Local Government Debt Expansion under Trade Shocks: Evidence from China

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Abstract

Governments have incentives to expand debt in response to adverse shocks, yet such expansions are constrained by political and fiscal institutions. In this paper, we use the U.S.-China trade conflict as a quasi-natural experiment to study the debt expansion of Chinese local governments and reveal the strategic behavior of governments under the institutional restrictions of debt financing quotas. Based on data for Chinese cities from 2015 to 2022, we construct the refined city level tariff shock exposure measurements, distinguishing the export (the U.S. side tariff) and import (the China side retaliatory tariff) tariff shocks. We investigate how the institutional characteristics of fiscal instruments shape city governments' differential responses by comparing government general debt, special-purpose debt, and implicit debt through local government financing vehicles. We empirically find that provincial governments prioritize the debt need of cities severely hit by export tariff shocks at the expense of cities primarily exposed to import tariff shocks. This intra-provincial reallocation of debt quotas is implemented through general debt which is more discretional to the provincial governments. Moreover, the official debt financing needs are not fully met, leading to a greater reliance on implicit debt.

Keywords: Local government debt; Trade shocks; Fiscal institutions; Implicit government debt

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1. Introduction

The expansion and constraint of government debt is one of the central themes in public finance. When facing adverse shocks, governments have incentives to expand debt to offset the damage to economy and fiscal revenues. However, such debt expansions are often constrained by financing capacity in some contexts, and by political institutions in others. For instance, this debt expansion constraint takes the form of a statutory debt ceiling set by Congress in the United States; while it manifests as debt quotas imposed by the central government on subnational governments in China. In this paper, we use the U.S.-China trade conflict as a quasi-natural experiment to study the debt expansion of Chinese local governments to tariff shocks and reveal the strategic behavior of governments under specific institutional restrictions. Based on data for Chinese cities from 2015 to 2022, we construct the refined tariff shock exposure measurements for cities, distinguishing the export and import tariffs shocks. We investigate how the institutional characteristics of fiscal instruments such as government general debt, special-purpose debt, and implicit debt in the form of local government financing vehicles (LGFVs) shape governments' differential responses in utilizing them.

In the canonical framework, governments engage in countercyclical debt financing to stabilize the economy in response to adverse shocks. Yet government debt expansion is not without limits. It is subject to multiple constraints, including financing capacity and/or various institutional restrictions. In a unitary state system such as China, this tension between debt expansion and constraint is particularly pronounced at the local government level, where the local government debt management operates under a hierarchical quota system. Specifically, the central government sets the provincial quotas and the provincial governments allocate quotas among the cities within its jurisdiction. The debt quota allocation mechanism thus constitutes the key institutional backdrop for understanding local government debt behavior. The outbreak of the U.S.-China trade conflict in 2018 provides an ideal external shock scenario for studying it. The United States imposed tariffs on Chinese products through three rounds of escalation, and China responded with multiple rounds of retaliatory tariffs on U.S. imports. This trade conflict is characterized by both comprehensiveness and intensity. And crucially, the tariff shocks were largely exogenous and abrupt, offering a rare quasi-natural experiment for identifying the causal impact of tariff exposure on local government debt.

To identify the causal effect of trade tariff shocks on local government debt, we construct a city-level panel dataset spanning 2015-2022, covering 292 cities. We distinguish the impacts of import tariff shocks and export tariff shocks and capture the differential responses of various government debt instruments, including official general debt, special-purpose debt, and implicit debt channeled through local government financing vehicles. Tariff abruptly increases during the U.S.-China trade conflict and serves as a source of external shocks. Meanwhile, the Chinese cities have heterogeneous exposures to these shocks due to their differential import and export structure. Thus, we employ a difference-in-difference style framework by regressing the change of government finance variables against the change of tariff rates combined with base period exposure of imports and exports across cities. We include city fixed effects to capture time-invariant unobserved heterogeneity at the city level, year fixed effects to capture common macroeconomic shocks faced by all cities each year, and year-by-province fixed effects to capture province-level time-varying unobserved characteristics. Additionally, we introduce a battery of baseline city

characteristics interacted with time trends as control variables to further mitigate endogeneity concerns, thereby isolating the net effect of tariff shocks and enhancing the reliability of causal identification.

Theoretically, both import and export tariff increases constitute adverse shocks to local economies, potentially generating debt expansion motivations by local governments. However, we have obtained a strikingly unexpected empirical finding that Chinese cities faced with larger import tariff shocks reduce their government general debt, which is in contrast with the theory. Meanwhile, cities faced with more export tariff shocks significantly increase their government general debt and special purpose debt, which is consistent with the theoretical predictions. To understand this anomaly, we first empirically confirm that both import and export tariffs exert negative economic consequences. Both reduce GDP growth, shrink trade, and lower local fiscal revenues, implying that the affected governments should have incentives to expand debts. We next provide evidence from expansion of implicit debt through LGFVs to show that cities affected by import tariff shocks indeed have the need of debt expansion.

We then further investigate the underlying mechanism behind the contraction in government general debt induced by import tariff shocks. Our analysis suggests that it stems from a supply-side constraint, namely, the intra-provincial allocation mechanism of debt quotas. Under China's local government debt management system, the central government first set debt quota for provinces. Then, provincial governments distribute their total quota among cities within their jurisdictions. When certain cities within a province face severe export tariff shocks, provincial governments tend to prioritize the debt needs of these cities, thereby compressing the debt quotas of other cities under the binding total quota constraint. Since the severity of import tariff shocks is typically lower than that of export tariff shocks, cities primarily exposed to import tariff shocks become the sacrificed parties in the quota reallocation process. Our evidence of the impacts of tariff shocks on local government debt quotas is consistent with this fiscal logic. Moreover, using import and export ratios at the base period to characterize cities' trade structure, we find that for cities with higher import-to-export ratio, import tariff shocks lead to larger reductions in general debt and greater declines in general debt quotas. Thus, this heterogeneity analysis further validates the debt quota reallocation mechanism.

Why does the quota reduction mechanism manifest primarily in general debt rather than special-purpose debt? This asymmetry arises from the distinct institutional attributes of the two government debt instruments. In China, debt quota allocation involves two considerations. The first one is related to top-down government transfer payments, and the other one is related to bottom-up public project demands. The special-purpose debt must account for major project expenditures and financing needs, emphasizing the principle of self-balancing project revenues; general debt, in contrast, focuses more on covering fiscal revenue-expenditure gaps, providing institutional space for provincial governments to conduct redistributive adjustments. If certain cities suffer severe adverse shocks, from the provincial government's perspective, the first response is to assist them through transfer payments, that is, tilting general debt quotas toward severely affected cities. On the other hand, the special-purpose debts are project driven, requiring local governments to first propose revenue-generating projects. While, the principle of self-balancing project revenues offers very limited room for provincial-level redistributive maneuvering.

Finally, we examine the structural composition of debt expansion, that is, how local city governments rely on different instruments to finance debt under the joint pressure of external shocks

and institutional constraints. We find that even for cities affected more by export tariff shocks with favorable genera debt quota allocation, these city governments do not expand all debt categories uniformly. Instead, they also exhibit significant structural adjustment: the share of implicit debt over the total debt and the share of special-purpose debt over the official debt both increases. This structural pattern reflects the differential institutional constraints faced by alternative financing channels. Implicit debt is not fully incorporated into statutory debt quota management. It is subject to weaker administrative constraints, making it an important channel when fiscal pressure mounts. Special-purpose debt, although classified as official debt, is backed by project revenues, offering relatively more operational flexibility. General debt, on the other hand, faces stricter budget constraints and quota controls, leaving the least room for adjustment.

Our research question is important for understanding the public finance in general, not only limited to the scope of China's public finance. From a comparative perspective, the political institutional constraints on government debt expansion exhibit a similar functional logic across different political systems. In China's unitary system, the constraint imposed by higher-level governments on the borrowing behavior of lower-level governments through debt quotas reflects an institutional restriction on debt expansion within a political hierarchy. In federal systems such as the United States, federal government debt expansion is constrained by the statutory debt ceiling set by the Congress. Although the debt ceiling has been repeatedly raised in practice, its essence as a political constraint mechanism bears a striking resemblance to the debt quota management in the Chinese context. Both systems seek to balance the need of responding to short-term economic shocks with the imperative of maintaining long-term fiscal sustainability; both face the tension between the rigidity of institutional constraints and the flexibility motivated by the economic reality; and both may induce governments to pursue alternative financing strategies that circumvent formal restrictions. Therefore, the study of strategic behavior by Chinese local governments under debt quota constraints carries research value that transcends the Chinese context. It reveals how governments innovate and substitute across debt instruments to achieve fiscal objectives when facing institutional constraints, offering a reference for understanding the government behavior of finance in countries operating under various constraints.

This paper is closely related to three strands of literature. The first strand examines the local economic effects of international trade shocks. Following the seminal work of Autor, Dorn, and Hanson (2013) on the China shock, a large body of research has documented that external trade shocks generate persistent and unevenly distributed effects on regional employment, incomes, and industrial structure (Amiti et al., 2019; Autor et al., 2021; Fajgelbaum et al., 2020). Subsequent studies further reveal that such shocks exhibit significant regional heterogeneity and can propagate across regions through industrial linkages and spatial spillovers (Huang et al., 2023; Chor and Li, 2024; Jiao et al., 2024). In the Chinese context, related work similarly points to local government' policy adjustments to counter external shocks, though with notable distortions and externalities (Li et al., 2026). A growing related literature further emphasizes that trade shocks may also transmit to local public finance through fiscal stress and revenue shocks (Feler and Senses, 2017; Wang et al., 2022). While this literature has illuminated the distributional consequences and transmission mechanisms of trade shocks, they usually do not distinguish the structural differences in transmission pathways between import and export shocks, thereby precluding a nuanced characterization of the asymmetric effects of different types of external shocks on local economic systems. This paper complements this strand of literature by distinguishing between import and

export shocks at the regional level, and identifying their differential transmission pathways.

The second strand studies the interaction between external shocks and fiscal policy. Within the fiscal federalism literature, it has been well established those intergovernmental fiscal arrangements shape local fiscal responses to economic shocks, including taxation and expenditure decisions (Besley and Rosen, 1998; Goodspeed, 2000; Devereux et al., 2007). Related research demonstrate that external shocks erode local tax bases through employment and income compression, thereby triggering public expenditure adjustments (Feler and Mine, 2017; Kondo et al., 2023). In the Chinese context, existing studies, starting from development patterns and fiscal instruments, suggest that external demand shocks may influence local government behavior through land markets, fiscal structures, and investment channels (Zhao et al., 2021; Mei and Wen, 2020). Some studies have further highlighted that local governments may exhibit heterogeneous and adaptive responses to external shocks, particularly in the context of the U.S.-China trade war tariff shocks (Pan et al., 2024), highlighting variation in policy adjustments across fiscal instruments. However, much less is known about how intergovernmental borrowing constraints interact with external trade shocks in shaping local governments' financing choices across different debt instruments. This paper extends the analysis of fiscal effects of trade shocks from the perspective of institutional constraints. We examine how local governments make strategic choices among general debt, special-purpose debt, and implicit debt under debt quota constraints. We also compare the differential responses of these debt instruments, highlighting their institutional attributes and their functional division in responding to external shocks.

The third strand focuses on the determinants and mechanisms of local government debt expansion. The existing literature has primarily examined political incentives (Jia et al., 2017; Ji et al., 2019), fiscal institutions (Xu, 2011; Zhang, 2020), and soft budget constraints (World Bank, 2010; Zhu and Fan, 2024). A related strand of research emphasizes that China's fiscal federal system is characterized by a trade-off between growth incentives and fiscal risk control, which shapes local governments' overall fiscal behavior under institutional constraints (Lyu et al., 2022). We complement these studies by introducing trade shocks as an exogenous disturbance into the constrained expansion framework. We systematically analyzing how local governments adjust debt structure and financing methods under given institutional constraints to cope with external pressure. Overall, we integrate trade shocks, fiscal responses, and debt constraints in one framework, distinguishing between import and export shocks, and reveal the critical constraining role of the debt quota system in local debt expansion. This provides micro-level evidence for understanding the operational mechanisms of China's local government debt management system.

The remainder of the paper is organized as follows. Section 2 provides background on the institutional features of local government debt in China and the evolution of the U.S.-China trade conflicts. Section 3 details the research design, including data sources, empirical model, and variable construction. Section 4 presents the main empirical results, including baseline regressions and mechanism analyses. Section 5 conducts heterogeneity tests, robustness checks, and analysis of extensions. Finally, Section 6 concludes.

2. Background

2.1. Institutional Features of Local Government Debt in China

Under China's distinctive fiscal and administrative system, local government debt is not only

formed through autonomous local decisions, but also is subject to top-down multi-tier government debt management framework. It constitutes the critical institutional foundation for understanding the empirical results of this paper.

From the vertical government hierarchy perspective, China operates a three-tier local debt management system. Figure A1 in the Online Appendix illustrates the government debt management pattern in China. The central government holds the highest authority over local government debt management. Based on macroeconomic conditions, fiscal sustainability requirements, and regional equity objectives, the central government formulates nationwide debt management regulations and approving annual debt quotas to provinces, autonomous regions, and municipalities directly under central administration. These quotas are mandatory and legally binding. Lower-level governments cannot exceed them. Within the centrally determined debt ceiling, provincial governments serve as the core allocating and coordinating hub for cities within its jurisdiction. Provincial fiscal departments redistribute the provincial quota across cities according to local fiscal conditions, project demands, economic capacity, risk profiles, regional coordination goals, and many others. This process is not simple and automatic, but intensively embodies evident policy tilting, redistributive intentions, and political bargaining. City level governments may only borrow, use, and repay debt within the quotas allocated by provincial authorities. Consequently, the debt expansion capacity of city governments depends largely on the financing space granted by higher-level governments rather than on local unilateral will. This institutional structure implies that when external shocks such as trade conflicts generate heterogeneous impacts across cities within a province, the quota reallocation behavior of provincial governments becomes one potential transmission mechanism.

From the perspective of differential features and management rules of various debt instruments, China conventionally classifies official local government debt into two categories, which are general debt and special-purpose debt, subject to entirely distinct management mechanisms. General debt is primarily used to cover revenue-expenditure gaps in the general public budget. Its repayment sources comprise general public budget revenues, including tax revenues, non-tax revenues, and upper-level governmental transfer payments. In quota allocation, general debt emphasizes top-down fiscal coordination, granting provincial governments substantial discretionary power to tilt quotas toward regions facing greater fiscal pressure or stronger shocks. By contrast, special-purpose debt must be used for public welfare projects with certain revenue-generating capacity, strictly adhering to the principle of self-balancing project financing and returns, that is, future project cash flows must cover principal and interest payments of the debt. The issuance of special-purpose debt quotas is highly dependent on project reserves, applications, reviews, and revenue assessments, exhibiting a bottom-up, project-driven characteristic that leaves limited room for provincial governments to arbitrarily reallocate quotas across cities. Thus, the institutional differences between general and special-purpose debt could generate markedly different responses to shocks.

Beyond official government debt, implicit debt channeled primarily through local government financing vehicles (LGFVs) constitutes an important complementary component of China's local government financing system. Under the strict constraint of official debt quotas, city governments often borrow through financing platforms in the name of corporate entities to accelerate infrastructure construction, stabilize economic growth, and cope with emergent fiscal pressures, thereby forming de facto government debt. Such debt is not incorporated into statutory quota management, yet its repayment relies heavily on local fiscal revenues, land concession income, or

implicit government credit support. The central government has repeatedly issued policies to strictly curb new implicit debt and promote the resolution of existing implicit debt. However, when fiscal downward pressure intensifies and official debt quotas prove insufficient, implicit debt remains an important alternative financing channel for local governments. A clear substitutive relationship thus exists between explicit official debt and implicit debt. This institutional feature provides the institutional basis for explaining the key mechanism in this study. Figure A2 in Online Appendix illustrates the patterns among the debt categories at the city level, along with their characteristics, purposes, etc. Total debt comprises official government debt and implicit debt, while official debt further consists of general debt and special-purpose debt.

In summary, the formation, adjustment, and structural evolution of local government debt in China consistently occur within an institutional framework characterized by quota controls, hierarchical allocation, use regulation, and the coexistence of official and implicit financing channels. Only with a clear understanding of this institutional backdrop can the transmission pathways of tariff shocks to local government debt be accurately identified, and the empirical results presented in this paper be reasonably interpreted.

Figure 1(a) presents the time trends of the ratios to GDP of local government total official debt outstanding, general debt outstanding, special-purpose debt outstanding, and LGFV interest-bearing debt in our sample[4]. As shown, the ratio of total local government official debt to GDP remained relatively stable before 2018 and exhibited an upward trend thereafter. Disaggregating into general and special-purpose debt, the ratio of general debt to GDP remained broadly stable with modest year-to-year fluctuations, whereas the ratio of special-purpose debt to GDP displayed a pronounced upward trend that accelerated after 2018. For implicit debt, the ratio of LGFV interest-bearing debt to GDP also exhibited a significant upward trend; by 2022, the share of implicit debt to GDP exceeded 48 percent, far surpassing the total official debt share. Figure 1(b) presents the time trends of the ratios to GDP of local government official debt quotas, general debt quotas, and special-purpose debt quotas. We find that the trends in the three debt-to-GDP ratios are strongly correlated with their corresponding quota-to-GDP ratios, and that the debt-to-GDP ratios consistently remain below the quota-to-GDP ratios.

[Figure 1 here]

2.2. The Evolution of the U.S.-China Trade Conflict

During the first term (2017-2021), the Trump administration shifted its trade policy focus toward China following the completion of the Section 301 investigation. Table 1 presents the timeline of tariff escalations by both countries. This round of trade conflict exhibited both comprehensiveness and intensity. The products covered by the tariff schedules of both sides accounted for over 80 percent of bilateral trade by product count and over 90 percent by trade value. Specifically, the U.S. tariff lists on Chinese products covered 9,791 HS 8-digit product categories, while China's retaliatory tariff lists on U.S. products covered 6,632 HS 8-digit categories. For affected products, the average tariff rate rose sharply following the escalation of the trade conflict. Figures 2 and 3 present the weighted average tariffs on U.S. products affected by Chinese tariff increases and on Chinese products affected by U.S. tariff increases, respectively. Appendix 2 provides a detailed description of tariff escalations and exclusions during the U.S.-China trade conflict.

[4] Debt information data are sourced from Finchina Enterprise Risk Early Warning System.

[Table 1 here]

[Figure 2 here]

[Figure 3 here]

Figure 4 displays the geographic distribution of constructed tariff shocks among the cities in 2019. Panel (a) corresponds to the Chinese tariff shocks on U.S. products (*ΔCNTariff*), and Panel (b) corresponds to the U.S. tariff shocks on Chinese products (*ΔUSTariff*), with darker shades indicating stronger tariff shocks. Comparing the two panels, Panel (b) generally exhibits darker shades, indicating that U.S. tariffs on Chinese products were more severe than Chinese retaliatory tariffs on U.S. products. Both types of tariff shocks exhibit significant geographic heterogeneity. High-intensity areas of Chinese tariff shocks are concentrated in eastern coastal cities and some northeastern cities, while the shock intensity in central and western cities is relatively weaker. High-intensity areas of U.S. tariff shocks broadly cover the eastern coastal region and extend into some central cities, with inland western cities generally experiencing lower shock intensity. This spatial pattern is thus closely tied to the trade structure of Chinese cities. Overall, the geographic distribution validates the empirical strategy of constructing city-level tariff shock indicators based on trade structure. The spatial heterogeneity in city trade patterns drives regional differentiation in tariff exposure, providing the necessary cross-sectional variation for identifying the causal impact of tariff shocks on city government debt.

Following the geographic heterogeneity in tariff shock intensity documented in Figure 4, a further important question arises: does this heterogeneity manifest solely in shock magnitude, or does it also exhibit systematic variation in shock structure? In other words, different cities may not only face varying degrees of tariff exposure but may also differ systematically in the relative importance of export shocks versus import shocks. Figure 5 presents the geographic distribution of the ratio of U.S. tariff shocks on Chinese products (i.e. export shocks) over the Chinese tariff shocks on U.S. products (i.e. import shock) at the city level within selected provinces in 2019. The darker shade indicates a higher relative intensity of export shocks to import shocks.[5] For the provinces shown, Jilin, Shandong, Zhejiang, Guangdong, Shaanxi, Yunnan, and Xinjiang, the distribution reveals substantial heterogeneity in shock structure across cities within the same province. This spatial feature suggests that tariff shocks do not exert uniform impacts at the provincial level, but instead generate differentiated shock exposures across cities within a province. This intra-provincial heterogeneity provides the empirical foundation for provincial governments to allocate debt quotas in response to the specific city-level shock pressure. It provides support for the subsequent analysis that the effect of tariff shocks on local debt operates through province-level quota allocation behavior.

[Figure 4 here]

[Figure 5 here]

3. Research Design

This paper examines the impact of tariff shocks on local government finance with tariff

[5] For clarity and readability, the main text displays this ratio for seven non-adjacent provinces; Appendix 3 presents the relative shock intensity for all provinces at the city level.

exposures and government debt information of Chinese cities from 2015 to 2022.[6] In this section, we report the data sources, the design of the empirical model, and the construction of key variables.

3.1. Data Sources

The data are drawn from the following sources. First, the base for measuring the tariff shocks are the product level trade war tariff schedules from the U.S. and China government. For each round of trade war tariffs, we extract information of product level tariff rates by combining tariff schedules, tariff exclusion lists, and most-favored-nation (MFN) tariff rates for both China and the United States during the trade conflict.[7] For each product, if it is imposed by the trade war tariff (either U.S. side tariff or China side retaliation tariff), we carefully apply the corresponding tariff with the consideration that whether it is in the exclusion list for the product within that period of time.

Second, to construct the firm level trade war tariff exposure, we also need to know the firm level export and import patterns. The firm level import and export data are drawn from the customs records of the Chinese Customs Database at the HS 8-digit product-country-year level.

Third, to obtain the city level trade war tariff exposure, we then identify the location of firms based on the registration code of the operating unit[8], and aggregate firm-level import and export values by the city to construct city-level import and export values.[9]

Last, city-level government finance and other related variables are obtained from the Wind Database, the CSMAR Database, and Finchina Enterprise Risk Early Warning System.[10]

3.2. Empirical Model

The objective of the baseline regression is to identify the fundamental relationship between tariff shocks and expansions in local government debt. We distinguish the impacts between the import tariff shocks and the export tariff shocks. We also capture the differential responses of various government debt instruments, including official general debt, special-purpose debt, and implicit debt channeled through local government financing vehicles (LGFVs). The tariff abruptly increases during the U.S.-China trade conflict. It serves as a source of external shocks. Meanwhile, the Chinese cities have heterogeneous exposures to these shocks due to their differential import and export structure. Thus, we employ a difference-in-difference style framework by regressing the change of government finance variables against the change of tariff rates combined with base period exposure of imports and exports across cities.

The onset of the U.S.-China trade conflict in 2018 were abrupt and largely unanticipated, and

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[6] There are 337 prefecture-level cities, including 4 municipalities directly under the Central Government, 293 cities, 7 prefectures, 30 autonomous prefectures and 3 leagues. The 4 municipalities directly under the Central Government were omitted during the process of adding the year-province fixed effects. Based on data availability, we have a panel of 292 cities with 2,328 observations.

[7] Chinese tariff schedules and exclusion lists are obtained from the official website of the Customs Tariff Commission of the State Council, https://gss.mof.gov.cn/; U.S. tariff schedules and exclusion lists are obtained from the Office of the United States Trade Representative (USTR), https://ustr.gov/issue-areas/enforcement/section-301-investigations; MFN tariff information for both countries are obtained from the WTO database, https://ttd.wto.org/en.

[8] We drop a small number of observations for which the administrative affiliation of the operating unit cannot be determined or that belong to the province-administered counties.

[9] We have compared the trade values constructed based on firm-level data with the corresponding values officially reported in the statistical yearbooks for those top ten cities in terms of import and export value, and the two track each other closely, as shown in Online Appendix 4. Additionally, the correlation coefficients between the constructed total import and export values at the city-year level from 2013 to 2015 and those published in various statistical yearbooks reached 1 and 0.99 respectively. All these results indicate that our construction method based on firm-level data is reasonably reliable.

[10] Finchina Enterprise Risk Early Warning System. Available at: https://www.qyyjt.cn. It is a professional big data platform focusing on enterprise credit and risk monitoring, widely applied in corporate risk inquiry and financial analysis.

therefore have been used to identify the causal effect of tariff barriers on various economic outcomes interested (Fajgelbaum et al., 2020; Benguria et al., 2022; Chor and Li 2024). Moreover, our construction of weighted tariff exposures relies extensively on product-level import and export structure of cities as in Chor and Li (2024), which could substantially alleviate the potential endogeneity concerns. We additionally control for city fixed effects, year fixed effects, and year-by-province fixed effects. City fixed effects absorb time-invariant unobserved characteristics at the city level, including geographic location, resource endowments, and others. Year fixed effects capture common macroeconomic shocks faced by all cities each year. Year-by-province fixed effects absorb province level time-varying unobserved characteristics, further refining the regional differentiation of macro environments. As a result, we can strip out confounding from city-specific heterogeneity, macro-level time trends, and province-level dynamic factors, thereby precisely identifying the net effect of tariff shocks.

Specifically, we establish the following baseline regression model to identify the effects of tariff shocks on city level government finance:

$$\Delta \boldsymbol{Debt_{i,t}/GDP_{i,t0}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1}\Delta \boldsymbol{CNTariff_{i,t}} + \boldsymbol{\alpha_2}\Delta \boldsymbol{USTariff_{i,t}} + \boldsymbol{\beta Ctls_{i,0}} \cdot \boldsymbol{D_t} + \boldsymbol{D_i} + \boldsymbol{D_t} + \boldsymbol{\delta_{pt}} + + \boldsymbol{\varepsilon_{i,j,m}} \quad (1)$$

The dependent variable $\Delta \boldsymbol{Debt_{i,t}/GDP_{i,t0}}$ measures the change in government debt outstanding, including total official government debt, general debt, special-purpose debt, and LGFV debt, relative to those of the base period, normalized by base period GDP: $\Delta \boldsymbol{Debt_{i,t}/GDP_{i,t0}} = (\boldsymbol{Debt_{i,t}} - \boldsymbol{Debt_{i,t0}})/\boldsymbol{GDP_{i,t0}}$. The main explanatory variables $\Delta \boldsymbol{CNTariff_{i,t}}$ and $\Delta \boldsymbol{USTariff_{i,t}}$ denote import tariff exposure, in terms of tariff imposed by China, and export tariff exposure, in terms of tariff imposed by the US, respectively. We refer to the first one as import tariff shock and the second one as export tariff shock, respectively. The term $\boldsymbol{Ctls_{i,0}} \cdot \boldsymbol{D_t}$ represents interactions between city base period characteristics and time fixed effects. Given that local government debt is influenced by multiple factors including economic fundamentals, financial environment, and others, we introduce a set of city characteristics into the model as controls. Following Chor and Li (2024) and Li et al. (2024), we interact these pre-determined variables with time trends to mitigate the endogeneity concerns. Finally, we additionally control for city fixed effects ($\boldsymbol{D_i}$), year fixed effects ($\boldsymbol{D_t}$), and year-by-province fixed effects ($\boldsymbol{\delta_{pt}}$).

3.3. Variable Construction

We present the construction of the variables in this subsection, and the descriptive statistics for the main variables are reported in Table 2. First, we follow Chor and Li (2024) to measure city-level tariff exposure, using tariff changes over the base period (2013-2015) weighted by based period trade flows. $\Delta \boldsymbol{USTariff_{it}}$ measures the export tariff exposure faced by Chinese city *i* in year *t*, constructed as follows:

$$\Delta \boldsymbol{USTariff_{it}} = \sum_{j \in J_i} \left[\frac{\boldsymbol{X_{ij0}^{US}}}{\boldsymbol{X_{i0}}} \times \Delta \boldsymbol{\tau_{jt}^{US}} \right], \quad (2)$$

where $\Delta \boldsymbol{\tau_{jt}^{US}}$ is the change in the ad valorem tariff rate imposed by the U.S. to Chinese product *j* at the HS 6-digit level in year *t* relative to that of the base period, and the tariff rate is computed as the MFN tariff plus the additional U.S. tariff on product *j*.[11] $\boldsymbol{X_{ij0}^{US}}$ is the average exports of product *j* from city *i* to the U.S. during 2013-2015, $\boldsymbol{X_{i0}}$ is the average total exports of city *i* to all countries during 2013-2015, and $\boldsymbol{J_i}$ denotes the set of products exported by city *i*. Similarly, we construct

[11] Following Jiang et al. (2023), we convert ad valorem, specific, and compound tariffs into ad valorem equivalents at the HS 8-digit level, and then compute HS 6-digit-level value weighted tariff rates.

$\Delta \boldsymbol{CNTariff_{it}}$, which measures the import tariff exposure faced by city *i* in year *t* based on China's retaliatory tariffs on U.S. products, as follows:

$$\Delta \boldsymbol{CNTariff_{it}} = \sum_{j \in J_i} \left[\frac{\boldsymbol{M_{ij0}^{US}}}{\boldsymbol{M_{i0}}} \times \Delta \boldsymbol{\tau_{jt}^{CN}} \right], \quad (3)$$

where $\Delta \boldsymbol{\tau_{jt}^{CN}}$ is the change in the ad valorem tariff rate imposed by China to U.S. product *j* in year *t* relative to that of the base period; $\boldsymbol{M_{ij0}^{US}}$ is the average imports of city *i* from the U.S. during 2013-2015; $\boldsymbol{M_{i0}}$ is the average total imports of city *i* from all countries during 2013-2015, and $\boldsymbol{J_i}$ denotes the set of products imported by city *i*.

We measure the response of city government debt as the change of debt outstanding relative to that of the base period, normalized by base period GDP: $\Delta \boldsymbol{Debt_{i,t}/GDP_{i,t0}}$. Official government debt instruments comprise both general debt and special-purpose debt, which have different institutional features. Thus, we also separate overall government debts into these two categories by setting $\Delta \boldsymbol{GDebt_{i,t}/GDP_{i,t0}}$ and $\Delta \boldsymbol{SDebt_{i,t}/GDP_{i,t0}}$ as dependent variables to explore the heterogeneous impacts of tariff shocks. Besides official government debt instruments, the Chinese cities have another unofficial channel in terms of LGFVs to obtain finance. These LGFVs typically undertake public infrastructure projects with the funds raised, in a way closely tied to government finance. We thus additionally examine the effect of tariff shocks on these implicit government debts (i.e. LGFVs), $\Delta \boldsymbol{ImDebt_{i,t}/GDP_{i,t0}}$.

Following Chor and Li (2024) and Li et al. (2024), we introduce interactions between pre-determined city characteristics and time trends as control variables. These pre-determined characteristics include: the share of secondary industry, population size, the state-owned enterprises' trade share with the U.S., distance to the nearest port, financial developments measured by the ratio of total deposits and loans to GDP and the number of financial institution branches. The share of secondary industry captures the structural features of the local economy. Population size measures the local market capacity and the demands for fiscal expenditure. The state-owned enterprises' trade with the U.S. captures local trade dependence and external shock exposure of the public sector. The distance to a port measures a city's geographical endowments for trade. Finally, financial developments directly affect local governments' debt-raising capacity and their responsiveness to external shocks.

[Table 2 here]

4. Empirical Results

In this section, we present the empirical findings on the effects of import and export tariff shocks on local government debts in China. We begin by documenting a striking finding. Cities facing adverse import tariff shocks exhibit a reduction in official general debt, instead of an increase as expected. To account for this result, one guess would be that the import tariff shock does not hurt the economy. However, we rule out this possibility by providing evidence that adverse import tariff shocks indeed generate negative economic consequences at the city level, implying that the more tariff shock exposed local governments should have the incentives to expand debts. Evidence from implicit debt through LGFVs for those cities with higher import tariff shocks further supports this need of debt expansion. Building on this, to explain this puzzling fact, we offer a coherent explanation for the contraction in government general debt. When faced with adverse import and export tariff shocks, provincial governments as the higher-level authority reallocate the pool of

general debt quotas across cities within their jurisdiction, prioritizing the debt expansion need of cities severely hit by export tariff shocks at the expenses of cities primarily exposed to import tariff shocks.

4.1. Tariff Shocks and Local Government Debt Expansion

We first report the effects of import and export tariff shocks on local government debt. Both import and export tariff increases are adverse shocks to local economies, which cuts the tax base for local government, generating need of debt expansion by local governments. On the one hand, we indeed find that cities facing higher export tariffs increased government general debt. To the contrary, strikingly, we find that cities facing higher import tariffs reduced government general debt.

Tables 3-5 present the effects of import and export tariff shocks on general debt (*ΔGDebt*), special-purpose debt (*ΔSDebt*), and total official debt *(ΔDebt*), respectively. In each table, columns (1)-(3) omit controls and include only fixed effects, while columns (4)-(6) additionally include the full set of controls. Columns (1) and (4) examine import tariff shocks alone, columns (2) and (5) examine export tariff shocks alone, and columns (3) and (6) include both import and export tariff shocks simultaneously.

Specifically, Table 3 reports the effects of tariff shocks on local government general debt. The results in column (6) show that the coefficient on the export tariff shock is 0.4015, which implies that a one-standard-deviation increase in the export tariff shock raises the change in general debt relative to the base by 0.55 percent. Strikingly, however, the coefficient on the import tariff shock is -0.1974, indicating that adverse import tariff shocks significantly suppress general debt, instead of increasing. Thus, the impact of import tariff shock on general debt is diametrically opposed to that of export tariff shocks.

[Table 3 here]

Table 4 reports the effects of tariff shocks on local government special-purpose debt. Based on the specification with the full set of controls in column (6), the coefficient on the export tariff shock is 0.4594, indicating that a one-standard-deviation increase in the export tariff shock raises the change in special-purpose debt by 0.63 percentage. The coefficient on the import tariff shock is 0.0547, which is not statistically significant, suggesting a weak positive effect of adverse import tariff shocks on special-purpose debt.

[Table 4 here]

Table 5 reports the effects of tariff shocks on total official debt, which is the sum of general and special-purpose debt. Under the specification that includes both import and export tariff shocks and the full set of controls in column (6), the coefficient on the export tariff shock is 0.6377. This shows that export tariff shocks significantly expand the total official debt. The coefficient on the import tariff shock is -0.1046, but statistically insignificant, indicating a weak negative effect of import tariff shocks on total official debt. For export tariffs, the increase in total official debt is readily understood given that Table 3 and Table 4 show export tariffs raise both general and special-purpose debt. For import tariffs, Table 3 shows that import tariffs reduce general debt, while Table 4 shows that import tariffs raise special-purpose debt, albeit insignificantly; the results in Table 5 suggest that the contractionary effect on general debt dominates the expansionary effect on special-purpose debt.

[Table 5 here]

Overall, the baseline regression results demonstrate that import and export tariff shocks exert differential effects on local government debt. Adverse export tariff shocks significantly expand general debt, special-purpose debt, and the total official debt, which is consistent with theoretical predictions that when facing adverse external demand shocks, local governments expand debt to confront local economic downturns. However, the results for import tariff are just the opposite. Our city-level empirical evidence reveals that cities facing larger adverse import tariff shocks instead reduced general debt. We next turn to explaining this anomalous finding.

4.2. Tariff Shocks, Economic Fundamentals, and Need of Debt Expansion

The significant contraction of general debt induced by adverse import tariff shocks is highly counterintuitive. In this section, we provide several possible explanations for the above anomaly and check them one by one. One possible explanation is that, given China's export-oriented rather than import-oriented economic structure, import tariff increases may not have exerted the anticipated negative effects on local economies, thereby eliminating local governments' motivation of debt expansion. In this subsection, we provide direct evidence that both import and export tariffs negatively affect city-level economic performance and government revenues. We further present evidence from LGFV debt showing that local governments significantly increased implicit debt in response to both adverse import and export tariff shocks. Thus, all these results rule out the interpretation that governments facing import tariff shocks lacked need of debt expansion.

4.2.1. Negative Effects of Tariff Shocks on Local Economy and Government Revenue

We examine the effects of tariff shocks on local economic fundamentals from several dimensions: trade, economic growth, fixed-asset investment, and fiscal revenue, respectively. We find that both import and export tariffs exert significant negative effects on local economies and government revenue.

Specifically, we replace the dependent variable in equation (1) with variables related to imports, exports, GDP, investment, and fiscal revenue, maintaining the same normalization relative to the base. Table 6 presents the effects of trade tariff shocks on the local economy. The first four columns report the effects on imports (*ΔImport*), exports (*ΔExport*), GDP (*ΔGDP*), and fixed-asset investment (*ΔInvestment*). The coefficient on the import tariff shock for imports is -28.71; for exports, it is -4.04, but statistically insignificant; for GDP, it is -0.5772; and for fixed-asset investment changes, it is -1.9042. These results all confirm that import tariff shocks significantly suppress the local economy. The coefficients of the export tariff shock similarly demonstrate that they significantly dampen local economic growth and reduce both import and export.

The last three columns of Table 6 present the effects on general public budget revenue (*ΔRevenue*), tax revenue (*ΔTaxRevenue*), and government fund revenue (*ΔFundRevenue*). Tax revenue is the primary subcomponent of general public budget revenue, whereas government fund revenue is a separate fiscal revenue category parallel to general public budget revenue, primarily comprising revenue from the sales of state-owned land use rights. The regressions show that the coefficient on the import tariff shock for general public budget revenue is -0.1614; the coefficients for tax revenue and government fund revenue are -0.0509 and 0.1264, respectively, both statistically insignificant. Thus, import tariff shocks indeed reduce general public budget revenue. On the other hand, the coefficient on the export tariff shock for general public budget revenue changes is -0.1004; for tax revenue, it is -0.0734; and for government fund revenue, it is 0.0496, statistically insignificant.

[Table 6 here]

The above findings clearly demonstrate that both import and export tariff shocks generate significant negative effects on local economic fundamentals. After the trade conflict tariffs, the local trade contracts, economic growth slows, investment declines, and fiscal revenue falls significantly. These results validate that tariff shocks intensify local economic and fiscal pressures which could predict significant government debt expansion. The baseline regression results show that the effect of export tariff shocks is consistent with this logic, yet the negative effect of import tariff shocks on government general debt is clearly contradictory. Another possibility is that despite the negative effects of import tariff shocks on local economies and fiscal revenue, local governments nevertheless still lack motivations of debt expansion. We next provide evidence showing that this is not the case neither.

4.2.2. Evidence from Government Implicit Debt Expansion

In this subsection, we provide evidence that local governments did not entirely lack motivations of debt expansion; rather, they simply did not satisfy this need through official debt. Alternatively, we find that governments facing import tariff shocks expanded implicit debt through LGFVs.

For Chinese local governments, besides general and special-purpose debts, there exist other important debt expansion channels, most notably borrowing through various LGFVs. LGFVs differ from ordinary state-owned enterprises in that their primary function is to serve as financing platforms, enabling local governments to borrow in the name of corporate entities while forming de facto government debt. This is widely recognized by China's financial system; market participants generally treat LGFV debt as implicit government debt, a perception partially shared by local governments themselves and even by higher-level authorities. The emergence of such implicit debt is primarily driven by the constraints imposed by higher-level governments on official debt, which prevent local governments from easily expanding official government debt. We therefore examine that whether local governments significantly expanded implicit debt, such as LGFV debt, in response to adverse tariff shocks, particularly import tariff shocks.

Specifically, we collect data on LGFV interest-bearing debt and employ its change relative to the base, normalized by GDP, as the dependent variable. Table 7 reports the regression results for the effect of tariff shocks on implicit debt ($\Delta ImDebt$). The specification that includes both import and export tariff shocks and the full set of controls is presented in column (3). The results show that the coefficient on the export tariff shock is 1.3496. A one-standard-deviation increase in the export tariff shock raises the change in implicit debt by 1.85 percentage points of GDP, confirming that implicit debt is an important borrowing option for city governments. Moreover, the absolute magnitude of this coefficient (1.3496) substantially exceeds its effects on offical debt (0.6377), general debt (0.4015), and special-purpose debt (0.4594), further suggesting that implicit debt could be a more important borrowing channel for governments under export tariff shocks.

More compelling evidence comes from the effect of import tariff shocks. As shown in column (3) of Table 7, the coefficient on the import tariff shock is 0.7177. This finding refutes the interpretation that local governments facing import tariff shocks ceased borrowing. When cities suffer from the import tariff shocks, instead of increasing the official debt, the cities would turn to implicit debt to raise funds. We would explain why import tariff shocks are transmitted through implicit debt not the official debt in the next section.

[Table 7 here]

4.3. Trade Tariffs and Intra-Provincial Allocation of Debt Quotas

The preceding results demonstrate that import and export tariff shocks exert differential effects on the structure of local government debt financing. For export tariff shocks, city governments expanded debt through multiple channels, both official debt (general debt and special purpose debt) and implicit debt. Meanwhile, for import tariff shocks, they substituted implicit debt for official general debt. Thus, a critical question remains. Why do city governments prefer to borrow through implicit debt rather than through conventional general debt, when facing adverse import tariff shocks?

In the following subsection, given the institutional features and empirical evidence for local government debt expansion, we argue that the key lies in the allocation of debt quotas by provincial governments, which are the higher-level authorities of those cities within their jurisdictions. Since the overall provincial quota is determined by the central government, provincial governments can only reallocate debt quotas across cities within their jurisdiction. We provide evidence that export tariffs increase the general and special-purpose debt quotas received by local cities, whereas import tariffs reduce the general debt quotas received by local cities. Our findings thus suggest that provincial governments prioritize satisfying the official debt need of the cities severely hit by adverse export tariff shocks, thereby indirectly sacrificing those of the cities primarily exposed to adverse import tariff shocks.

4.3.1. Effects of Import and Export Tariff Shocks on Debt Quotas

The issuance of official debt by Chinese city governments, including general and special-purpose debt, is constrained by debt quotas of higher-level provincial governments. The allocation of these quotas directly determines the space for local city borrowing. In this subsection, we examine the effects of tariff shocks on city-level debt quotas and debt quota utilization rates (i.e. the outstanding debt over the debt quotas) to verify the following facts: whether import tariff shocks compress general debt quotas, thereby constraining local governments' borrowing capacity and causing the decline in general debt.

The first three columns of Table 8 report the regression results for the effects of tariff shocks on city government general debt quotas (*ΔGDebtQuota*), special-purpose debt quotas (*ΔSDebtQuota*), and total debt quotas (*ΔDebtQuota*). The coefficient on the export tariff shock for general debt quotas, special-purpose debt quotas, and total debt quotas are all positive. These results indicate that, in response to adverse export tariff shocks faced by local governments, the higher-level provincial governments significantly increased their debt quotas, thereby expanding their space for borrowing. By contrast, the coefficient on the import tariff shock for general debt quotas is -0.2136; the coefficients for special-purpose debt quotas and total debt quotas are both statistically insignificant. These results indicate that import tariff shocks significantly compress general debt quotas while exerting no significant effect on special-purpose debt quotas.

We further examine the effects of tariff shocks on debt quota utilization rates. Specifically, the utilization rate is defined as the ratio of debt outstanding to the debt quota, measuring the intensity of quota usage by city governments. The last three columns of Table 8 report the regression results for the effects of tariff shocks on general debt utilization rates (*ΔGDebtUse*), special-purpose debt utilization rates (*ΔSDebtUse*), and total debt utilization rates (*ΔDebtUse*). The coefficient on the import tariff shock for general debt utilization rates is 0.3710, indicating that general debt utilization rates rise significantly under import tariff shocks.

[Table 8 here]

These results provide a clear explanation for the anomaly in the baseline regressions. The negative effect of import tariff shocks on general debt does not stem from insufficient borrowing demand by city governments, but rather from the compression of general debt quotas by higher-level governments. Under import tariff shocks, the general debt quotas decline significantly. Then, city governments cope with economic pressures by raising general debt utilization rates and expanding implicit debt financing. Under export tariff shocks, the expansion of both general and special-purpose debt quotas provides more space for borrowing while simultaneously driving implicit debt expansion, generating a dual-channel borrowing pattern. These findings suggest that the intra-provincial allocation mechanism of debt quotas may be the key channel through which tariff shocks affect the structure of local government debt.

4.3.2. Intra-Provincial Reallocation of Government Debt Quotas

The preceding findings lead us to conjecture that provincial governments' quota reallocations are shaped by the trade structure of local cities. Given that cities engage in both import and export activities, we examine the strategy of provincial governments' quota allocation based on cities' relative dependence on imports versus exports. To reveal the underlying quota allocation of provincial government, we introduce the city-level import-to-export ratio of the base period (*ImEx*) as an explanatory variable to test whether the reallocation of debt quotas is related to cities' trade dependence structure.

Table 9 reports the effects of the import-export structure on the impact of tariff shocks on debt quotas and outstanding. Column (1) presents the results on general debt quotas. The interaction term between the import tariff shock and the import-export ratio has a coefficient of -0.2723, indicating that cities with higher import-export ratio experience larger reductions in general debt quotas by import tariff shocks. Column (2) presents the results on general debt outstanding. The interaction term between the import tariff shock and import-export ratio has a coefficient of -0.3330, indicating that cities with higher import-export ratio experience larger declines in general debt by import shocks. Columns (3) and (4) of Table 9 report the results of the interaction between import tariff shocks and import-export ratio on special-purpose debt quotas and debt outstanding, respectively. Both coefficients are statistically insignificant, indicating that special-purpose debt quota allocation is not affected by the cities' import-export ratio.

Why do provincial governments rely primarily on general rather than special-purpose debt when allocating debt quotas? Institutionally, quota allocation involves two logics. The first one is related to top-down government transfer payments, and the other one is related to bottom-up public project demands. General debt quota allocation more directly reflects the transfer payment intentions of higher-level governments, aimed at covering conventional fiscal gaps. Special-purpose debt quotas, by contrast, are tied to specific public projects with revenue streams, relying on the demands of specific projects. From the provincial government's perspective, the total debt quota is set by the central government. When a local city suffers an adverse shock, the first response is to assist it through transfer payments, that is, tilting general debt quotas toward affected cities. Conversely, because special-purpose debt issuance requires self-generated cash flows from projects, provincial governments have very limited discretionary room for maneuver.

[Table 9 here]

Moreover, we provide additional evidence supporting the above interpretation of intra-provincial quota allocation across cities by altering the regression specification. In the baseline

regressions, the year-by-province fixed effects serve to capture province-level policy and environmental heterogeneity over time. We remove these fixed effects while maintaining all other baseline specifications. Specifically, we re-estimate the regressions without year-by-province fixed effects; the results are reported in Table 10. Upon removing the year-by-province fixed effects, the results for export tariff shocks remain robust, while the significant negative effect of import tariff shocks on general debt disappears. The year-by-province fixed effects essentially capture provincial governments' allocation of fixed debt quotas; when these fixed effects are removed, the influence of provincial allocation behavior based on a fixed aggregate is stripped away, and the suppressive effect of import tariff shocks on general debt ceases to be significant. This evidence indirectly corroborates that the suppressive effect of import tariff shocks on general debt is closely tied to province-level debt allocation behavior.

[Table 10 here]

In summary, our findings clarify the transmission mechanism through which tariff shocks affect local government debt. Under the condition that the provincial total debt quota is relatively fixed, higher-level governments tilt general debt quotas toward lower import-export ratio cities facing more severe external shocks to alleviate their economic and fiscal pressures. For cities more dependent on imports compared with exports, their general debt quotas are diverted despite their suffering from adverse import tariff shocks, causing them to lose borrowing capacity through general debt. These city governments then turn to implicit debt financing channels to fill funding gaps. For special-purpose debt, because the issuance requirements are tied to specific project revenues, their allocation is relatively independent of higher-level government control and does not exhibit a comparable reallocation effect across cities.

4.4. Financing and Expenditure Structure of Local Government Debt

In this subsection, we emphasize that despite the marginal reallocation of debt quotas among city governments, stringent constraints on debt expansion capacity persist, even for lower import-export ratio cities that receive relatively favorable quota allocations. Beyond conventional market borrowing capacity constraints, in China's unitary political system with its hierarchical government structure, the debt quotas imposed by higher-level governments on subordinate authorities constitute an inescapable constraint. As a result, city governments manage to finance their borrowing with structural substitution across debt instruments. We also provide a preliminary exploration of the uses of expanded government debt.

4.4.1. Financing Structure of Government Debt

City governments can finance through three channels by general debt, special-purpose debt, and implicit debt, which differ in costs, constraints, and applicable scenarios. Substitution across these debt instruments reflects the strategic choices of city governments in responding to shocks. In this subsection, we adopt a structural substitution perspective and examine how tariff shocks affect the composition of different debt instruments at the city level. We present evidence showing that even for cities facing adverse export tariff shocks, the expansion of debt quotas remains insufficient to meet their demands, making them expand debt more heavily through implicit debt channels.

Table 11 reports the regression results for the effects of trade tariff shocks on all government debt (*ΔTotalDebt*), which encompasses both official and implicit debt, the implicit debt share (*ΔImDebtRatio*), and the share of special-purpose debt within official debt (*ΔSDebtRatio*). Column (1) presents the results on overall government debt, including general debt, special-purpose debt,

and implicit debt. The coefficient on the export tariff shock is 2.0289, indicating that export tariff shocks significantly drive the expansion of government debt. Column (2) presents the results on the implicit debt share, which is the implicit debt over the overall government debt (implicit debt and official debt). The coefficient on the export tariff shock is 0.6155, indicating that the implicit debt share rises significantly under export tariff shocks. This reflects that when official government debt is constrained, city governments supplement financing through channels subject to weaker restrictions. Column (3) presents the results on the share of special-purpose debt within official debt (i.e. the sum of general debt and special-purpose debt). The coefficient of the export tariff shock for the special-purpose debt share is 0.5161, indicating that within the official government debt, the special-purpose debt share rises significantly under export tariff shocks. That is, these local governments prefer financing instruments tied to project revenues that offer relatively more operational flexibility. The effects of import tariff shocks on all debt share variables are statistically insignificant, suggesting that under import tariff shocks, debt structure adjustment exhibits weaker regularity and is insufficient to trigger systematic structural reconfiguration.

[Table 11 here]

These results suggest that under the institutional constraint of debt quota management, city government financing behavior exhibits a characteristic pattern of substitutive adjustment. Specifically, the implicit debt, which is not fully incorporated into the statutory government debt management system, faces relatively weaker quota constraints. It thus becomes an important supplementary channel when fiscal pressure mounts. Special-purpose debt, backed by project revenues and possessing a degree of self-liquidating capacity, are relatively more likely to receive support within the official debt framework. General debt, which rely primarily on public fiscal revenues for repayment and are subject to stricter budget constraints and higher-level oversight, have relatively limited expansion room. Consequently, under the joint pressure of external shocks and institutional constraints, city governments achieve endogenous adjustment to financing constraints through substitution and combination across different debt instruments.

4.4.2. Expenditure Structure of Government Debt

After expanding debt through multiple channels, the expenditure of raised funds directly reflects the policy orientation in responding to tariff shocks. In this subsection, we examine the effects of tariff shocks on local fiscal expenditures, and provide a preliminary analysis of the specific pathways through which city governments deploy debt to cope with external shocks.

Table 12 reports the regression results for the effects of tariff shocks on general public budget expenditures (*ΔExpenditure*), public infrastructure investment (*ΔMuniInvest*) [12], social security and employment expenditures (*ΔSocialExp*), research and development expenditures (*ΔRDExp*), debt issuance and repayment expenditures (*ΔRepayExp*) [13], education expenditures (*ΔEduExp*), and medical expenditures (*ΔMedicalExp*). For general public budget expenditures, the coefficient on the export tariff shock is 0.3668. Key expenditure of subcategories are as follows. The coefficients on export tariff shocks stand at 0.0986 for public infrastructure investment, 0.0963 for social security and employment expenditures, 0.0086 for research and development expenditures, and 0.0581 for

[12] Public infrastructure investment is the sum of investments in water supply, gas supply, centralized heating, rail transit and public transportation, roads and bridges, drainage, sewage treatment and recycling, landscaping, urban sanitation, garbage disposal, and other investments, sourced from the China Urban Construction Statistical Yearbook.
[13] Debt issuance and repayment expenditures comprise bond issuance fees, principal repayments, and interest payments.

debt issuance and repayment expenditures. The export tariff shock exerts no significant effect on education or medical expenditures. These results indicate that debt expansion by local governments under export tariff shocks exhibits a clear use orientation. It is primarily allocated to expanding public expenditures, particularly public infrastructure investment, while also covers social security and employment expenditures. This finding validates the positive role of debt expansion in responding to adverse external shocks. The effects of import tariff shocks on all expenditure and investment categories are statistically insignificant, suggesting that under import tariff shocks, the use of expanded debt is relatively dispersed, without forming a significant expenditure orientation.

[Table 12 here]

5. Heterogeneity, Robustness, and Further Analysis

In this section, we report heterogeneity, robustness analyses and further analysis at province level. First, we examine how local characteristics moderate the relationship between tariff shocks and debt expansion from dual perspectives, including existing debt space and fiscal capacity. Second, we assess the robustness of our results to alternative samples. Finally, we investigate the patterns at the province level.

5.1. Heterogeneity Analysis

The preceding analysis has revealed that tariff shocks affect city government debt through channels such as debt quota allocation and debt structure adjustment, yet heterogeneity in debt expansion across regions remains to be documented. Implicit debt financing is constrained not only by local governments' official debt borrowing space but also by their financing capacity. In this subsection, we focus on several local characteristics to investigate their heterogenous influences on the core relationship between tariff shocks and debt expansion in terms of implicit debt.

Table 13 reports the moderating effects of official debt unused quotas on the relationship between tariff shocks and implicit debt expansion. The unused quota is defined as the difference between the debt quota and actual debt outstanding, reflecting the initial debt borrowing space available to city governments. Columns (1)-(3) present the regression results using the base period total official debt unused quota (*Debtgap0*), general debt unused quota (*GDebtgap0*), and special-purpose debt unused quota (*SDebtgap0*) as city characteristics, respectively. The results indicate that higher initial government debt unused quotas weaken the positive effect of export shocks on implicit debt expansion, while they strengthen the positive effect of import shocks on implicit debt expansion. The more significant effects are from initial special-purpose debt unused quota. It should be noted that, general debt and special-purpose debt have lower costs compared to implicit debts. If there is still room for choice, the government will still prefer to use general and special-purpose debt as the primary option.

[Table 13 here]

We next examine the moderating effects of three characteristics commonly associated with local fiscal financing capacity: fiscal self-sufficiency (*SelfSuffi0*), business environment scores (*Score0*), and land concession revenues (*LandRev0*).[14] Specifically, higher fiscal self-sufficiency

[14] Fiscal self-sufficiency at the city level is defined as general public budget revenue divided by general public budget expenditure, multiplied by 100. The business environment scoring system evaluates the business environment of major Chinese mainland cities, sourced from the China Urban Business Environment Assessment Database 2024.

implies stronger fiscal stability and debt repayment capacity for city governments, facilitating greater market confidence in implicit debt financing. A superior business environment enables LGFVs to obtain support more readily from financial institutions and market investors. Higher land concession revenues increase the value of assets available for implicit debt guarantees, providing stronger credit backing for LGFVs. Table 14 reports the interaction effects of these three characteristics on the relationship between tariff shocks and implicit debt. The results show that all the three city-level characteristics strengthen the positive effect of export tariff shocks on implicit debt. However, they have no statistically significant effect on the relationship between import tariff shocks and implicit debt.

[Table 14 here]

5.2. Robustness Analysis

Trade shocks during our sample period exhibit pronounced abruptness and phase-specific characteristics. They emerged rapidly after 2018 while exhibiting essentially no systematic variation in the preceding period. We show evidence that our results are not driven by underlying trends or long-term factors as well as the specific choices of samples.

5.2.1. Placebo Test

To rule out potential pre-trend concerns, we follow the literature and conduct a placebo test to validate our identification strategy (Roberts et al., 2013). Specifically, we restrict the sample to the pre-trade-war period (2015-2017) and replicate the baseline regression specification on this subsample. The regression results in Table 15 show that when only the pre-policy sample is included, the estimated coefficients on the tariffs are all statistically insignificant. This indicates that before the outbreak of the trade war, the tariff variables were not systematically correlated with changes in government debt, thereby ruling out the possibility that the estimates are driven by underlying pre-trends or omitted variables.

[Table 15 here]

To alleviate potential dynamic endogeneity concerns, we replace the dependent variable with lagged ones as a robustness check, following Chor and Li (2024). The regression results are reported in Tables 16-18, in which we lag the dependent variable by one to five periods. The results show that when lagged terms are introduced, the statistical significance of the tariff shocks gradually weakens as the lag length extends. For example, when the lag extends to five periods, all the core coefficients become statistically insignificant in Table 16. This indicates that the effects of trade shocks on government debt are primarily concentrated in the short to medium term rather than being driven by long-term trend factors.

[Table 16 here]

[Table 17 here]

[Table 18 here]

5.2.2. Accounting for Tariff Exclusions and Exemptions

Land concession revenue refers to income obtained from transferring state-owned land use rights in the capacity of landowner, sourced from municipal statistical yearbooks.

Given that some tariff increases were subsequently subject to exclusions or exemptions, we further test the robustness of our main results by accounting for tariff exclusions and exemptions. We incorporate product tariff exclusions and exemptions as follows. If any product under a given HS 8-digit code was excluded from tariff increases or granted an exemption at any point in time, the tariff increase for that HS 8-digit code is set to zero from that date onward until the exclusion or exemption expires.[15] On this basis, we reconstruct the Chinese-level and U.S.-level tariff exposure variables, denoted *ΔCNTariff_ex* and *ΔUSTariff_ex*, and re-estimate the baseline regressions. The results in Table 19 show that after incorporating tariff exclusion and exemption information, the estimated coefficients on export tariff shocks remain significantly positive for general debt, special-purpose debt, and total official debt, while import tariff shocks continue to exert a significant suppressive effect on general debt.

[Table 19 here]

5.2.3. Including Municipalities Directly under Central Government

In the baseline regressions, controlling the year-by-province fixed effects requires that sample cities belong to clearly defined provinces. The four municipalities directly under central government, which are Beijing, Shanghai, Tianjin, and Chongqing, are therefore dropped from the baseline regressions. This treatment may introduce sample selection bias and affect the external validity of the results. To address this concern, we test the robustness of the baseline results by bringing back these four cities. Specifically, we assign the four cities to a single artificial province and reconstruct the year-by-province fixed effects accordingly, while replicating all baseline specifications. The regression results are reported in Table 20. After including the four municipalities, the significance, sign, and magnitude of the tariff shock variables remain robust. That is, export tariff shocks continue to significantly raise general debt, special-purpose debt, and total official debt, while import tariff shocks continue to significantly suppress general debt with insignificant effects on special-purpose debt and total official debt.

[Table 20 here]

5.2.4. Controlling for the COVID-19 Pandemic

The outbreak of COVID-19 in 2020 generated systematic shocks to local economies, fiscal revenues, and expenditures in China. Its disturbance to international trade and local public finance may have become intertwined with the effects of tariff shocks, potentially confounding the validity of our core identification strategy. To rule this out, we conduct robustness checks from this perspective. First, we directly add a city-year level pandemic severity variable, *lnCovid*, measured as the logarithm of the average number of existing confirmed cases within the city-year, to the baseline regression model; the results are reported in the first three columns of Table 21. Second, we construct an interaction term *PostCovid_Trade*, defined as the interaction between a pandemic dummy and trade dependence measure. The pandemic dummy is equal to one for 2020 and thereafter. The city trade dependence is the ratio of total trade to GDP in the base period, to control for the additional shock of the pandemic on cities with different trade dependence. The results are reported in the last three columns of Table 21. The dependent variables are changes in general debt, special-purpose debt, and total official debt, respectively. The results show that after controlling for

[15] Tariff exclusions or exemptions may apply to a single HS 10-digit product or a more specific product variant under an HS 8-digit code, and therefore this method could underestimate the measured tariff exposure.

pandemic severity and its heterogeneous impact on trade-dependent cities, the core effects of tariff shocks on local debt remain robust. Overall, export shocks continue to significantly raise government debt, while import shocks exert a significant negative effect only on general debt.

[Table 21 here]

5.3. Further Analysis at Province Level

In the baseline analysis, we identify the effects of trade shocks on government debt expansion at city level, and document that provincial governments reallocate debt quotas within their jurisdictions by the priority coping with export shocks. This result raises a further question whether the central government adopts a similar strategy in allocating debt quotas among the provinces. To address this question, we conduct a further analysis at the provincial level.

Specifically, using a sample of 31 provincial-level regions and controlling for province fixed effects and year fixed effects, we examine the effects of trade shocks on provincial government debt expansion. Table 22 reports the estimation results. However, the results show that export shocks exert significant negative effects on general debt, special-purpose debt, and total official government debt, and similarly significant negative effects on the corresponding debt quotas. Import shocks have insignificant effects on general debt and their quotas, but significant negative effects on special-purpose debt, total official debt, and their quotas. These findings indicate that at the provincial level, trade shocks are not countered through debt expansion, but rather exhibit a contractionary effect. This phenomenon is in a stark contrast with the city-level findings documented earlier. Therefore, the central government follows a rather different strategy in allocating debt quotas among the provinces. When external shocks intensify economic downturns and elevate local government debt risks, the central government is more prudent in setting debt quotas, paying more attention to the fiscal suitability of these lower-level governments. Combining the provincial and city level results yields a more complete picture of the policy response. At the central level, local government debt policy manifests as regulation oriented toward borrowing constraints; however, at the lower level, local governments indeed heavily rely on debt policy to cope with external shocks, making such a policy as a countercyclical tool.

[Table 22 here]

6. Conclusion

Facing adverse shocks of trade conflict tariffs, the city level governments have incentives to expand debt to offset damage to economic activity and fiscal revenues. Yet such expansions are often constrained by market-oriented financing capacity in some contexts, and by political institutions in others. This paper examines the tension between local governments' debt expansion and institutional constraints manifested as debt quotas imposed by provincial level governments. The U.S.-China trade conflict provides the exogeneous shock to study the debt expansion of Chinese local governments. Specifically, we study how city government respond to tariff shocks and the strategic behavior of governments under specific institutional restrictions. Based on data for Chinese cities from 2015 to 2022, we construct refined tariff shock exposure for the cities, distinguishing export and import tariffs in terms of shock severity. We investigate how the institutional characteristics of fiscal instruments such as government general debt, special-purpose debt, and implicit debt of LGFVs shape government responses.

We empirically find that city governments face strong need of debt expansion when confronting adverse tariff shocks, but these needs are strictly constrained by debt quotas imposed by the provincial authority. This constraint operates at two levels. First, provincial governments prioritize the debt need of cities severely hit by export tariff shocks by increasing their official debt quotas, rather than those hit more by import tariffs, resulting in compressed need of cities primarily exposed to import tariff shocks. This intra-provincial reallocation of debt quotas is implemented primarily through general debt rather than special-purpose debt. This is because that the former is more discretional to the provincial governments than the latter. Second, even for those cities with favorable quota tilts, their financing demand remains unmet, compelling them to expand implicit debt through LGFVs.

Our study carries implications that transcend the Chinese context. The vertical political constraint in the Chinese setting is functionally analogous to the horizontal political constraint in federal systems such as the United States. Both systems seek to balance the need of responding to short-term economic shocks with the imperative of maintaining long-term fiscal sustainability. Both systems face the tension between the rigidity of institutional constraints and the flexibility motivated by the economic reality. Both systems may induce governments to pursue alternative financing strategies that circumvent formal restrictions. Thus, the quota reallocation logic, debt instrument prioritization, and implicit debt expansion revealed in this paper provide micro-level evidence for understanding common behavioral patterns of governments facing institutional constraints across different political systems.

Reference:

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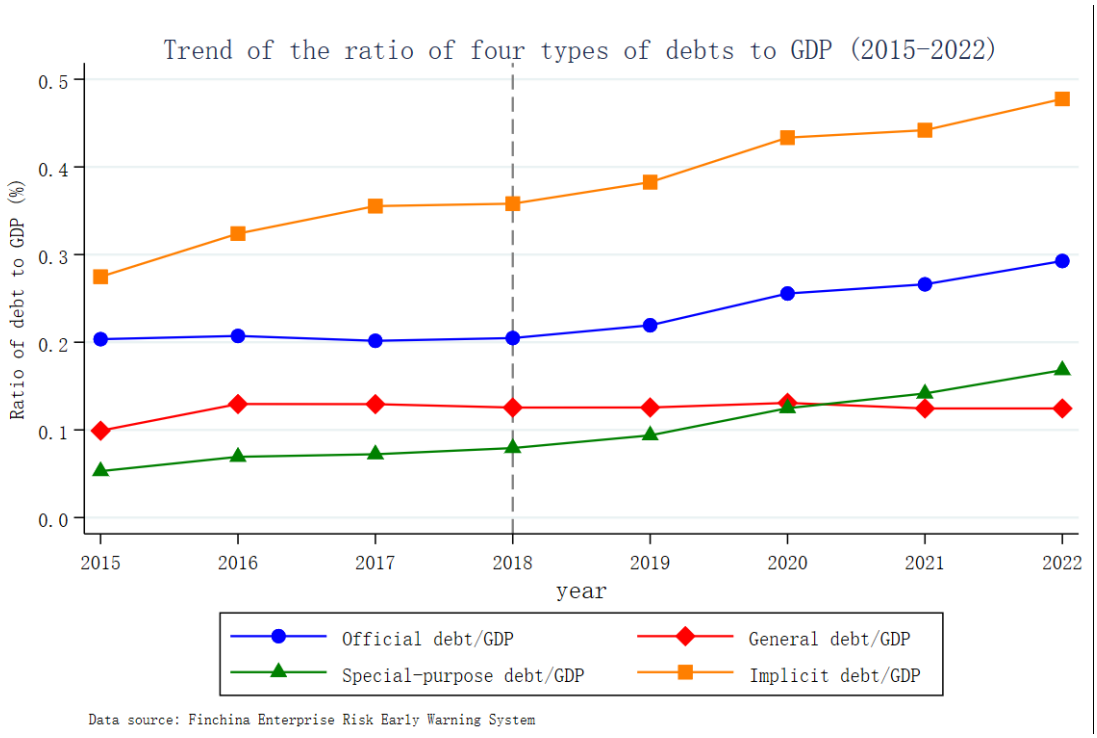


Figure 1(a)

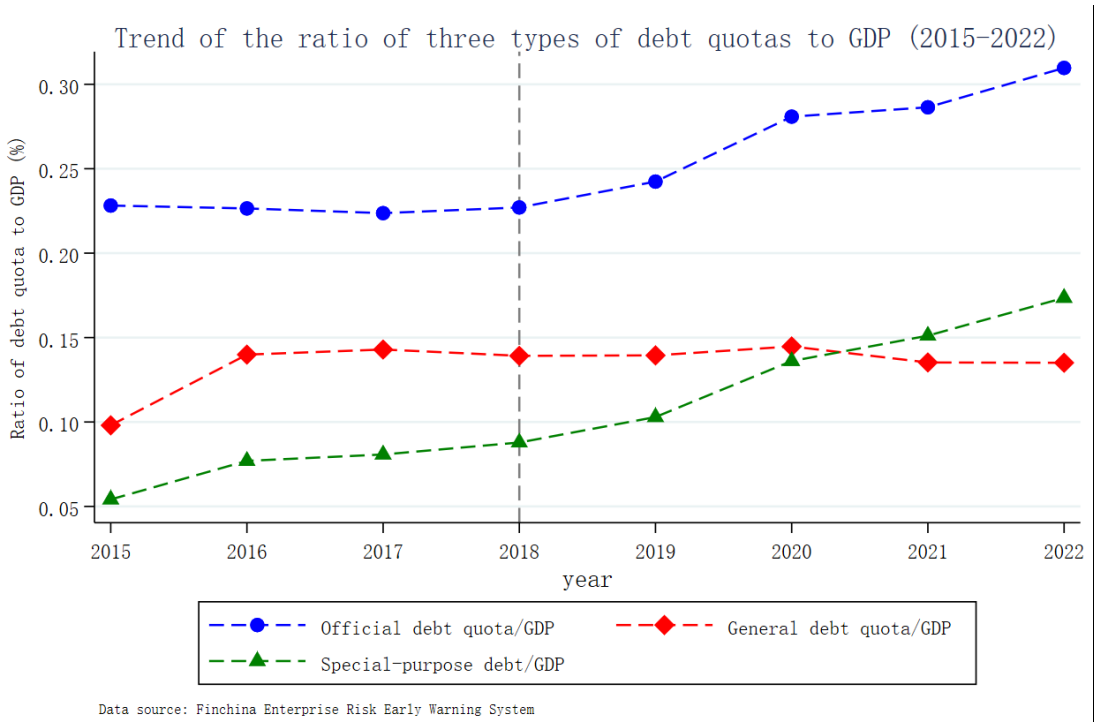


Figure 1(b)

Figure 1. Time Trend of Local Government Debt Outstanding and Debt Quota

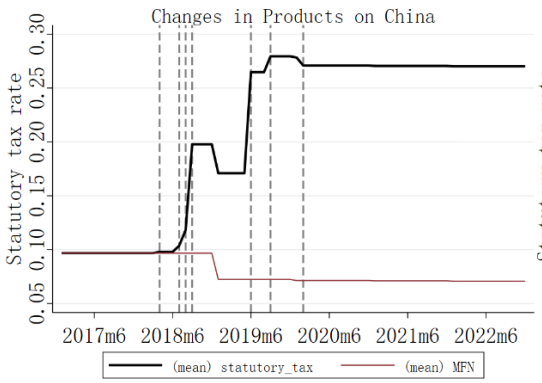


Figure 2(a)

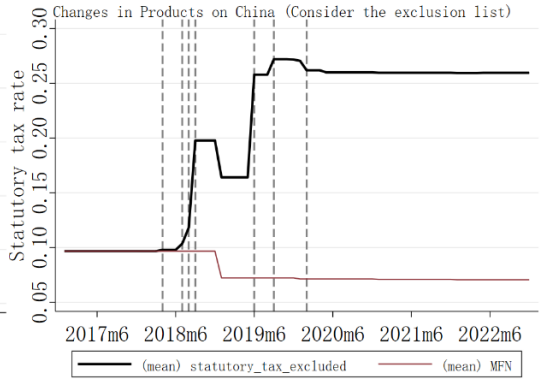


Figure 2(b)

Figure 2. Changes in Tariffs on Products Affected by China's Imposition of Counter-tariffs on the United States

Note: This chart presents the weighted average tariffs imposed by China on imports from the United States during the period from 2017 to 2022. Chart (a) shows the situation without considering the tariff exclusion list, while Chart (b) shows the situation with the tariff exclusion list taken into account.

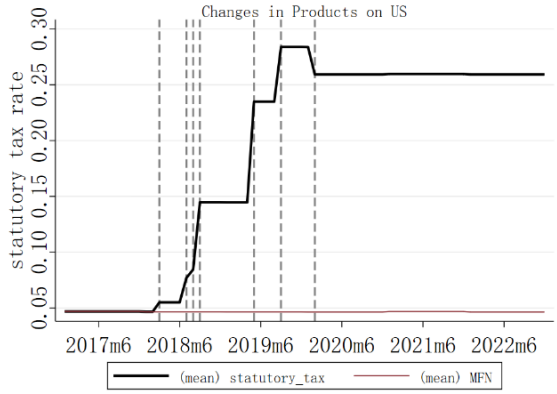


Figure 3(a)

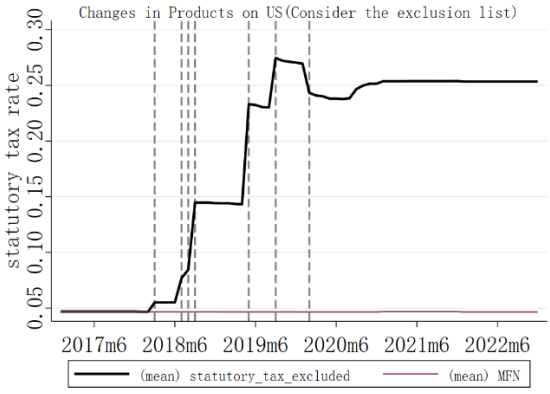


Figure 3(b)

Figure 3. Changes in Products Affected by the US Tariffs Imposed on China

Note: This chart presents the weighted average tariffs imposed by the United States on Chinese imported goods from 2017 to 2022. Chart (a) shows the situation without considering the tariff exclusion list, while Chart (b) shows the situation with the tariff exclusion list taken into account.

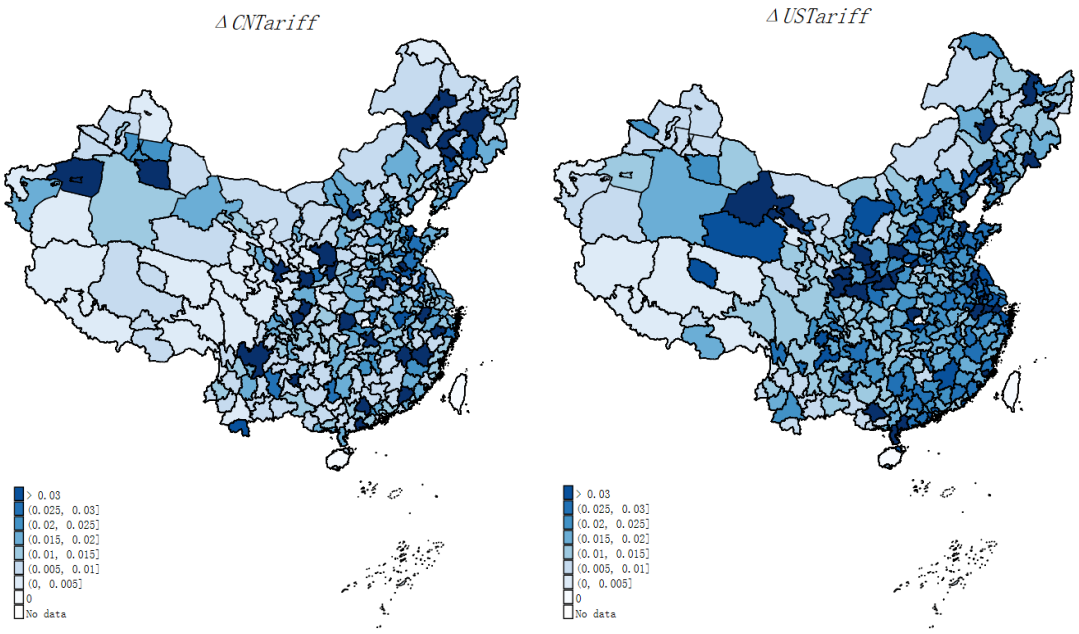


Figure 4(a) **Figure 4(b)**

Figure 4. Geographical Distribution of the Impact of Tariffs in China and the United States

Note: Figure 4 shows the geographical distribution of the impact of Chinese tariffs and US tariffs on various regions in 2019 (as shown in the following $\Delta \boldsymbol{CNTariff}_{it}$ and $\Delta \boldsymbol{USTariff}_{it}$. This measurement indicator combines the import/export shares of each region to the US during 2013-2015 with the tariff changes at the product level. The darker the color, the greater the degree of impact from Chinese tariffs or US tariffs. Some regions (such as Danzhou, Sansha, and the Greater Khingan Region) were not included in the statistics due to the lack of trade data.

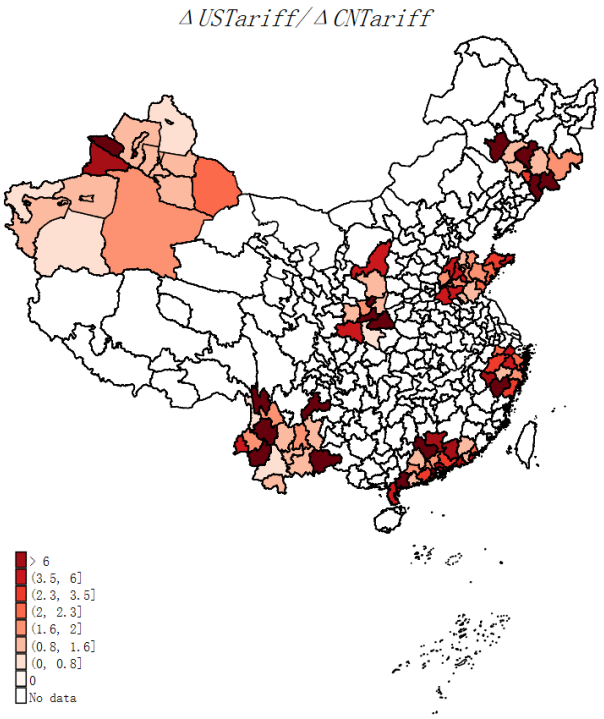


Figure 5. Geographical Distribution of the Ratio of the Impact of US Tariffs to That of Chinese Tariffs in Selected Provinces

Note: Figure 5 shows the geographical distribution of the impact of Chinese tariffs and US tariffs on various regions in 2019 (as shown in the following $\Delta \boldsymbol{CNTariff}_{it}$ and $\Delta \boldsymbol{USTariff}_{it}$. This measurement indicator combines the import/export shares of each region to the US during 2013-2015 with the tariff changes at the product level. The darker the color, the greater the degree of impact from Chinese tariffs or US tariffs. Some regions (such as Danzhou, Sansha, and the Greater Khingan Region) were not included in the statistics due to the lack of trade data.

Table 1: Timeline of Tariff Increases between China and the United States

Round	Country	Trade Value (billion US dollars)	Product Categories (HS8)	Additional Tariff	Effective Date
Pre trade conflicts	US	-	-	10%；25%	2018/03/23
	China	3.3	128	10%；25%	2018/04/02
First round	US	34	818	25%	2018/07/06
	China	34	545	25%	2018/07/06
	US	16	279	25%	2018/08/23
	China	16	333	25%	2018/08/23
Second round	US	200	5760	10%	2018/09/24
	China	60	5207	5%；10%	2018/09/24
	US	200	5760	25%	2019/05/10
	China	60	5140	5%-25%	2019/06/01
Third round	US	300	3233	15%	2019/09/01
			548	Suspend	2019/12/15
	China	75	1717	5%；10%	2019/09/01
			3361	Suspend	2019/12/15

Table 2. Descriptive Statistical Results

Variable	Definition	Observation	Mean	Standard Deviation	Min	Max
Debt	Explicit debt balance	2328	644.6509	875.2300	2.000	10565.330
GDebt	General debt balance	2328	313.9354	348.3334	2.000	3541.300
SDebt	Special-purpose debt balance	2328	335.6610	575.3567	0.130	8216.190
ImDebt	Implicit debt balance	2272	1032.2567	2320.3548	0.130	24607.580
Δ*Debt*	The change in the explicit debt balance measured by the base-period GDP relative to the base period	2328	0.0924	0.1395	-0.254	1.034
Δ*GDebt*	The change in the general debt balance as measured by the base-period GDP relative to the base period	2328	0.0235	0.0576	-0.217	0.622
Δ*SDebt*	The change in the balance of special-purpose bonds relative to the base period as measured by the base period GDP	2328	0.0556	0.1028	-0.193	0.708
Δ*ImDebt*	The change in the implicit debt balance measured by the base-period GDP compared to the base period	2272	0.1568	0.2489	-0.126	3.126
Δ*CNTariff*	Import Tariffs Shock	2328	0.0066	0.0125	-0.006	0.108
Δ*USTariff*	Export Tariffs Shock	2328	0.0105	0.0137	-0.011	0.082
mnf_ratio0	The proportion of the secondary industry in the base period	2328	43.2305	14.4990	8.120	81.890
SOEtradeUS0	The proportion of state-owned enterprises' trade in the total trade during the base period	2328	0.1465	0.2149	0.000	1.000
lnPop0	Base population size	2328	5.8624	0.7407	3.056	8.030
distance0	The distance of the nearest port from the base period	2328	493.9004	466.8882	1.775	2780.679
financial_level0	The proportion of deposits and loans in the base period to GDP	2328	1.9775	1.5008	0.000	8.866
finnum0	The number of financial institution outlets in the base-level prefecture-level cities	2328	750.8007	670.2194	76.000	5783.000
Debtuse	Explicit debt utilization rate	2328	0.9177	0.0675	0.654	1.000
GDebtuse	Utilization rate of general debt	2328	0.9094	0.0771	0.614	1.000
SDebtuse	Utilization rate of special-purpose bonds	2328	0.9211	0.0825	0.574	1.000
Debtgap	Explicit debt limit	2328	54.0936	87.5657	0.000	584.230
GDebtgap	General debt limit	2328	30.6229	49.4966	0.000	346.920
SDebtgap	Special-purpose debt limit	2328	24.4690	47.5348	0.000	313.290

Table 3 The Impact of Trade Tariff Shocks on General Debt

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*GDebt*	Δ*GDebt*	Δ*GDebt*	Δ*GDebt*	Δ*GDebt*	Δ*GDebt*
Δ*CNTariff*	-0.2195***		-0.2175***	-0.1985***		-0.1974***
	(0.0764)		(0.0760)	(0.0734)		(0.0729)
Δ*USTariff*		0.3869***	0.3854***		0.4022***	0.4015***
		(0.0884)	(0.0882)		(0.0840)	(0.0838)
Controls	No	No	No	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.845	0.846	0.846	0.864	0.865	0.866

Table 4 The Impact of Trade Tariff Shocks on Special-purpose Debt

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*SDebt*	Δ*SDebt*	Δ*SDebt*	Δ*SDebt*	Δ*SDebt*	Δ*SDebt*
Δ*CNTariff*	-0.0545		-0.0523	0.0535		0.0547
	(0.1263)		(0.1260)	(0.1186)		(0.1182)
Δ*USTariff*		0.4365***	0.4361***		0.4592***	0.4594***
		(0.1462)	(0.1462)		(0.1359)	(0.1359)
Controls	No	No	No	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.864	0.865	0.865	0.887	0.887	0.887

Table 5 The Impact of Trade Tariff Shocks on Official Debt

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*Debt*	Δ*Debt*	Δ*Debt*	Δ*Debt*	Δ*Debt*	Δ*Debt*
Δ*CNTariff*	-0.2685		-0.2654	-0.1062		-0.1046
	(0.1744)		(0.1740)	(0.1598)		(0.1593)
Δ*USTariff*		0.6101***	0.6083***		0.6380***	0.6377***
		(0.2020)	(0.2019)		(0.1831)	(0.1831)
Controls	No	No	No	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.860	0.861	0.861	0.889	0.889	0.889

Note: The official debt is the sum of general debt and special debt, reflecting the official debt balance of local governments.

Table 6 The Impact of Trade Tariff Shocks on Local Economy and Government Revenue

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Δ*Import*	Δ*Export*	Δ*GDP*	Δ*Investment*	Δ*Revenue*	Δ*TaxRevenue*	Δ*FundRevenue*
Δ*CNTariff*	-28.7064***	-4.0430	-0.5772**	-1.9042***	-0.1614***	-0.0509	0.1264
	(10.5597)	(16.8409)	(0.2453)	(0.5670)	(0.0402)	(0.0323)	(0.0800)
Δ*USTariff*	-23.5218*	-37.6222*	-0.7571***	-0.9009	-0.1004**	-0.0734**	0.0496
	(12.1378)	(19.3576)	(0.2819)	(0.6518)	(0.0446)	(0.0371)	(0.0928)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2288	2296	2264
R^2	0.744	0.684	0.948	0.862	0.818	0.799	0.791

Table 7 The Impact of Trade Tariff Shocks on Implicit Debt

	(1)	(2)	(3)
	Δ*ImDebt*	Δ*ImDebt*	Δ*ImDebt*
Δ*CNTariff*	0.7242*		0.7177*
	(0.3773)		(0.3764)
Δ*USTariff*		1.3545***	1.3496***
		(0.4497)	(0.4494)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	2232	2232	2232
R^2	0.806	0.806	0.807

Table 8 The Impact of Trade Tariff Shocks on Debt Quota and Debt Utilization Rates

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*GDebtQuota*	Δ*SDebtQuota*	Δ*DebtQuota*	Δ*GDebtUse*	Δ*SDebtUse*	Δ*DebtUse*
Δ*CNTariff*	-0.2136***	0.1127	-0.0201	0.3710***	-0.1016	0.1423
	(0.0711)	(0.1202)	(0.1598)	(0.1392)	(0.1703)	(0.1248)
Δ*USTariff*	0.3562***	0.5589***	0.7792***	0.1383	-0.3040	-0.0132
	(0.0817)	(0.1381)	(0.1837)	(0.1600)	(0.1957)	(0.1435)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.858	0.888	0.891	0.671	0.713	0.700

Table 9 The Moderating Role of Import and Export Structure in the Impact of Trade Tariff Shocks on Changes in Debt Quotas and Debt Balances

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*GDebtQuota*	Δ*GDebt*	Δ*SDebtQuota*	Δ*SDebt*	Δ*DebtQuota*	Δ*Debt*
Δ*CNTariff*	-0.1169	-0.0790	0.1578	0.1001	0.0792	0.0553
	(0.0790)	(0.0810)	(0.1338)	(0.1316)	(0.1780)	(0.1772)
Δ*USTariff*	0.3160***	0.3509***	0.5779***	0.4720***	0.7520***	0.5887***
	(0.0859)	(0.0880)	(0.1454)	(0.1431)	(0.1934)	(0.1926)
Δ*CNTariff_ImEx*	-0.2723***	-0.3330***	-0.1412	-0.1397	-0.2848	-0.4566**
	(0.0971)	(0.0995)	(0.1644)	(0.1618)	(0.2187)	(0.2178)
Δ*USTariff_ImEx*	0.0499	0.0631	-0.0349	-0.0252	0.0296	0.0555
	(0.0387)	(0.0397)	(0.0656)	(0.0646)	(0.0873)	(0.0869)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.858	0.867	0.889	0.887	0.891	0.890

Table 10 The Impact of Trade Tariff Shocks on Local Government Debt (After Removing Year-Province Fixed Effect)

	(1)	(2)	(3)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*
Δ*CNTariff*	-0.1084	0.1808	0.0512
	(0.0888)	(0.1480)	(0.1785)
Δ*USTariff*	0.5090***	0.5048***	0.7976***
	(0.1020)	(0.1700)	(0.2052)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	No	No	No
N	2328	2328	2328
R^2	0.755	0.786	0.831

Table 11 The Impact of Trade Tariff Shocks on Changes in Total Debt, Changes in the Proportion of Official Debt, and Changes in the Proportion of Implicit Debt

	(1)	(2)	(3)
	Δ*Totaldebt*	Δ*Imdebtratio*	Δ*Sdebtratio*
Δ*CNTariff*	0.5431	0.2640	-0.2379
	(0.4240)	(0.1743)	(0.1834)
Δ*USTariff*	2.0289***	0.6155***	0.5161**
	(0.5062)	(0.2080)	(0.2108)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	2232	2232	2296
R^2	0.839	0.804	0.869

Table 12 The Impact of Trade Tariff Shocks on City Fiscal Expenditure and Investment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Δ*Expenditure*	Δ*MuniInvest*	Δ*SocialExp*	Δ*RDExp*	Δ*RepayExp*	Δ*EduExp*	Δ*MedicalExp*
Δ*CNTariff*	-0.0875	-0.0077	-0.0060	0.0038	-0.0321	-0.0134	-0.0012
	(0.0812)	(0.0322)	(0.0186)	(0.0040)	(0.0292)	(0.0175)	(0.0133)
Δ*USTariff*	0.3668***	0.0986***	0.0963***	0.0086*	0.0581*	0.0286	-0.0066
	(0.0934)	(0.0350)	(0.0188)	(0.0044)	(0.0336)	(0.0194)	(0.0136)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2232	2200	2224	2296	2288	2072
R^2	0.906	0.563	0.862	0.810	0.815	0.904	0.824

Table 13 The Moderating Effect of Local Debt Financing Space on Implicit Debt

	(1)	(2)	(3)
	Δ*ImDebt*	Δ*ImDebt*	Δ*ImDebt*
Δ*CNTariff*	-0.0893	0.5158	-0.1456
	(0.5327)	(0.5301)	(0.4393)
Δ*USTariff*	2.0735***	1.6985***	2.0286***
	(0.4893)	(0.5010)	(0.4625)
Δ*CNTariff _Debtgap0*	0.0248**		
	(0.0116)		
Δ*USTariff _Debtgap0*	-0.0241***		
	(0.0065)		
Δ*CNTariff_GDebtgap0*		0.0083	
		(0.0157)	
Δ*USTariff _GDebtgap0*		-0.0189*	
		(0.0113)	
Δ*CNTariff _SDebtgap0*			0.1000***
			(0.0264)
Δ*USTariff _SDebtgap0*			-0.0662***
			(0.0121)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	2232	2232	2232
R^2	0.808	0.807	0.810

Table 14 The Moderating Effect of Local Fiscal Capacity Characteristics Variables on Implicit Debt

	(1)	(2)	(3)
	Δ*ImDebt*	Δ*ImDebt*	Δ*ImDebt*
Δ*CNTariff*	-2.9145	4.0294	0.9679
	(2.9720)	(3.7872)	(0.8644)
Δ*USTariff*	-5.8906**	-9.5420***	-1.3726*
	(2.5140)	(2.7842)	(0.8244)
Δ*CNTariff _ SelfSuffi0*	0.9951		
	(0.8356)		
Δ*USTariff _ SelfSuffi0*	2.0119***		
	(0.6961)		
Δ*CNTariff_score0*		-0.0809	
		(0.0935)	
Δ*USTariff_score0*		0.2819***	
		(0.0709)	
Δ*CNTariff _ LandRev0*			-0.0618
			(0.2314)
Δ*USTariff _ LandRev0*			0.8222***
			(0.2093)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	2232	2232	2232
R^2	0.808	0.808	0.808

Table 15 Results of the Placebo Test Regression

	(1)	(2)	(3)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*
Δ*CNTariff*	1.1253	-1.5782	1.1894
	(1.9265)	(3.1768)	(3.7439)
Δ*USTariff*	-0.5356	-1.4352	0.7042
	(2.0157)	(3.3238)	(3.9172)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	861	861	861
R^2	0.765	0.726	0.796

Table 16 Pre-trend of General Debt Response to Trade Tariff Shocks

	(1)	(2)	(3)	(4)	(5)
	*L.*Δ*GDebt*	*L2.*Δ*GDebt*	*L3.*Δ*GDebt*	*L4.*Δ*GDebt*	*L5.*Δ*GDebt*
Δ*CNTariff*	-0.1672**	-0.1382**	-0.0820*	-0.0372	-0.0070
	(0.0694)	(0.0575)	(0.0446)	(0.0285)	(0.0225)
Δ*USTariff*	0.4108***	0.3611***	0.2296***	0.1138***	0.0328
	(0.0798)	(0.0661)	(0.0514)	(0.0329)	(0.0252)
Controls	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2280	2264	2040
R^2	0.816	0.656	0.592	0.598	0.504

Table 17 The Pre-Trend of Special-purpose Debt Affected by Trade Tariff Shocks

	(1)	(2)	(3)	(4)	(5)
	*L.*Δ*SDebt*	*L2.*Δ*SDebt*	*L3.*Δ*SDebt*	*L4.*Δ*SDebt*	*L5.*Δ*SDebt*
Δ*CNTariff*	-0.0114	-0.0665	-0.0409	-0.0140	-0.0025
	(0.0967)	(0.0675)	(0.0422)	(0.0264)	(0.0139)
Δ*USTariff*	0.3057***	0.1404*	0.0620	0.0218	0.0006
	(0.1112)	(0.0776)	(0.0486)	(0.0304)	(0.0157)
Controls	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2280	2264	2032
R^2	0.854	0.775	0.697	0.575	0.520

Table 18 The Pre-Trend of Local Government Official Debt Affected by Trade Tariff Shocks

	(1)	(2)	(3)	(4)	(5)
	*L.*Δ*Debt*	*L2.*Δ*Debt*	*L3.*Δ*Debt*	*L4.*Δ*Debt*	*L5.*Δ*Debt*
Δ*CNTariff*	-0.1328	-0.1965*	-0.1169	-0.0587	-0.0198
	(0.1399)	(0.1074)	(0.0766)	(0.0510)	(0.0315)
Δ*USTariff*	0.4736***	0.2993**	0.1854**	0.1150*	0.0298
	(0.1608)	(0.1234)	(0.0881)	(0.0587)	(0.0357)
Controls	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2288	2280	2144
R^2	0.860	0.776	0.679	0.606	0.547

Table 19 The Impact of Trade Tariff Shocks on Local Debt (Considering Tariff Exclusions and Exemptions)

	(1)	(2)	(3)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*
Δ*CNTariff_ex*	-0.1981***	0.0685	-0.0896
	(0.0738)	(0.1197)	(0.1613)
Δ*USTariff_ex*	0.4372***	0.5012***	0.7252***
	(0.0906)	(0.1469)	(0.1979)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes
N	2296	2296	2296
R^2	0.866	0.887	0.889

Table 20: The Impact of Trade Tariff Shocks on Local Debt (Considering 4 Municipalities Directly under Central Government)

	(1)	(2)	(3)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*
Δ*CNTariff*	-0.1956***	0.0553	-0.1028
	(0.0729)	(0.1195)	(0.1610)
Δ*USTariff*	0.3935***	0.4299***	0.6015***
	(0.0837)	(0.1372)	(0.1849)
Controls	Yes	Yes	Yes
City Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Year-Virtual province Fe	Yes	Yes	Yes
N	2328	2328	2328
R^2	0.865	0.886	0.888

Table 21: The Impact of Trade Tariff Shocks on Local Debt (Considering the Effects of the Pandemic)

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*	Δ*GDebt*	Δ*SDebt*	Δ*Debt*
Δ*CNTariff*	-0.1992***	0.0614	-0.1005	-0.2544***	-0.0258	-0.2596*
	(0.0730)	(0.1182)	(0.1594)	(0.0720)	(0.1172)	(0.1555)
Δ*USTariff*	0.3966***	0.4785***	0.6494***	0.3092***	0.3289**	0.3863**
	(0.0840)	(0.1361)	(0.1835)	(0.0831)	(0.1353)	(0.1796)
lnCovid	-0.0011	0.0044**	0.0027			
	(0.0013)	(0.0021)	(0.0028)			
PostCovid_Trade				-0.0031***	-0.0044***	-0.0084***
				(0.0004)	(0.0006)	(0.0008)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
City Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year-Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	2296	2296	2296	2296	2296	2296
R^2	0.866	0.888	0.889	0.871	0.890	0.896

Table 22: The Impact of Trade Tariff Shocks on Local Debt (At the Provincial Level)

	(1)	(2)	(3)	(4)	(5)	(6)
	Δ*GDebt*	Δ*SDebt*	Δ*Debt*	Δ*GDebtQuota*	Δ*SDebtQuota*	Δ*DebtQuota*
Δ*CNTariff*	-0.9830	-7.3210***	-7.9509***	-1.4597	-7.3967***	-8.4586***
	(1.8760)	(1.9238)	(2.8734)	(1.8756)	(1.9321)	(3.0047)
Δ*USTariff*	-2.4419***	-1.3422**	-3.4903***	-2.0770***	-1.0167	-3.0206***
	(0.6108)	(0.6264)	(0.9355)	(0.6107)	(0.6291)	(0.9783)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Province Fe	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes
N	248	248	248	248	248	248
R^2	0.848	0.889	0.906	0.863	0.892	0.906

Online Appendix:

Appendix 1. China's Local Government Debt Management Pattern and Logical Relationship Diagram of City Government Debt Instruments



Figure A1. China's Local Government Debt Management Pattern

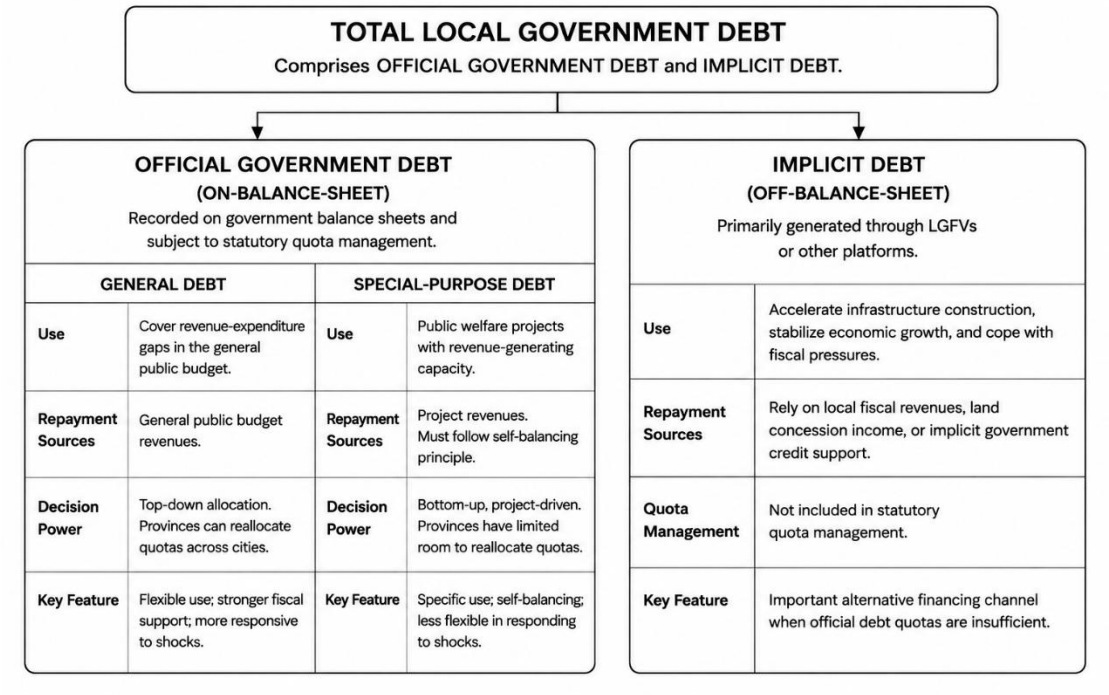


Figure A2. Logical Relationship Diagram of City Government Debt Instruments

Appendix 2. Detailed Description of Tariff Escalations and Exclusions in the U.S.-China Trade War

Upon taking office in 2017, the Trump administration substantially reversed the longstanding U.S. commitment to free trade. In April 2017, the U.S. Department of Commerce initiated a "Section 232 investigation" into steel imports; in May, the U.S. International Trade Commission launched "Section 201 investigations" into crystalline silicon photovoltaic cells and modules, and large residential washing machines. In January 2018, President Trump announced global safeguard measures on washing machines (for four years) and solar panels (for three years), and in March imposed 25 percent tariffs on steel imports and 10 percent tariffs on aluminum imports. Because these U.S. tariffs applied to all trading partners, China retaliated in April 2018 by suspending tariff concessions on 128 U.S. products—including fruits and pork—worth $3.3 billion.

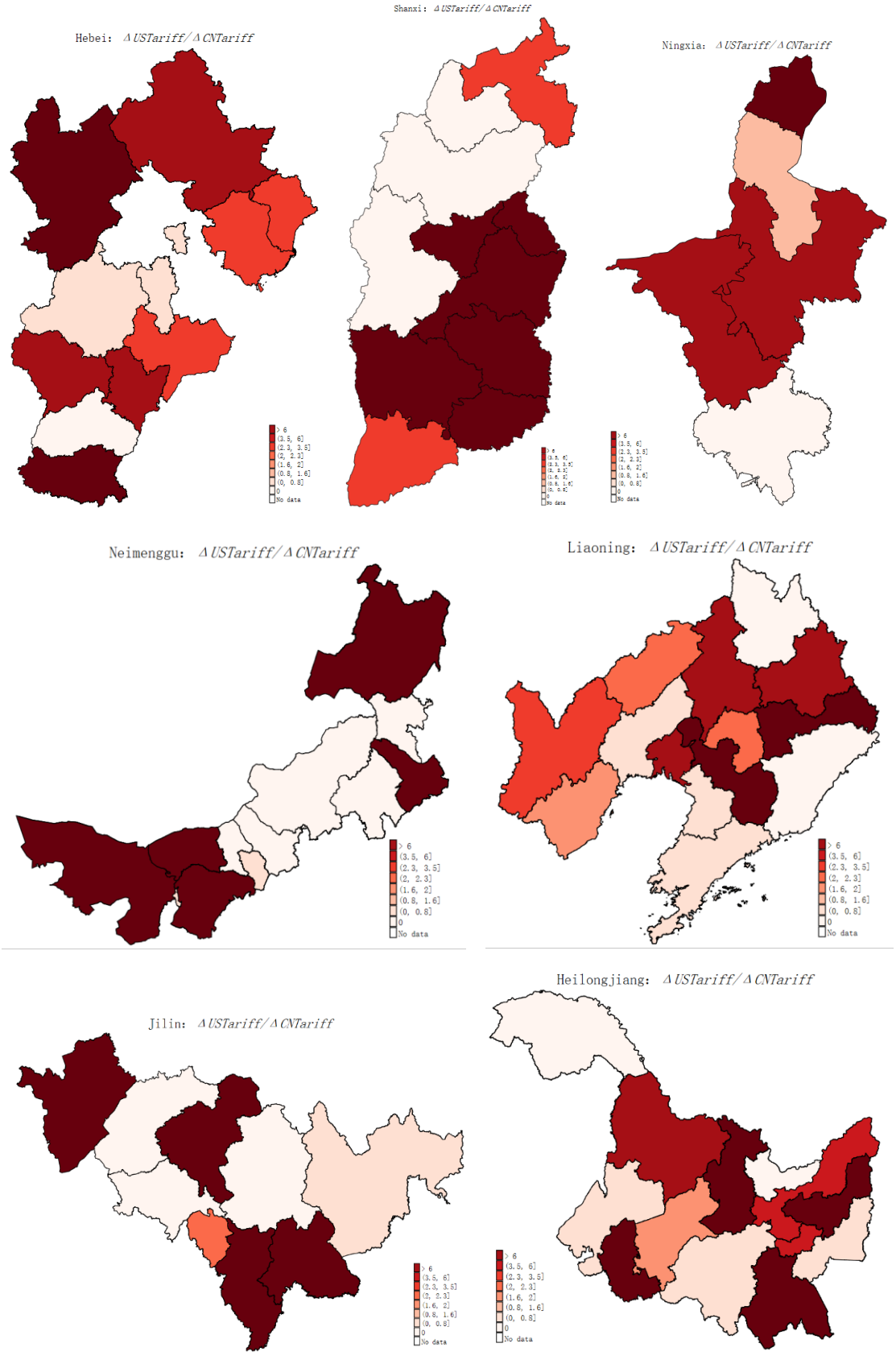
From July to September 2018, the United States imposed additional tariffs on China, covering the first round of $50 billion in imports and the second round of $200 billion. In May 2019, the United States further raised tariff rates on the second round of $200 billion; in September, it imposed tariffs on portions of a third round of $300 billion. China responded with corresponding retaliatory tariffs on U.S. imports: the first round of $50 billion from July to August 2018, the second round of $60 billion in September 2018; in June 2019, it raised tariff rates on portions of the second $60 billion list, and in September 2019 imposed retaliatory tariffs on portions of a third round of $75 billion. In December 2019, the two sides reached a Phase One agreement; during this period, both sides granted exclusions or exemptions for a small number of products, though tariffs remained in place on the vast majority.

In January 2019, China eliminated retaliatory tariffs on automobiles and auto parts and unilaterally lowered some MFN tariffs. Beginning in September 2019, China announced two exclusion lists for the first batch of retaliatory tariffs and two exclusion lists for the second batch. As of the end of 2024, China had announced sixteen exclusion extension lists for retaliatory tariffs on U.S. products, covering 438 HS 8-digit products. U.S. tariff exclusions for Chinese imports primarily involved four trade action lists: the $34 billion trade action (List 1), the $16 billion trade action (List 2), the $200 billion trade action (List 3), and the $300 billion trade action (List 4). Beginning in late December 2018, the Office of the United States Trade Representative (USTR) successively announced tariff exclusion lists and extended 549 exemptions upon expiration; however, most of these extensions expired before December 31, 2020. In March 2022, USTR decided to reinstate exemptions for 352 of the 549 products, with exclusions applying from October 12, 2021, and extended through December 31, 2022, with subsequent further extensions. To address COVID-19, USTR announced extensions of exclusion periods for certain healthcare products needed for pandemic response, granting tariff exclusions for 99 products from January 1, 2021; on October 30, 2021, exemptions for 18 products expired, while the remaining 81 products continued to be extended.

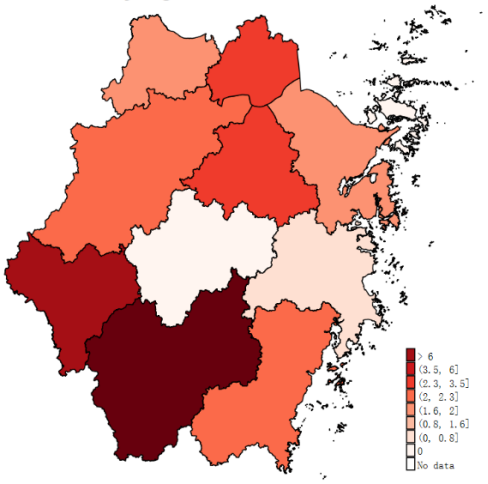
Figures 2 and 3 present the average tariffs on U.S. products affected by Chinese tariff increases and on Chinese products affected by U.S. tariff increases, respectively (simple arithmetic averages at the HS 8-digit product level). From 2017 through April 2018, the average tariff rate on U.S. products imported by China remained at approximately 9.7 percent, rising to 19.8 percent by the end of 2018 and to 27.9 percent by the end of 2019, before declining slightly to 27.1 percent in early 2020. Over the same period, China's MFN tariffs on imports from the rest of the world exhibited a

downward trend, falling from 9.7 percent in 2017 to approximately 7.1 percent in 2022. The average tariff on Chinese products imported by the United States remained at approximately 4.7 percent through March 2018, rising rapidly to 14.5 percent by the end of 2018 and further to 28.4 percent by the end of 2019, before declining to 25.9 percent in early 2020. Over the same period, U.S. import tariffs on products from the rest of the world remained virtually unchanged, fluctuating between 4.6 and 4.7 percent from 2017 to 2022.

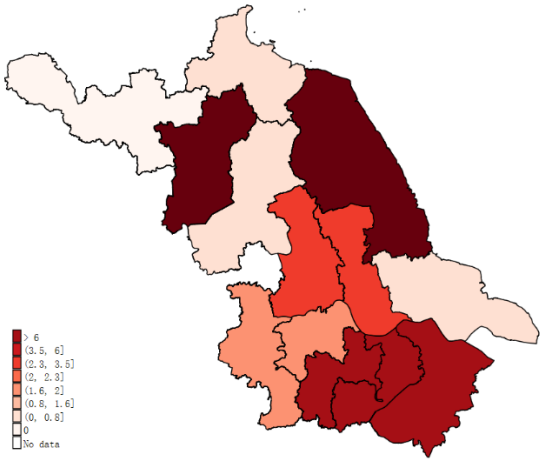
Appendix 3: Geographical Distribution of the Proportions of Export and Import Impacts in Each City within 27 Provincial Administrative Regions



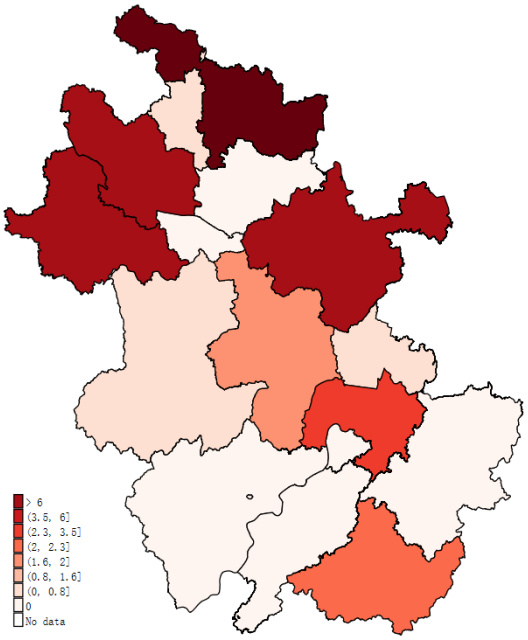
Zhejiang: $\Delta USTariff/\Delta CNTariff$



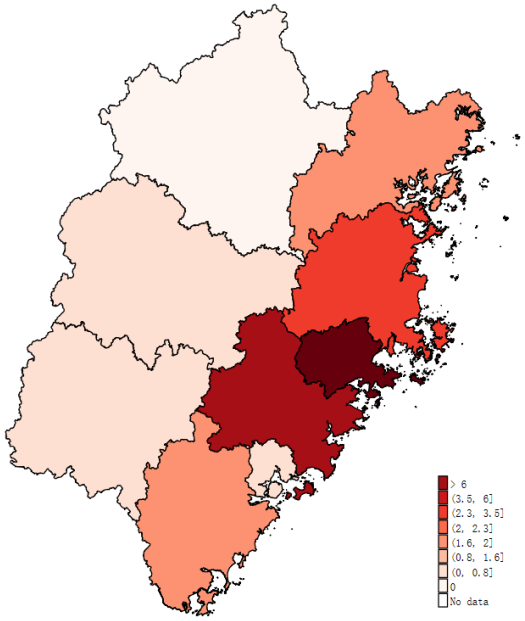
Jiangsu: $\Delta USTariff/\Delta CNTariff$



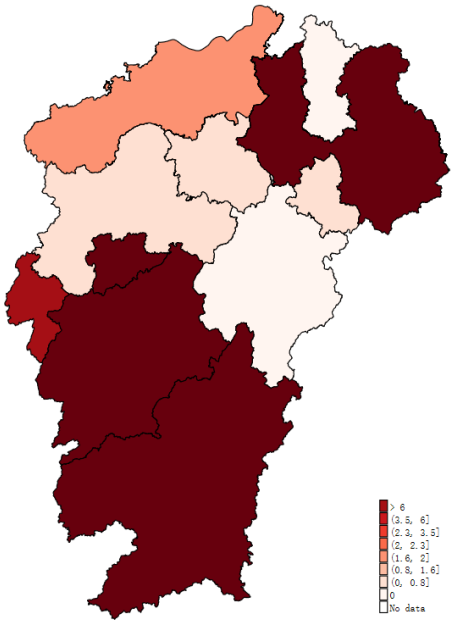
Anhui: $\Delta USTariff/\Delta CNTariff$



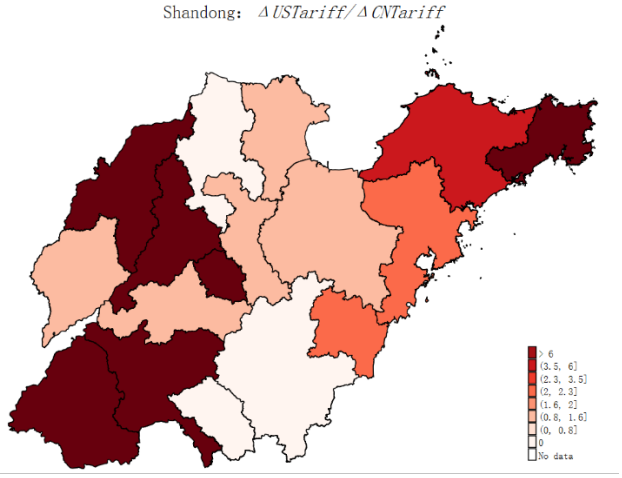
Fujian: $\Delta USTariff/\Delta CNTariff$



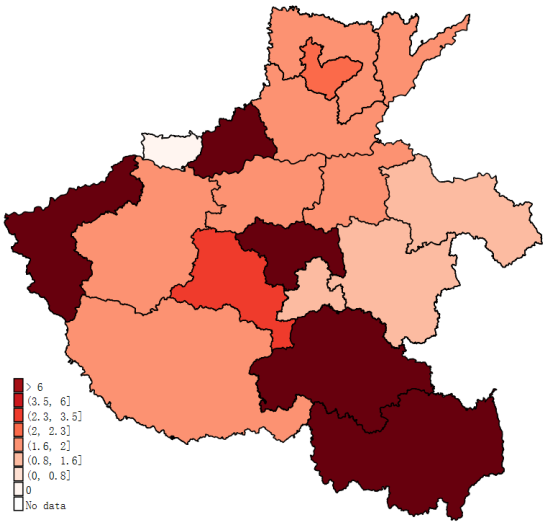
Jiangxi: $\Delta USTariff/\Delta CNTariff$



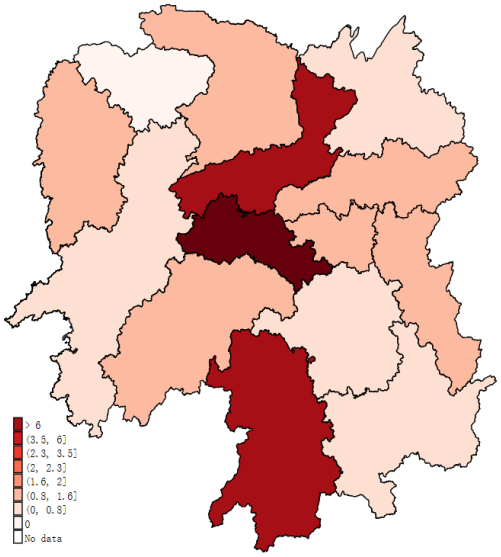
Shandong: $\Delta USTariff/\Delta CNTariff$



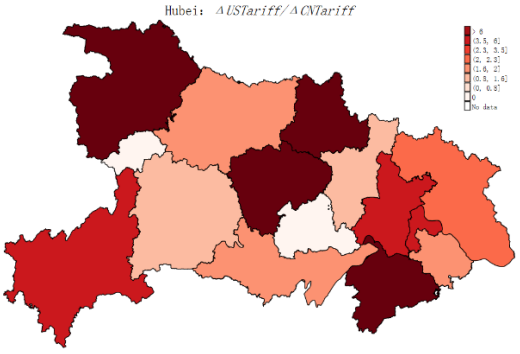
Henan: $\Delta USTariff/\Delta CNTariff$



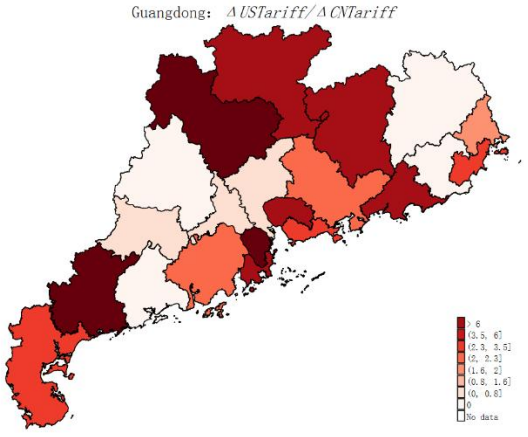
Hunan: $\Delta USTariff/\Delta CNTariff$



Hubei: $\Delta USTariff/\Delta CNTariff$



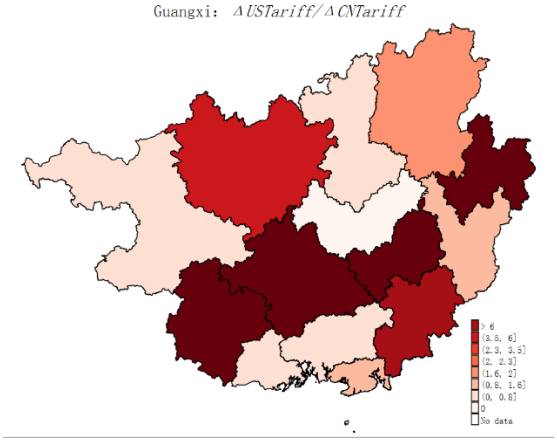
Guangdong: $\Delta USTariff/\Delta CNTariff$

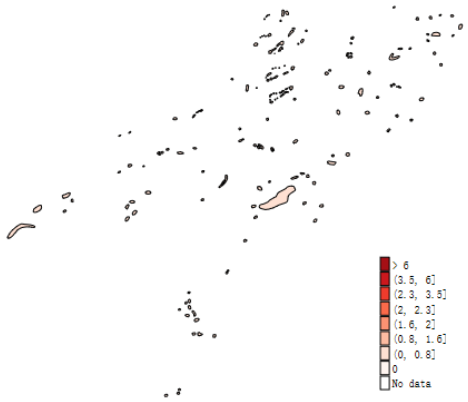


Hainan: $\Delta USTariff/\Delta CNTariff$

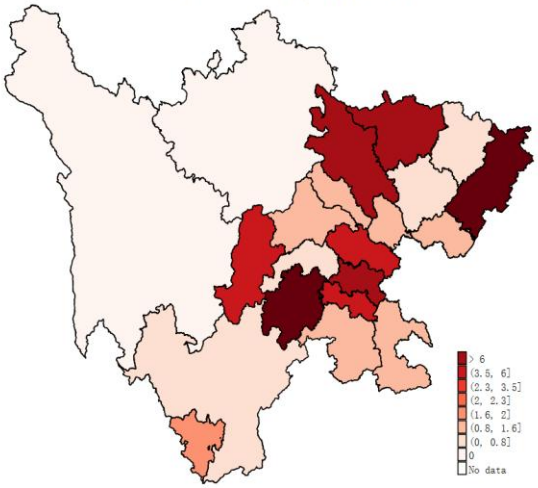


Guangxi: $\Delta USTariff/\Delta CNTariff$

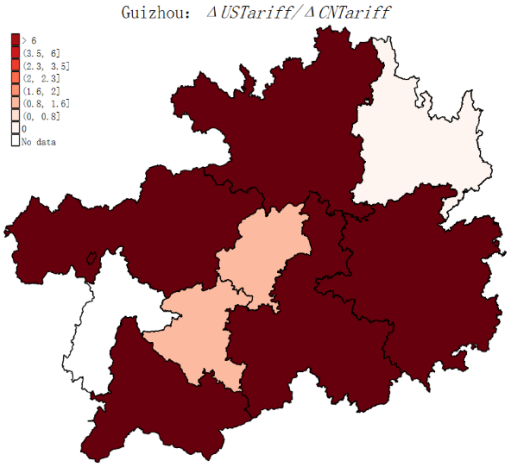




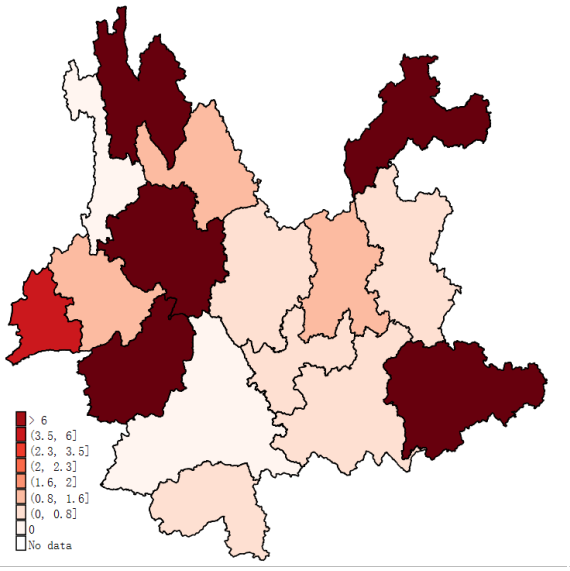
Sichuan: $\Delta USTariff/\Delta CNTariff$



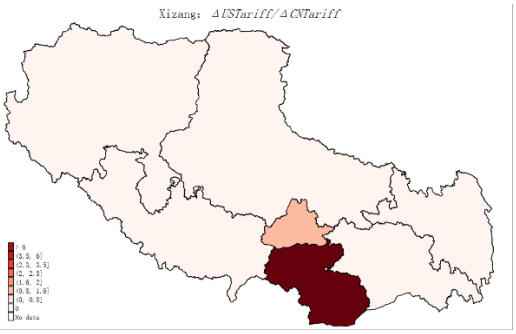
Guizhou: $\Delta USTariff/\Delta CNTariff$



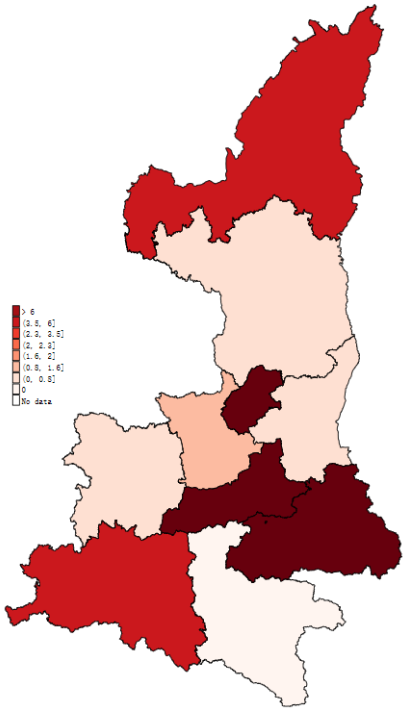
Yunnan: *ΔUSTariff/ΔCNTariff*



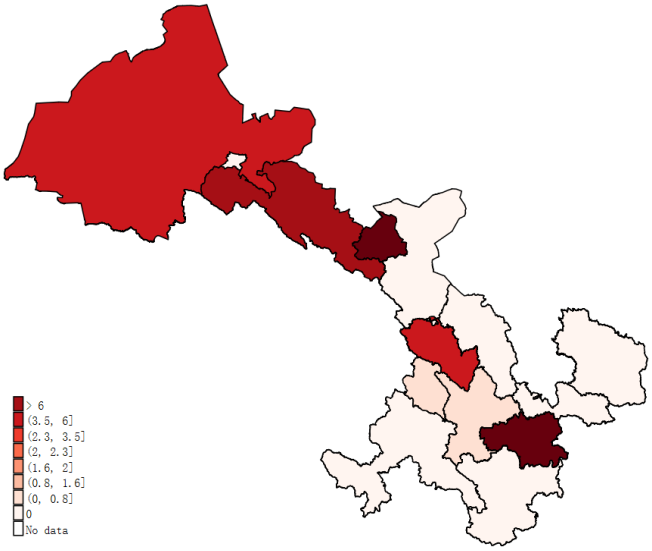
Xizang: *ΔUSTariff/ΔCNTariff*



Shaanxi: *ΔUSTariff/ΔCNTariff*



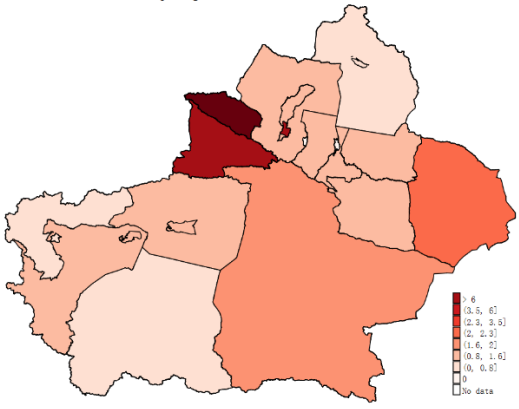
Gansu: *ΔUSTariff/ΔCNTariff*



Qinghai: *ΔUSTariff/ΔCNTariff*



Xinjiang: *ΔUSTariff/ΔCNTariff*



Appendix 4: Comparison Chart of Overall Import (Export) Amounts at the City Level as Officially Reported and the Summarized Import (Export) Amounts at the Enterprise Level as Recorded in the Customs Database

