China trade war should be viewed as a temporary shock.

advantage of lower costs in the future. We restrict the sample to 2000–2002, when the WTO commitments were just released to rule out such possibilities. We expect the tariff changes during this period will be less anticipated, so firms' responses will be more consistent with a trade liberalization that was unexpected. In Column 8 of Table 3, we obtain a statistically insignificant coefficient of−0.027. Therefore, even when we restrict the analysis to a period of unanticipated tariff changes, we still observe complete tariff pass-through.

5.3 The Role of Market Share

Standard trade theory suggests that tariff pass-through is related to the market strength of the importing country. Greater market power of the importer translates into pass-through that is less complete. In the extreme case in which the importing nation has no market power (i.e., a small open economy), the export supply curve is horizontal, and tariff pass-through is complete. This section examines the relationship between tariff pass-through and China's market power in the global economy.

Market share is a widely utilized indicator of market power. In particular, market power is larger if the importer accounts for a larger proportion of global demand. Therefore, we check whether tariff pass-through differs for products in which China has a large or small share of the global import market. To accomplish this, we compute the annual average of China's share of global imports for each HS four-digit product from 2000 to 2006. Then, we divided all products into four distinct market share groups: (a) share < 2%; (b) 2% ≤ share < 5%; (c) 5% ≤ share < 30%; and (d) 30% ≤ share < 1%. Then, we run the baseline pass-through regression separately for each group. We also run a specification where we interact the tariff changes with the market share group dummies.

The results are reported in Table 4. In general, the results suggest complete pass-through in all market share groups, as we find the price coefficients to be statistically insignificant for all market share groups. When pooling all the groups together and running a specification with tariffs that interacted with the group dummies, we find that all interactions are statistically insignificant. Surprisingly, the point estimates in columns 1–4 suggest that prices exclusive of tariffs responded more to tariff changes for products with a smaller market share. For example, the point estimate suggests a 0.14% increase in tariff-exclusive prices following a 1-percentage-point reduction in tariffs for products in which China accounts for less than 2% of global imports. Meanwhile, for products in which China holds a market share of more than 30%, the point estimate indicates that tariff-exclusive prices decreased by a negligible 0.027%.

6. Conclusion

This paper adds to the literature on tariff pass-through by estimating the pass-through of tariffs into import prices in China during the WTO accession period. We find

strong evidence of complete tariff pass-through using firm-level monthly trade data. We also structurally estimate export supply and import demand elasticity for China and show that Chinese importers face an infinite export supply elasticity. Surprisingly, the degree of pass-through seems to be uncorrelated with China's market power in global imports. Even for products where China accounts for more than 30% of global imports, we still find complete tariff pass-through into import prices.

In general, this evidence is consistent with recent studies documenting complete tariff pass-through for both China and the US during the 2018–2019 trade war. However, given China's substantial market share in global trade, it is surprising to find results that depict China as a small, open economy. One possible explanation is that Chinese imports are made by many importers. Although Chinese imports account for a significant share of global trade, the market power of individual importers may be limited. We leave the investigation of such explanations to future work.

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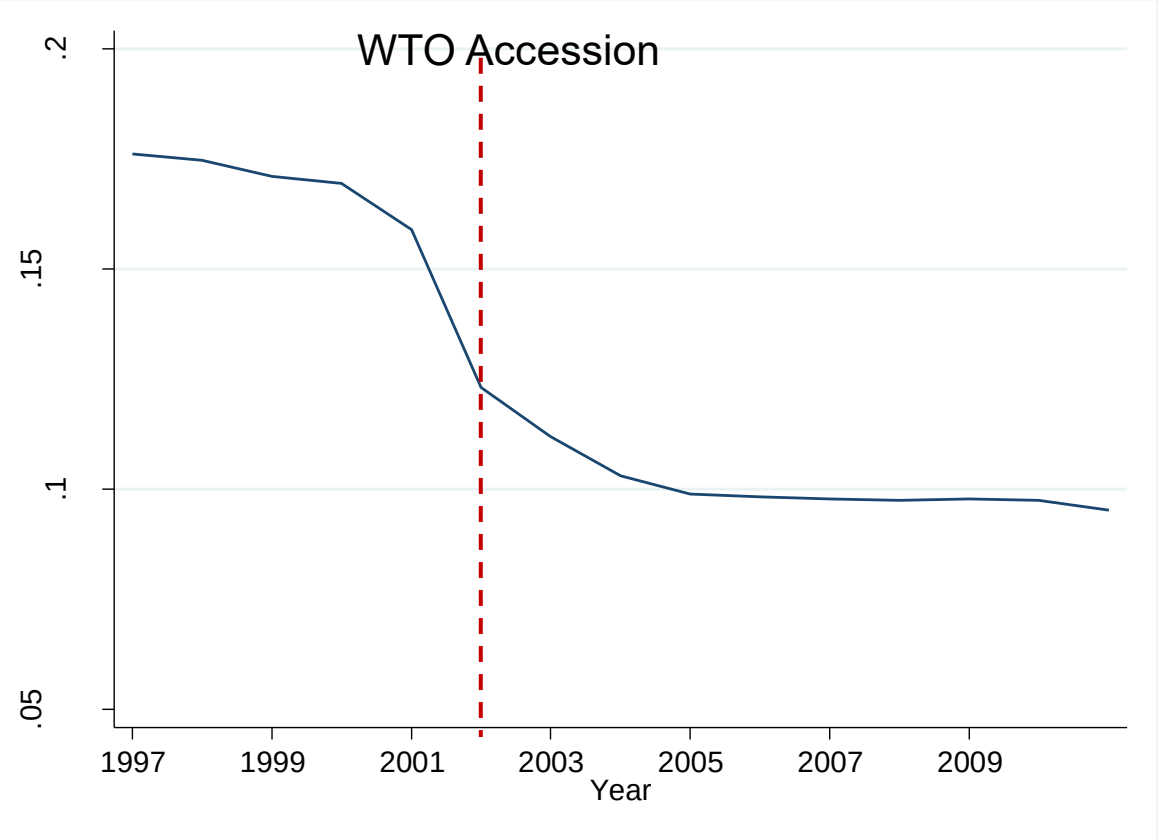
Figure 1. China's Average Tariff Rate, 1997–2010



Note: The figure displays the simple average of tariff rates across all HS 8-digit goods. Tariff data are obtained from the General Administration of Customs of China.

Source: General Administration of China Customs, and author's own calculation.

Table 1 Distribution of Tariff Changes, 2000–2006

Percentile	Tariff change
1st	-0.49
5th	-0.21
25th	-0.1
50th	-0.05
75th	-0.02
90th	0
95th	0

Note: This table illustrates the distribution of the change in China's applied tariff rate at the HS8 level between 2000 and 2006.

Source: General Administration of China Customs, and author's own calculation.

Table 2 Reduced-form Results

	(1) $\Delta \ln p^*$	(2) $\Delta \ln p^* m$	(3) $\Delta \ln m$	(4) $\Delta \ln p^*$	(5) $\Delta \ln p^* m$	(6) $\Delta \ln m$
$\Delta \ln(1+\tau)$	-0.055	-0.803**	-0.748**			
	(0.045)	(0.254)	(0.256)			
$\sum_{S=0}^{11} \beta_S (1+\tau_{t-s})$				0.091	-2.702***	-2.793**
				(0.395)	(1.011)	(1.075)
Firm-HS8 FE	yes	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes	yes
N	5,378,736	5,378,736	5,378,736	1,049,365	1,049,365	1,049,365
R2	0.097	0.081	0.08	0.049	0.057	0.08

Notes: This table summarizes the estimation results of equations (9) and (10). In columns (1)–(3), the dependent variables are log tariff-exclusive prices, log import value, and log import quantity. Columns (4)–(6) display the sum of coefficients prior to all contemporaneous and lagging tariff adjustments. All regressions contain both firm-HS8 and time fixed effects. Standard errors are clustered at the HS 8-digit level and reported in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4 Supply and Demand Elasticity

	(1)	(2)	(3)	(4)
	supply elasticity		demand elasticity	
Dep. Var.:	$\Delta \ln m$	$\Delta \ln p^*$	$\Delta \ln p$	$\Delta \ln m$
Δlnm		0.074		
		(0.068)		
Δlnp				-0.792**
				(0.269)
$\Delta \ln (1+\tau)$	-0.748**		0.945***	
	(0.256)		(0.045)	
N	5,378,736	5,378,736	5,378,736	5,378,736
Firm-HS8 FE	yes	yes	yes	yes
Time FE	yes	yes	yes	yes

Note: This table reports the two-stage least squares estimation results of equations (11) and (12). All regressions include firm-HS8 and time fixed effects. Standard errors are clustered at HS 8-digit level and reported in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5 Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	by ownership type			by product type				2000-2002 sample
$\Delta \ln(1+\tau)$	-0.129	-0.060	-0.174	-0.049	0.022	-0.030	-0.160	-0.027
	(0.068)	(0.099)	(0.119)	(0.197)	(0.095)	(0.091)	(0.130)	(0.053)
Type	state-owned	foreign	private	agricultural	input	capital	consumer	
Firm-HS8 FE	yes	yes	yes	yes	yes	yes	yes	
Time FE	yes	yes	yes	yes	yes	yes	yes	
N	1,553,580	1,790,900	761,054	79,942	2,009,375	2,016,788	535,979	1,408,694
R2	0.09	0.10	0.11	0.09	0.09	0.10	0.10	0.13

Note: This table reports the estimation results of equation (9). The dependent variable is log tariff-exclusive prices. Columns (1)–(3) report the results for state-owned enterprises, foreign-owned, and private firms. Columns (4)–(7) report the results for agricultural goods, intermediate inputs, capital goods, and consumer goods. Column (8) only presents data for 2000–2002. All regressions contain both firm-HS8 and time fixed effects. Standard errors are clustered at HS 8-digit level and reported in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6 Pass-through and China's share in world imports

Dep. Var.: Δlnp^*	(1)	(2)	(3)	(4)	(5)
$\Delta \ln(1+\tau)$	-0.140	-0.078	-0.012	0.027	-0.077
	(0.094)	(0.108)	(0.061)	(0.065)	(0.077)
$\Delta \ln(1+\tau) * ML$					0.001
					(0.102)
$\Delta \ln(1+\tau) * MH$					0.025
					(0.086)
$\Delta \ln(1+\tau) * High$					0.191
					(0.145)
China import share	Below 2%	2%-5%	5%-30%	30% above	
Firm-HS8 FE	yes	yes	yes	yes	yes
Time FE	yes	yes	yes	yes	yes
N	911,314	1,894,571	2,440,502	123,424	5,369,811

Note: This table displays the estimation results for equation (9). Sample in columns (1)–(4) are products with China's share of global imports below 2%, 2%–5%, 5%–30%, and 30% above, respectively. Column (5) illustrates the relationship between tariff changes and dummy variables for various import share ranges. All regressions incorporate the firm-HS 8-digit code fixed effects and time fixed effects. Standard errors are clustered at HS 8-digit level and reported in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.