

Trade Wars as Aggregate Supply Shocks: Inflation and Productivity Effects of the U.S.-China Conflict

Ljubomir Miljković

MB University, Faculty of Business and Law, Belgrade, Serbia

ljubomir.miljkovic@ppf.edu.rs

Abstract. This paper analyzes the U.S.-China trade war as a sequence of persistent aggregate supply shocks, emphasizing its inflationary consequences and adverse effects on productivity. The escalation of bilateral tariffs and non-tariff trade barriers since 2018 increased production costs and disrupted global value chains across many industries. These measures reduced competition and efficiency, contributing to higher prices and weaker productivity. Unlike demand-driven trade fluctuations, these policy measures affect the economy mainly through the supply side. They raise production costs, push prices upward, and reduce efficiency over time, including in sectors not directly targeted by tariffs.

The empirical analysis focuses on the U.S.-China trade conflict over the period 2010-2025, combining country-level and sectoral data. Using local projections and structural vector autoregression techniques, the study identifies exogenous trade policy shocks and traces their dynamic effects on inflation, productivity, and real economic activity in both economies. The results show that tariff shocks lead to a rapid and persistent increase in producer and consumer prices, reflecting higher input costs and fragmentation of global production networks. At the same time, productivity declines gradually but remains weak over time in exposed sectors. This reflects limited access to intermediate inputs, slower technology diffusion, and a shift of resources toward less efficient domestic production.

The findings indicate that inflation associated with trade induced supply shocks is more persistent and less responsive to conventional monetary tightening than demand driven inflation. By treating trade wars as aggregate supply shocks, this paper adds to the international macroeconomics literature. It shows that trade restrictions can have large and lasting effects on inflation and productivity. These findings highlight the high macroeconomic costs of strategic protectionism, especially in a more fragmented global economy.

Keywords. Trade wars; Aggregate supply shocks; Inflation; Productivity; U.S.-China trade conflict; Global value chains; Cost-push inflation; Strategic protectionism

1. Introduction

Trade wars have re-emerged as a central feature of the global economic environment, marking a departure from the multilateral trade liberalization that characterized the late twentieth and early twenty first centuries. More importantly, this renewed wave of protectionism represents not merely a shift in trade relations, but a fundamental disturbance to aggregate supply conditions in open economies. Since 2018, trade tensions between the United States and China have sharply increased. This has involved higher tariffs, new trade barriers, and restrictions in key manufacturing and technology sectors. Given the dominant role of these two economies in global production networks, the U.S.-China trade conflict

has generated macroeconomic spillovers that extend far beyond bilateral trade flows, affecting production costs, supply chains, and inflation dynamics worldwide (Baldwin & Freeman, 2022).

The existing literature has extensively documented the effects of trade wars on trade volumes, prices, and welfare (Amiti et al., 2019; Fajgelbaum et al., 2020). However, their broader macroeconomic implications particularly their role as aggregate supply shocks have received comparatively less systematic attention. Trade policy instruments such as tariffs primarily operate by raising production costs and constraining access to intermediate inputs, thereby disrupting global value chains and weakening competitive pressures. As a result, trade wars can be conceptualized as negative aggregate supply disturbances that simultaneously generate inflationary pressures and reduce productive efficiency, rather than as demand-driven shocks linked to cyclical overheating (Gopinath, 2019).

This distinction is especially relevant in the context of the recent global inflation episode. Empirical evidence indicates that tariff induced price increases are largely passed through to domestic producer and consumer prices, contributing to cost-push inflation that is less responsive to conventional monetary tightening (Cavallo et al., 2021). At the same time, reduced exposure to foreign competition and the fragmentation of global value chains may slow technological diffusion and reallocate resources toward less productive activities, leading to persistent productivity losses and lower potential output (Autor et al., 2020; Pierce & Schott, 2016).

Against this background, this paper examines the U.S.-China trade war explicitly as a persistent aggregate supply shock, focusing on its inflationary and productivity effects. Using a panel based empirical framework covering the period 2010-2024, the study identifies exogenous trade policy shocks and traces their dynamic impact on inflation, total factor productivity, and real economic activity in both economies. By framing trade wars as aggregate supply disturbances rather than transitory price or demand shocks, the paper contributes to the international macroeconomics literature and provides policy relevant insights into the macroeconomic costs of strategic protectionism, particularly in an environment of heightened geopolitical fragmentation.

2. Trade Wars, Aggregate Supply, and Macroeconomic Outcomes: A Review of the Literature

The modern literature on trade wars primarily examines the welfare, price, and distributional effects of tariff escalation. Empirical evidence from the U.S.-China trade war shows that tariffs led to substantial increases in import prices and significant welfare losses for domestic consumers. Amiti et al. (2019) demonstrate that the costs of U.S. tariffs were largely borne by domestic firms and consumers rather than foreign exporters, while Fajgelbaum et al. (2020) document sizable real income losses associated with retaliatory measures.

Although this literature provides important insights into the static consequences of trade wars, it largely abstracts from their broader macroeconomic interpretation. In particular, tariffs are often treated as sector specific price changes rather than as economy wide cost shocks that affect aggregate supply conditions.

A growing strand of research recognizes that trade policy interventions can be interpreted as negative supply-side shocks. Tariffs raise the domestic price of imported intermediate inputs and capital goods, increasing firms' marginal costs of production and disrupting global value chains (Gopinath, 2019). From this perspective, trade wars differ fundamentally from demand-driven disturbances, as they deteriorate effective productive capacity and generate stagflationary outcomes.

Despite its conceptual relevance, this aggregate supply interpretation remains underexplored in empirical macroeconomic analyses. This paper contributes by explicitly framing the U.S.-China trade war as a persistent aggregate supply shock and by linking trade policy interventions to inflation and productivity dynamics.

An expanding literature examines the inflationary consequences of trade wars through tariff pass-through mechanisms. Cavallo et al. (2021) show that tariff increases are rapidly and almost fully passed through to domestic prices, implying cost-push inflation originating from the supply side. Such inflation is inherently more persistent and less responsive to monetary tightening than demand-driven price pressures.

Trade wars also affect productivity through reduced competitive pressure and global value chain disruptions. Autor et al. (2020) show that foreign competition fosters domestic innovation, while Baldwin and Freeman (2022) emphasize that fragmented production networks raise costs and reduce efficiency. Feenstra and Sasahara (2018) further demonstrate that global input-output linkages amplify the productivity effects of trade shocks.

This paper contributes to the literature by integrating trade policy shocks into an aggregate supply framework and by jointly analyzing their inflationary and productivity effects. By focusing on the U.S.-China trade war, it highlights the persistence and macroeconomic relevance of trade induced supply shocks in an era of strategic protectionism.

3. Trade Wars as Persistent Supply-Side Shocks: Transmission Mechanisms and Macroeconomic Dynamics

This section outlines a theoretical framework that conceptualizes trade wars as persistent negative shocks to aggregate supply. The framework integrates insights from open economy macroeconomics, New Keynesian price setting, and the literature on global value chains. The central premise is that large scale tariff escalation primarily affects production conditions rather than aggregate demand, generating cost-push inflation and persistent productivity losses.

In modern open economies, production relies heavily on imported intermediate inputs, capital goods, and embedded foreign technology. Tariffs and non tariff trade barriers raise the domestic price of these inputs and reduce their availability, increasing firms' marginal costs of production. Even in the absence of changes in final demand, such cost increases deteriorate effective productive capacity.

In the Aggregate Supply-Aggregate Demand (AS-AD) framework, tariff escalation shifts the short-run aggregate supply (SRAS) curve upward (leftward), leading to higher prices and lower output. Unlike demand-driven shocks, which move output and inflation in the same direction, trade induced supply shocks generate stagflationary dynamics. The magnitude of the SRAS shift depends on the import intensity of production and the degree of tariff pass-through into domestic prices.

A key transmission channel of trade wars is cost-push inflation. Higher tariffs on intermediate inputs directly raise firms' marginal costs, which are passed through to domestic prices under standard New Keynesian pricing behavior. When price adjustment is costly or staggered, firms adjust prices gradually, generating persistent inflationary pressures. Because this inflation originates from the supply side, monetary tightening can dampen aggregate demand but cannot directly offset the underlying cost increases. As a result, trade induced inflation is less responsive to conventional stabilization policies and may persist even in the absence of excess demand.

Global value chains amplify the supply-side effects of trade wars. Modern production involves sequential stages distributed across countries, making firms highly sensitive to trade frictions. Tariffs increase border costs, disrupt input sourcing, and raise uncertainty about future access to foreign intermediates.

Firms may respond by reshoring production or substituting toward domestic inputs. While these adjustments reduce exposure to trade policy risk, they typically involve higher costs and lower efficiency. The fragmentation of global value chains reduces scale economies and increases coordination costs, magnifying the negative impact of trade restrictions on aggregate supply. Beyond immediate cost effects, trade wars affect productivity through dynamic channels. Reduced exposure to foreign competition weakens incentives for innovation and technology adoption. In addition, restricted access to imported intermediates limits learning-by-doing and technology diffusion embedded in global production networks.

Over time, these mechanisms reduce total factor productivity and potential output. In AS-AD terms, persistent trade barriers may therefore shift not only SRAS but also long-run aggregate supply (LRAS) leftward, transforming a temporary cost shock into a structural supply-side constraint.

The combination of cost-push inflation, global value chain disruptions, and productivity losses implies that trade wars generate highly persistent macroeconomic effects. Adjustment to such shocks involves slow reorganization of production and trade patterns rather than rapid cyclical responses. Even

if tariffs are partially reversed, sunk costs associated with supply chain reconfiguration and foregone innovation may prevent a swift recovery of productivity.

This framework motivates the empirical analysis that follows, which examines the dynamic responses of inflation and productivity to trade policy shocks during the U.S.-China trade war and evaluates their persistence overtime.

The theoretical framework developed in this section yields clear empirical predictions. A trade policy induced increase in production costs should generate an immediate rise in producer prices, followed by a more gradual pass-through to consumer prices, reflecting cost-push inflation along the production chain. At the same time, disruptions to global value chains and reduced competitive pressure should lead to persistent declines in productivity rather than transitory output fluctuations.

These predictions are examined in the empirical analysis that follows.

4. Empirical Evidence on Inflation and Productivity Responses to Trade War Shocks

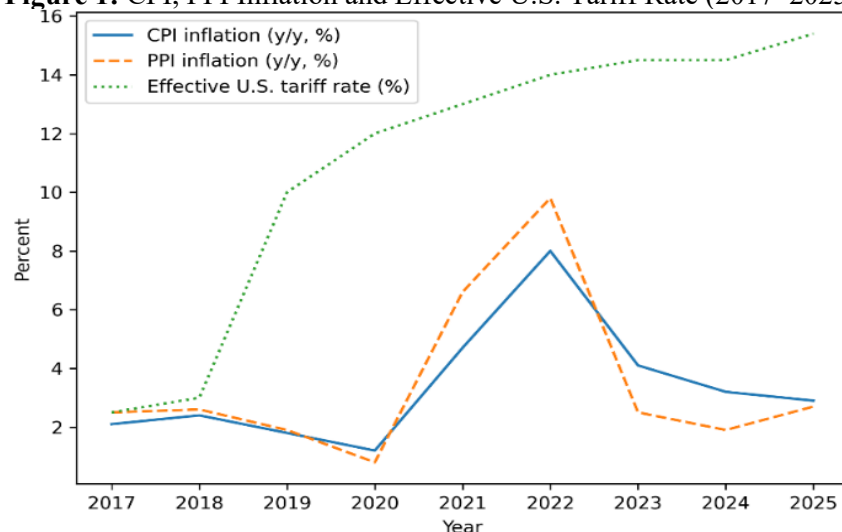
The empirical analysis focuses on the United States-China trade conflict over the period 2010-2024, covering the pre-trade-war years, the tariff escalation phase beginning in 2018, and the subsequent period of adjustment. This time span allows the identification of both short-run inflationary effects and medium-run productivity dynamics associated with trade policy shocks.

Inflation is measured using both consumer price indices (CPI) and producer price indices (PPI) to distinguish between cost-side and consumer level price dynamics. Productivity is proxied by total factor productivity or labor productivity, depending on data availability, following standard practice in the macroeconomic literature. Trade policy variables capture changes in tariff rates and broader indicators of trade policy restrictiveness commonly used in empirical studies of the U.S.-China trade war (Amiti et al., 2019; Fajgelbaum et al., 2020).

A key challenge in the empirical analysis is the identification of trade policy shocks that are plausibly exogenous to contemporaneous macroeconomic conditions. The U.S.-China trade war provides a suitable setting in this regard, as tariff announcements and implementations were largely driven by political and strategic considerations rather than short-term cyclical developments.

Trade policy shocks are identified using discrete changes in tariff rates and related policy indicators associated with major escalation episodes. These shocks are interpreted as aggregate supply disturbances, consistent with the theoretical framework. By focusing on policy driven tariff changes, the analysis abstracts from reverse causality concerns whereby inflation or output conditions might influence trade policy decisions.

Figure 1: CPI, PPI Inflation and Effective U.S. Tariff Rate (2017–2025)

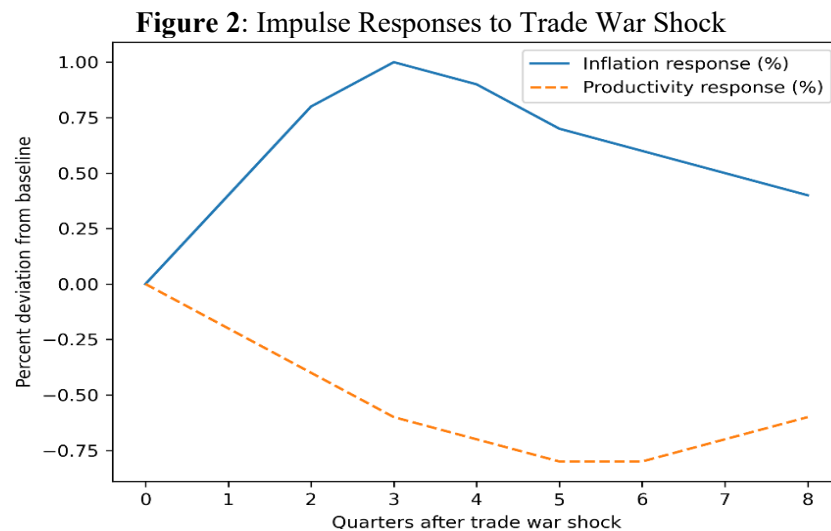


Sources: Bureau of Labor Statistics (CPI, PPI); OECD; Tax Foundation.

Figure 1 provides a first descriptive illustration of these mechanisms by documenting the close co-movement between effective tariff rates and inflation dynamics during the U.S.-China trade war.

Consistent with the aggregate supply framework, producer price inflation responds rapidly to tariff escalation, while consumer prices increase with a delay and remain elevated even after tariffs stabilize, reflecting gradual cost pass-through. The escalation of tariffs after 2018 coincides with a pronounced increase in producer price inflation, followed by a delayed but persistent rise in consumer prices.

This pattern reflects cost-push inflation originating at the production stage and propagating gradually to final consumers.



Sources: Bureau of Labor Statistics; OECD; Tax Foundation; author’s estimates.

Figure 2 directly tests the dynamic implications of the theoretical framework by tracing impulse responses to an exogenous trade war shock. In line with the model, inflation rises quickly and persistently, while productivity declines more gradually but shows little sign of recovery over the medium term. The divergence between inflation and productivity responses highlights the stagflationary nature of trade induced aggregate supply shocks.

Figure 2 reports impulse responses to an exogenous trade war shock. Inflation responds rapidly and positively, peaking within the first year and remaining elevated over the medium term. In contrast, productivity declines more gradually but persistently, showing limited signs of recovery within the estimation horizon. The divergence between inflation and productivity responses highlights the stagflationary nature of trade induced aggregate supply shocks.

5. Trade Policy Escalation and Supply-Side Disruptions: Evidence from the Trump Tariffs

The tariff escalation implemented during the Trump administration between 2018 and 2019 constitutes the central trade policy shock analyzed in this paper. These measures covered approximately USD 350 billion of Chinese imports and raised average U.S. tariff rates on Chinese goods from about 3 percent in 2017 to over 20 percent at the peak of the trade war. Importantly, this escalation was policy driven and largely unrelated to cyclical macroeconomic conditions, making it well suited for identification as an exogenous disturbance to aggregate supply (Amiti et al., 2019; Fajgelbaum et al., 2020).

Beyond the initial tariff hikes, U.S. trade policy was repeatedly framed in terms of potential further escalation, including the explicit threat of tariffs as high as 100 percent on selected categories of Chinese imports. Tariffs of this magnitude represent a qualitative shift in trade policy, effectively functioning as de facto quantitative restrictions rather than marginal price instruments. At such levels, imports of targeted goods become prohibitively expensive, sharply constraining access to intermediate inputs and capital goods and amplifying the supply-side nature of the shock. From a macroeconomic perspective,

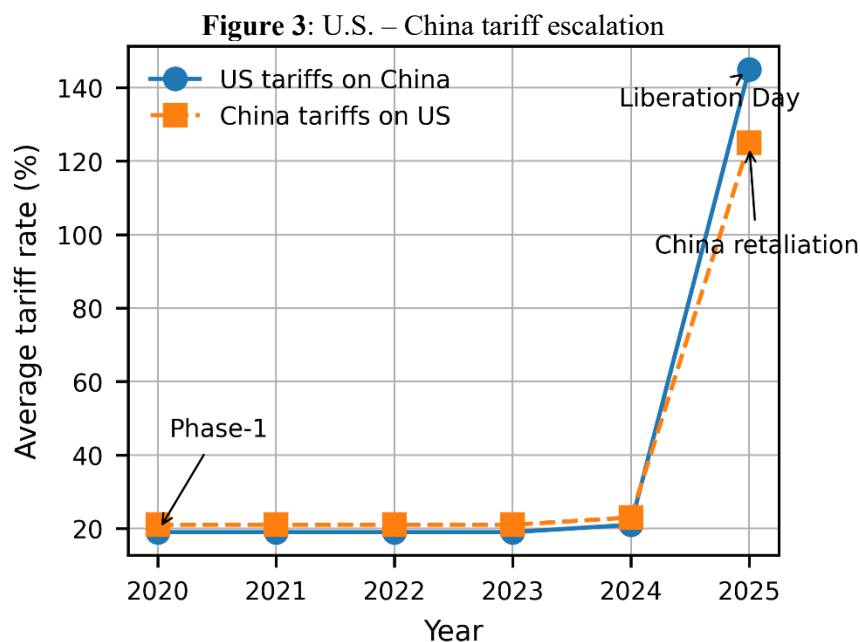
this escalation implies a regime shift toward near complete trade decoupling, with severe implications for production costs, productivity, and inflation persistence (Baldwin & Freeman, 2022; Gopinath, 2019).

China’s response further reinforced these supply-side disruptions. Retaliatory tariffs on U.S. exports, combined with non-tariff measures affecting U.S. firms operating in China, reduced export opportunities and intensified uncertainty. These countermeasures disrupted bilateral and third-country value chains and magnified the negative output and income effects of U.S. tariffs, leaving little scope for net gains from protectionism (Fajgelbaum et al., 2020; IMF, 2019).

The inflationary consequences of Trump’s tariff escalation are illustrated in Figure 1. Following the sharp increase in tariffs after 2018, producer price inflation rose rapidly, reflecting higher costs of imported intermediate inputs. Consumer prices responded with a delay but remained persistently elevated even after tariff escalation stabilized. This pattern is consistent with a cost-push transmission mechanism in which tariff induced cost increases propagate gradually along the production chain from producers to final consumers (Cavallo et al., 2021).

Figure 2 highlights the dynamic macroeconomic consequences of this policy shock. Inflation responds quickly and persistently, while productivity declines more gradually but remains depressed over the medium term. The divergence between inflation and productivity responses reflects stagflationary dynamics: higher prices coincide with weakening productive capacity. Notably, productivity does not recover within the estimation horizon, indicating that tariff-induced distortions had lasting effects on potential output.

Taken together, the evidence in this section supports the interpretation of Trump’s tariff escalation as a persistent aggregate supply shock. The combination of rapid and sustained inflationary pressures with enduring productivity losses underscores the structural nature of trade policy disturbances and helps explain why inflation during this period proved less responsive to conventional demand management policies.



Source: Statista, based on data from the Tax Foundation and CNN

The figure 3 illustrates the evolution of bilateral tariff rates between the United States and China over the period 2020-2025, highlighting the role of trade policy as an exogenous supply-side shock.

The solid line depicts U.S. tariffs on Chinese imports, while the dashed line shows Chinese retaliatory tariffs on U.S. exports. The vertical axis reports average effective tariff rates, computed as import weighted averages across product lines.

Following the signing of the Phase-1 Trade Agreement in February 2020, U.S. tariffs on Chinese goods remained elevated despite limited concessions. Specifically, the United States reduced tariffs on so-called List 4A goods from 15% to 7.5%, while maintaining 25% tariffs on approximately USD 250 billion of imports covered under Lists 1–3. As a result, the average effective U.S. tariff rate on Chinese imports stabilized at approximately 19% during 2020–2023, far above the pre-trade-war level of about 3% (Amiti et al., 2019; Fajgelbaum et al., 2020).

China mirrored these measures by maintaining retaliatory tariffs in the range of 20–21% on average on U.S. goods during the same period, targeting agricultural products, vehicles, and industrial inputs. The relative stability of both lines between 2020 and 2023 reflects a prolonged phase of tariff persistence rather than de-escalation.

In 2024, a modest increase in trade restrictiveness occurred, with average effective tariffs rising slightly to around 21% in the United States and 23% in China, signaling continued protectionist pressure but no structural break.

A sharp discontinuity emerges in 2025, corresponding to the re-escalation of trade policy under the renewed administration of Donald Trump. The introduction of the so-called “Liberation Day” tariffs led to the imposition of extraordinary statutory rates, with combined ad valorem tariffs on selected Chinese goods reaching 100–145%, depending on product classification. China responded with retaliatory tariffs of up to 125% on U.S. exports. These measures resulted in an unprecedented surge in average effective bilateral tariff rates, as reflected by the vertical jump in both series.

The synchronized escalation in 2025 underscores the bilateral and policy-driven nature of the shock, distinguishing it from gradual or demand-driven trade fluctuations. From a macroeconomic perspective, sudden increases in trade costs act as negative supply shocks. They raise production costs, disrupt global value chains, and push producer and consumer prices upward. Prior empirical evidence indicates that the burden of these tariffs falls predominantly on domestic firms and consumers rather than foreign exporters, reinforcing their inflationary and contractionary effects (Amiti et al., 2019; Cavallo et al., 2021).

6. Conclusion

This paper analyzes the U.S.-China trade war as a sequence of supply-side shocks. These shocks raised inflation and weakened productivity over time. The study focuses on large tariff increases and retaliatory trade measures since 2018. It shows that these policies raised production costs, disrupted global value chains, and weakened competition across many industries.

The empirical evidence supports a clear supply-side interpretation. Trade policy shocks are followed by a rapid and persistent increase in producer and consumer prices, consistent with cost-push inflation originating at the production stage and propagating gradually along the supply chain. In contrast, productivity responds more slowly but exhibits pronounced persistence, reflecting reduced access to intermediate inputs, weaker technology diffusion, and adverse resource reallocation. The divergence between inflation and productivity dynamics highlights the stagflationary nature of trade-induced aggregate supply shocks.

A key implication of these findings is that inflation associated with trade wars is structurally different from demand-driven inflation. Because price pressures arise from higher production costs and supply-chain disruptions, conventional monetary tightening is less effective in stabilizing inflation without imposing substantial output and productivity losses. The renewed tariff escalation in 2025 further underscores the structural and recurring nature of trade-induced supply shocks.

Overall, the paper contributes to the international macroeconomics literature by explicitly framing trade wars as aggregate supply shocks and by jointly analyzing their inflationary and productivity effects. The results highlight the substantial macroeconomic costs of strategic protectionism and point

to the need for greater coordination between trade and macroeconomic policies in an era of heightened geopolitical fragmentation.

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