PREFACE

The Discussion Notes (NDDs) are aimed at analyzing issues relevant to monetary policy in Chile and around the world. Their objective is to present a discussion on the current state of global literature, emphasizing the most relevant implications for monetary policy design. To this end, the Notes describe the different approaches of cutting-edge research in economics, highlighting points of agreement and ongoing debates. The NDDs are prepared by economists from the Monetary Policy Division and do not necessarily reflect the official view of the Board members of the Central Bank of Chile.

This tenth NDD issue examines the macroeconomic effects of tariffs—particularly unilateral increases—and the impact of other economic sanctions imposed between countries. Since 2018, several nations, notably the United States, China, and some European economies, have raised tariffs on specific destinations and products in what has been termed the "Trade War." In 2025, a new wave of tariffs has emerged, underscoring the relevance of this discussion. The analysis considers the effects on imposing countries, affected economies, and the global economy at large. It explores repercussions on prices— of exports, imports, and consumer goods—as well as trade flows and macroeconomic aggregates such as activity, employment, and investment. In addition, it reviews evidence on the economic impact of sanctions, focusing on those implemented in recent decades. The issue concludes with an overview of ongoing research following the April 2025 U.S. announcements and studies examining the interaction between monetary policy and tariffs.

This NDD was prepared by Will Lu, Brian Pustilnik, and Marco Rojas. Special thanks to Elías Albagli, Sofía Bauducco, Guillermo Carlomagno, Mariana García, Mario Giarda, Enrique Orellana, and Juan Marcos Wlasiuk for their contributions, comments, and suggestions. We also appreciate the comments from the Board and staff of the Monetary Policy Division of the Central Bank of Chile during various in-house presentations.

CONTENTS

1. INTRODUCTION (GEO-ECONOMIC FRAGMENTATION: TARIFFS AND SANCTIONS)

Upon the arrival of the new U.S. government, tariffs have once again taken center stage in the international economy. The first measures implemented by the current administration, including declarations of national emergency and massive tariff increases on key imports such as electric vehicles, batteries, steel, and pharmaceuticals—marked a deepening of the protectionist shift that began in 2018. If the tariffs announced in the second week of May 2025 are implemented, the average tariff applied by the United States would return to levels comparable to those of the early 20th century, challenging many of the tariff concessions built under the multilateral system of the General Agreement on Tariffs and Trade (GATT). created in 1947, and the World Trade Organization (WTO) created in 1995.

Such shift highlights the need to comprehend the available literature in economics—both theoretical and empirical—on the effects of tariffs and trade sanctions. Beyond their immediate motivations or political legitimacy, measures of this kind generate costs and reallocations in multiple dimensions: they make imported goods more expensive, alter investment and production decisions, restructure global value chains, affect financial flows, and modify terms of trade, among other effects. In turn, imposing tariffs of the announced magnitudes could trigger trade escalations with retaliation from affected countries, heighten uncertainty, and intensify global tensions. Given the current geopolitical context, it is crucial to carefully analyze the use of tariffs as an economic tool for political ends. Understanding the precise effects –both of what they do and do not achieve—is essential for assessing their effectiveness as a means of exerting pressure on other countries.

The objective of this NDD is to revisit recent economic research on the effects of tariffs and trade sanctions, with an emphasis on their impact on trade, prices, welfare, and macroeconomic aggregates. The note also seeks to distinguish between the effects on the country imposing the measure, the recipient country, and third countries that are indirectly affected or which operate as "bystanders" within the global system. This exercise is particularly pertinent for the likes of the Chilean economy, which are open, integrated into global value chains, and sensitive to changes in relative prices, trade flows diversions, and fluctuations in global financial markets.

The acute geopolitical tensions are reflected in academic literature with the renewed focus on economic diplomacy, or economic statecraft, understood as the deliberate use of economic instruments to achieve strategic political objectives.[1]/ Itskhoki and Ribakova (2024) define this approach as leveraging the economic power of the state to influence the behavior of other countries, through either incentives or restrictions. Unlike traditional trade policy, which pursues direct economic goals (such as correcting inefficiencies), the emphasis is shifted to the realm of political and international relations.

Among the most representative instruments of economic diplomacy are trade sanctions, understood as restrictive measures imposed by a state or bloc of countries to modify the behavior of an international agent. They are intended to exert pressure through the deliberate deprivation of access to key economic resources, such as financial flows, strategic goods, or sensitive technologies. According to Galtung (1967), an effective sanction must meet two conditions: it must deprive the target country of something valuable and, at the same time, induce them to comply with rules or expectations defined by the sanctioning country.

[1] This expression captures more accurately the notion that these tools are manipulated to service the "art of governing", notably its strategic dimension beyond its purely economic operation.

Based on this logic, recent literature has identified a broader phenomenon known as geoeconomic fragmentation: a process whereby global flows of trade, investment, and knowledge begin to reorganize around geopolitical blocs, driven by policy decisions that prioritize national security, productive resilience, and strategic autonomy. Gopinath et al. (2025) and Alfaro and Chor (2023) document this transformation, especially in sectors deemed critical, such as semiconductors, batteries, healthcare, and defense. In this context, economic instruments are no longer aimed exclusively at correcting internal imbalances or improving efficiency, but rather at containing, deterring, and positioning geopolitics.

It is in this scenario that tariffs take on particular prominence. Tariffs are taxes levied on imported goods when they cross a customs border. They can take the form of a percentage of the value of the goods (ad valorem) or a fixed amount per unit (specific), and their original purposes have historically been fiscal, protectionist, or corrective.[2]/ However, when applied selectively and for non-commercial purposes—for example, to pressure another country, influence its policies, or support the domestic defense industry—tariffs can mimic sanctions in terms of their nature.

If properly designed, tariffs can meet the criteria established by Galtung (1967) to be considered a sanction: they restrict the target country's access to a valuable market and attempt to induce a change in its behavior. However, their effectiveness as a sanction depends more on economic factors: elasticities of demand and supply, substitution capabilities, the nature of the goods taxed (whether intermediate inputs or final goods), market structure, and endogenous responses from both the sanctioning and the recipient countries, as well as third countries. Unlike quantitative restrictions or explicit blockades, tariffs operate by altering relative prices and costs, introducing distortions that can have effects that are difficult to anticipate. This complexity makes tariffs a tool with high strategic potential, but their use requires, at the very least, awareness of the second-round economic effects they can cause.

This note is organized into a section on tariffs and one on sanctions, along with two boxes covering the foreseen effects of the April 2 tariff announcements and the interaction of tariffs with monetary policy. It addresses tariffs and sanctions within a unified conceptual framework. However, given their greater frequency, quantification, and relevance in recent episodes, a larger portion is devoted to the analysis of tariffs. It should be noted that we will study the effects of tariff increases since 2018 in the wake of the trade war initiated during Donald Trump's first administration, and not the tariff reductions that generally arise from free trade agreements.

Section 2 reviews the legal and institutional framework governing the imposition of tariffs, both at the multilateral level (GATT and WTO) and in the specific case of the United States, where laws such as Sections 232, 301, or the International Emergency Economic Powers Act (IEEPA) have allowed unilateral actions without formally violating international commitments. The 2018 trade war and the 2025 announcements fall outside the framework of the GATT's Most-Favored-Nation clause, which prohibits discrimination in tariff rates between trading partners.[3]/ In practice, the tariffs imposed during these episodes are more closely related to commercial sanctions than conventional tariffs used by most countries.

This is followed by a discussion of the theoretical justifications for the use of tariffs. It reviews models of optimal tariffs, protection for sensitive or developing industries, dynamic externalities, strategic trade policy, and geopolitical motivations, incorporating both classical literature and recent developments. While the theory acknowledges circumstances under which a tariff can improve national welfare, these conditions are demanding and difficult to apply in contexts where such taxes are imposed on a large scale.

[2] The fiscal objective of a tariff is to collect tax revenue. A tariff whose objective is protectionist seeks to favor domestic production in competing with imported products. Finally, a tariff can create incentives for allocations that correct distortions or negative externalities associated with the production or consumption of certain goods.

[3] Most-Favored-Nation (MFN) is an international trade principle whereby a country must give all its trading partners the same favorable tariff and trade treatment it grants to any of them, known as the MFN tariff. This framework was established in the General Agreement on Tariffs and Trade (GATT) of 1947 and later maintained by the World Trade Organization (WTO).

Before reviewing the empirical evidence on episodes of trade escalation, the transmission mechanisms and factors that determine the impact of a tariff are described in detail. Key variables are identified, such as supply and demand elasticities, relative size of the country, type of good affected (intermediate input vs. final good), market structure (degree of competition), and heterogeneity of firms. Each of these elements modulates the magnitude and direction of the tariff's effects on prices, quantities, and margins, explaining the diversity of results found in the empirical literature.

Empirical evidence on the effects of tariffs is presented in three parts. First, the impacts on the country imposing the measure are examined, summarizing recent findings on prices, trade, consumption, GDP, financial markets, and uncertainty, with a focus on the trade war between the United States and China (2018–2019) and the tariff announcements of 2025. Key results from the 2018 trade war include a near-complete pass-through of tariffs to import prices, with no improvements in the terms of trade; a sharp drop in imports from China, partly offset by a shift toward other suppliers; and a reduction in exports even in sectors not subject to retaliation, due to higher input costs. Overall, the macroeconomic impact on the U.S. was modest though not trivial, with welfare losses estimated at around 0.04% of GDP and significant financial effects.

The second part reviews the evidence on the countries affected by the tariffs, notably China, highlighting its ability to redirect exports to other markets and cushion the shock via its supply chains, which limited the negative effects on the overall volume of its exports.

Finally, the third part addresses the effects on third countries and international trade jointly, including repercussions on economies integrated into global value chains, reallocation of trade flows, heightened uncertainty, financial volatility, and monetary policy responses in emerging countries.

Section 3 focuses on trade sanctions, which over recent decades have become one of the most common tools of geopolitics. Historically dominated by comprehensive trade embargoes—such as the one imposed by the United States on Cuba since 1960 or the blockades against South Africa during Apartheid—sanctions have evolved toward more targeted mechanisms, including individual designation, sectoral restrictions, or financial controls, with the aim of reducing collateral humanitarian harm.

First, the historical evolution is reviewed, followed by a summary of the empirical literature on their economic effects. At the macroeconomic level, sanctions have had significant impacts on targeted countries, including declines in GDP, investment, and foreign trade, as well as increases in inflation and capital outflows. At the microeconomic level, recent studies based on data from sanctioned companies show declines in sales, employment, and assets, with heterogeneous effects depending on the type of firm and its exposure to the global financial system. The case of sanctions against Russia in 2014 and 2022 is also discussed, highlighting the unprecedented scale of the sanctions regime, its impact on energy and financial trade, and the adaptation strategies adopted by Russian firms.

Complementing this analysis, the note presents two boxes. The first discusses the developing evidence on the potential effects of the tariff announcements made by the Trump administration on April 2. Among the possible consequences are a contraction in economic activity and a slight increase in prices are noted which, however, would not be sufficient to close the trade deficit. The second box reviews the literature on the interaction between monetary policy and tariffs. Part of the consensus suggests that the optimal response to tariff increases is expansionary, where, while generating higher temporary inflation, it reduces the recessionary effect of such tax increases.

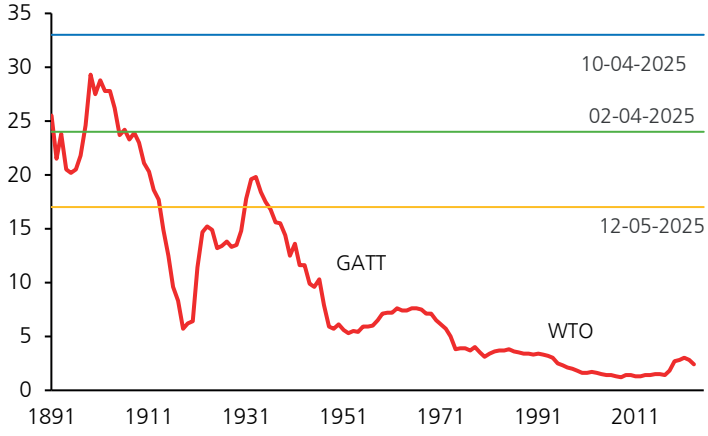
2. TARIFFS

2.1 Context and legal framework

2.1.1 Recent history

Throughout history, tariffs have been a central tool of trade policy. At the turn of the twentieth century, many nations maintained high tariffs to protect their nascent industries and raise revenue. In the United States, customs tariffs averaged between 20% and 30% (Figure 1). Tariff levels fluctuated with tensions between protectionism and liberalization, with a marked cyclical behavior in the first half of the century and a tendency to reduce trade barriers in the second half. An extreme milestone was the Smoot-Hawley Act of 1930 passed during the Great Depression, which raised U.S. tariffs on more than 20 thousand products, bringing the average tariff to around 19%–20%. This global wave of protectionism in the 1930s triggered a chain of retaliatory measures and a contraction in world trade, thus establishing consensus that extreme protectionism ultimately worsened the economic depression.

FIGURE 1 HISTORICAL AVERAGE TARIFF OF THE UNITED STATES



Source: Authors' calculations using data from the U.S. International Trade Commission and Tax Foundation.

Back in 1947, twenty-three nations led by the United States signed the General Agreement on Tariffs and Trade (GATT) with the express purpose of substantially lowering tariffs and other barriers to trade. Since then, eight rounds of multilateral negotiations have led nations to reciprocally reduce their tariffs dramatically. As a result, the average tariff level of the major economies fell to around 5% by 1999. In the case of the U.S., average tariffs on manufactured goods fell to record lows (around 3% or less at the end of the twentieth century) thanks to these concerted reductions and agreements such as the North American Free Trade Agreement (NAFTA) in 1994, which eliminated most tariffs between the United States, Canada, and Mexico. This era of multilateral liberalization, consolidated with the creation of the World Trade Organization (WTO) in 1995, was accompanied by sustained growth in world trade under more predictable rules.

A key event in the trade history of the twenty-first century was China's entry into the WTO in 2001. As part of its accession, China reduced its average MFN tariff from 15.6% to about 9%–10%, significantly opening its market. Its share of global trade skyrocketed, lowering costs for consumers and businesses worldwide, but also generating significant competitive pressures on certain Western industrial sectors. In the U.S., the influx of cheaper Chinese imports—a phenomenon known as the "China shock" in the economics literature —was associated with factory closures and manufacturing job losses in some regions. For the multilateral system, China's entry posed a challenge that would soon lead to trade frictions within the WTO.

After decades of relative openness, the resurgence of protectionism in the U.S. gained momentum in the late 2010s. In 2018, under Donald Trump's first administration, the United States embarked on a series of unilateral tariff increases on a scale not seen since the pre-WTO era. Invoking provisions of the Trade Expansion Act of 1962 and the Trade Act of 1974 (sections 201, 232, and 301), it imposed additional tariffs across the board: 25% tariffs on steel and 10% tariffs on aluminum from almost all origins, 10–25% tariffs on Chinese goods initially worth $50 billion, later expanded to $250 billion annually, an additional duties to other measures on specific products (washing machines and solar panels, to name a couple). In aggregate terms, the so-called "Trade War" of 2018–2019 saw the U.S. apply punitive tariffs on approximately $280 billion worth of imports (about 17.6% of total imports in 2017). The January 2020 "Phase One" deal, between the United States and China, froze further tariff escalations, but most of the extraordinary tariffs implemented since 2018 remained in place.

In 2025, with Donald Trump's return to the presidency, the U.S. once again intensified the use of tariffs as an economic policy tool. Given the high frequency of new tariff announcements, we refer the reader to the blog "Trump's trade war timeline 2.0: An up-to-date guide" by the Peterson Institute. The next section describes the legal framework for the current use of tariffs.

2.1.2 Legal framework

The use of tariffs is mainly governed by the GATT of 1947 rules, incorporated into the WTO since its creation in 1995. The WTO establishes that each member must define maximum tariffs in its lists of concessions, ensuring applied tariffs do not exceed these bindings. Likewise, the Most-Favored-Nation (MFN) clause applies, which prevents discrimination between trading partners: any tariff advantage granted to one country must be extended to all WTO members, except under preferential agreements. If a country seeks to raise a tariff above its binding rate, it must renegotiate with its affected partners and offer compensation; otherwise, the other members may resort to the WTO dispute settlement mechanism and, if a violation is found, obtain authorization to impose countermeasures.

The multilateral framework allows exceptions under which a nation may impose temporary or discriminatory additional tariffs without violating its obligations, provided certain criteria are met. Some of the main exceptions are:

- The "escape clause" of Article XIX of the GATT allows a country to temporarily raise tariffs or restrict imports if an unexpected increase in imports causes—or threatens to cause—serious damage to domestic producers.

- National security exception (Art. XXI GATT): allows to take countervailing measures contrary to obligations (including tariffs) if adopted to protect essential national security interests.

- Measures against unfair practices (Art. VI GATT and related agreements): the WTO authorizes correcting tariffs in cases of dumping or harmful subsidization (through anti-dumping or countervailing duties).

Although the United States had committed decades earlier to first resorting to the WTO's multilateral dispute settlement mechanism in such cases, the measures taken against China from 2018 onwards were not endorsed by the organization.[4]/ In this context, the United States managed to impose its trade policy tools unilaterally, combining its constitutional authority with various trade laws. Although subject to appeals, this legal framework provided greater capacity for immediate action than the procedure under the multilateral agreement. For example, in February and April 2025, President Donald Trump declared national emergencies in response to threats such as drug trafficking and a persistent trade deficit, imposing tariffs under the International Emergency Economic Powers Act (IEEPA). The IEEPA is a federal law passed on 28 December 1977, which allows the President to regulate or prohibit international transactions in the event of an "unusual and extraordinary threat". Donald Trump's administration was the first to use it to impose massive tariffs.

In addition to the emergency power, the U.S. has other mechanisms for imposing tariffs, though these are less abrupt and subject to greater bureaucracy and judicial scrutiny.[5]/ Each of these requires formal steps such as assessments, public reports, and negotiation or authorization by the U.S. Trade Representative (USTR). The main mechanisms are listed below:

- Section 232 (Trade Expansion Act, 1962): Allows tariffs to be imposed for national security reasons, following an investigation by the Department of Commerce.

- Section 201 (Trade Act, 1974): Allows tariffs for a limited period if serious damage to a local industry due to imports is demonstrated.

- Section 301 (Trade Act, 1974): Authorizes retaliation--including tariffs-- when unfair trade practices or violations of agreements by a foreign country are detected by means of a USTR investigation.

- Section 122 (Trade Act, 1974) and Section 338 (Tariff Act, 1930): Offers limited discretionary power to the President in cases of payment of severe balance of payments deficits or discrimination.

[4] Starting in 2018, there was a shift toward more coercive tools following an investigation into China's policies on technology transfer and intellectual property. After finding evidence of "unreasonable" practices that harmed US trade, President Trump ordered punitive tariffs on Chinese imports. In September 2020, a specialized international panel ruled that these tariffs violated the terms of the agreement and were not justified by the exceptions invoked, declaring them inconsistent with US obligations to other members. The ruling had little impact: by then, China had already responded with countermeasures equally outside the multilateral framework, and both countries had already begun negotiations that culminated in the so-called "Phase One" trade deal."

[7] Article I, Section 8 of the US Constitution establishes that only Congress can regulate international trade, but on numerous occasions this authority has been delegated to the executive branch.

Although these measures take the form of ad valorem tariffs, their nature and function differ greatly from conventional tariffs committed under the multilateral framework of the MFN clause. Bown and Crowley (2016) provide an exhaustive review of trade barriers, noting that international trade is restricted through tools beyond simple tariffs, including quotas, licenses, safeguards, and legal instruments for strategic purposes. These barriers go beyond uniform or horizontal levies and today constitute a substantial part of the protectionist arsenal. Kee et al. (2009) estimate that, compared to conventional tariffs, the inclusion of these measures raises the level of trade restrictiveness by an average of 87%.[6]/

In this sense, the tools used by the United States in recent trade wars—such as sections 232 and 301, and more recently the IEEPA—are more akin to non-tariff barriers, given their selective nature, extra-commercial motivation (such as national security or geopolitical leverage), and detachment from multilateral commitments. This helps to explain why, after decades of relative liberalization, the average U.S. tariff nearly doubled following the 2018 measures, and why the 2025 announcements could push it even higher— along a trajectory more reminiscent of early twentieth-century protectionism than the principles of modern globalization.

2.2 Motives for tariff application

Import tariff policies have several justifications in economic literature. The main theoretical and practical motivations for imposing tariffs are summarized below.

A first classic justification is the optimal tariff argument, which relates to improving a country's terms of trade when it has international market power. If a country is large enough to influence world prices for the goods it imports or exports, it can impose a tariff to alter those prices in its favor (Caliendo and Parro, 2022; Costinot et al., 2020). By taxing its imports, the country reduces its demand for foreign goods and puts downward pressure on their world price; conversely, taxing exports restricts global supply and raises the international price of what it sells. The result is an improvement in the terms of trade: imports become relatively cheaper, and exports yield higher returns. This benefit can translate into a net gain in welfare for the country imposing the tariff, provided this rate is not excessively high and trading partners do not retaliate.

This argument, originally proposed by authors such as Kaldor (1940), Baldwin (1948), and Johnson (1953), challenges the idea of unilateral free trade by showing that, in the absence of international agreements, nations with monopolistic power may have incentives to deviate from trade openness to exploit their market position. Such incentives are a central element in the literature explaining the existence of multilateral trade agreements designed to neutralize potential tariff-driven deviations (Limão, 2018). Nevertheless, the optimal tariff provides a theoretical basis for protectionism when a major country seeks to maximize its own welfare at the expense of others by leveraging its influence on international prices.

[8] Anderson and Neary (2005) review some literature developing the Trade Restrictiveness Index (TRI), an indicator that summarizes the effects of a set of trade policies (tariffs and others) in terms of a single uniform tariff rate that would generate the same level of welfare as the current regime. Kee et al. (2009) extend this methodology to calculate comparable indices of restrictiveness by country and sector, using data on the consolidated MFN tariff, observed non-tariff measures, and demand and supply elasticities estimated for international trade.

Another theoretical rationale behind tariffs comes from strategic trade policy, developed in the 1980s. This approach studies international oligopolistic markets in industries where a few enterprises from different countries compete for market share. In such imperfectly competitive settings, government intervention through tariffs, export subsidies, or similar measures can alter competition in favor of domestic firms, ensuring that a larger share of oligopolistic profits remains at home (Markusen, 1981; Brander and Spencer, 1981, 1985; Krishna, 1989; Das and Donnenfeld, 1989). A related facet of strategic trade policy concerns the international location of production. This phenomenon, known as "tariff jumping," has been studied in theoretical models by authors such as Venables (1985, 1987), Helpman and Krugman (1989), and more recently Ossa (2014), Bagwell and Lee (2020), and Gopinath et al. (2025). The intuition is that by artificially raising the price of foreign products in the domestic market, tariffs attract foreign companies to invest locally, increasing production and competition at home.

Finally, another important motivation---particularly relevant in the current context and more empirical in nature than previous justifications---is the protection of domestic industries facing adverse shocks from imported competition (Caliendo and Parro, 2023; Amiti et al., 2019; Caliendo et al., 2019; Bown, 2016; Autor et al., 2013; Grossman 1986, 1987). In situations where a sharp increase in imports causes substantial damage to local productive sectors, governments often resort to tariffs or other barriers to alleviate pressure from external competition. Economic theory reckons that, in the short term, the relocation of resources can be costly and slow (Rodrik, 1998; Mussa, 1974); therefore, temporarily protecting an industry may be justified to allow time for orderly adjustment. Empirical studies have documented that massive imports shocks can severely impact certain local labor markets: for example, the so-called "China shock" showed that the influx of Chinese manufacturing imports beginning in the 1990s devastated jobs and wages in numerous U.S. industrial regions (Autor et al., 2013; Grossman, 1986, 1987).

One case that has gained prominence recently is the use of tariffs to support domestic manufacturing critical to defense procurement. The production of certain goods such as steel, aluminum, microcomponents, and precision machinery —is considered essential for maintaining military readiness. In the case of the current U.S. administration's tariffs, Klomp (2025) highlights an expanded conception of national security that encompasses not only immediate military capability but also the resilience of strategic supply chains. This justification has been explicitly invoked by the United States since 2018 to apply tariffs on imported steel and aluminum under Section 232 of the Trade Expansion Act of 1962. In 2025, the U.S. administration reaffirmed this approach by extending and intensifying tariffs on these key inputs, arguing that maintaining a robust industrial base is indispensable for the defense apparatus. (White House communiqué, April 2025).

The United States has repeatedly used protectionist measures to rescue struggling industries: in 1971, President Richard Nixon imposed a 10% across-the-board tariff on imports amid external imbalances; in 1977, the Carter administration introduced quotas on footwear imports to support domestic producers; in 1981, Ronald Reagan's government pressured Japan into voluntary restrictions on its automobile exports to protect Detroit's auto industry; more recently, in 2002, George W. Bush imposed high tariffs on imported steel; and in 2009, Barack Obama applied additional tariffs of 35% on Chinese tires in response to a sudden surge in imports that was affecting local employment. These examples illustrate that, from a political standpoint, tariffs are often justified as instruments to defend industries suffering significant damage from foreign competition, giving them space to restructure or adapt.

A related case is the protection of infant industries. Some potentially competitive domestic industries fail to take off due to entrenched foreign competition but could become efficient in the future if given temporary protection. Dynamic externalities ---such as learning-by-doing or economies of scale that require time to materialize--- can force out industries that, with short-term protection, would have achieved international competitiveness. Baldwin (1969) and Rodrik (1995) analyze how transitional tariffs can raise a country's long-term welfare by fostering domestic industrial capacity that generates technological spillovers and productivity gains.

2.3 Expected effects and their nuances

Whenever a country imposes a tariff on imports, theory predicts an increase in the domestic price of the taxed good (Fajgelbaum and Khandelwal, 2022). This price rise protects domestic producers competing with the imported goods and may stimulate their production, but it also harms consumers, who face higher prices. Domestic demand for the imported product declines, reducing the equilibrium volume of imports. The government of the importing country collects additional tax revenue from the tariff, thus transferring part of consumer spending to the public sector. If the importing country has sufficient market power, a tariff can improve its terms of trade by pushing down the international price of the product, so that foreign producers effectively absorb part of the tariff to maintain their market share.

For countries whose exports are subject to tariffs (tariffed countries), the immediate effect is typically a contraction in sales within the protectionist country's market. This often translates into a decline in production and employment in the affected export sectors abroad. In general, foreign producers lose full access to the protected market and may face lower sales prices if they have to absorb part of the tariff by cutting their margins, thereby reducing their producer surplus (Amiti et al., 2019). Exporting firms may attempt to redirect sales to other markets, but the impact may be amplified if affected countries respond with retaliatory tariffs, leading to an escalation or trade war.

Countries on the sideline of the trade conflict may be affected by trade diversion. Some may begin to supply goods to the protected market to replace imports from the tariffed country or expand existing trade flows. In turn, these countries may receive exports that the tariffed country no longer sells to its original destination. These dynamics create patterns of "trade diversion and creation": some third countries benefit by selling more or buying at lower prices, while others may experience adverse effects if they were integrated as input suppliers in the value chains of the tariff-imposing country, or if redirected imports generate intense competition with domestic producers.

Globally, rising tariff barriers generate additional impacts. Trade uncertainty intensifies as firms remain unsure whether they will operate in open markets or in tariffed scenarios, prompting them to postpone investments and international expansion projects (Handley and Limão, 2017). In addition, financial costs are expected to rise for firms most exposed to international trade (Amiti et al., 2021; Correa et al., 2025).

However, the effects of a tariff are not uniform across all contexts, as they vary significantly depending on certain structural characteristics of the economy and the affected market. The magnitude and direction of the impacts depend on factors such as the price sensitivity of supply and demand, the relative weight of the country in international trade, whether the good is a productive input or a final consumer good, the form of competition in the sector involved, and the heterogeneity of productivity among firms. These elements determine both who ultimately bears the tariff's cost and the intensity of the distortions in prices, quantities, and welfare.

The sensitivity of quantities supplied and demanded to price changes—known as supply and demand elasticities—is a critical determinant of the tariff incidence. Figure 2, taken from Amiti et al. (2019), illustrates this principle. In the left panel, the horizontal axis represents the quantity imported by the tariff-imposing country (m), while the vertical axis shows import prices (p) and the prices perceived by the foreign exporters (p^*). The foreign export supply curve (S^*) slopes upward, reflecting that higher prices induce foreign producers to increase their production, while import demand (D) slopes downward. In the absence of tariffs, the market clears at an equilibrium price ($p_0 = p_0^*$) where import demand equals export supply, with imports at level m_0.

An ad valorem tariff on imports at a rate τ raises the cost of the imported good in the domestic market, reducing demand for imports to level m_1. At that level of imports, a gap emerges between the prices charged by foreign producers (p_1^*) and the prices paid by local consumers (p_1), which is the equivalent of the tariff per unit, that is, $p_1^*\tau$.

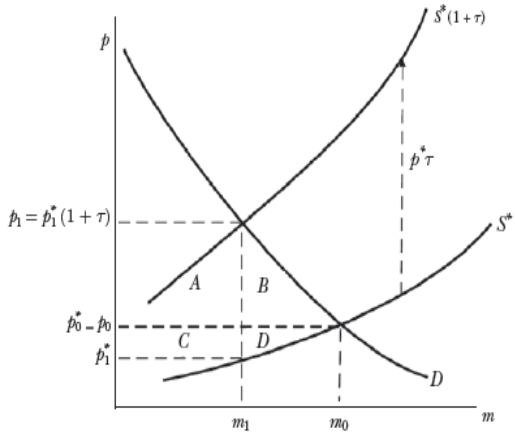
However, the importer does not absorb the entire tariff because, in the new equilibrium, p_1^* is lower than p_0^*. This ability to force exporters to lower their prices depends on the slopes of the supply and demand curves, which reflect their elasticities. An extreme case, shown in the right panel, occurs when export supply is perfectly elastic and the supply curve is horizontal: there is no pressure on the export price, so importers bear the full tariff. Other extreme cases include completely inelastic supply (vertical curve), where the export price must fall so that the importer's total purchase price remains unchanged, or that of completely inelastic demand (vertical curve), where again the export price does not change, and importers absorb the tariff in full. In intermediate cases, the side with the more inelastic curve typically bears the greater incidence.

Another important nuance is whether the tariff applies to a final good or an intermediate input. A tariff on a final good (e.g., an appliance, a car, or food) acts as a consumption tax raising the price for the end consumer--- a pass-through mechanism described by Amiti et al. (2019). Potentially, if the market structure allows it, the tariff on the imported final good provides some degree of protection to local producers. In contrast, a tariff on intermediate inputs often has counterproductive effects for the imposing economy. Some dimensions to consider in this case are the erosion of competitiveness and margins in intermediate sectors, the disincentives for investment in downstream sectors, and even potential damage to employment (Flaaen and Pierce, 2024; Cavallo et al., 2021).

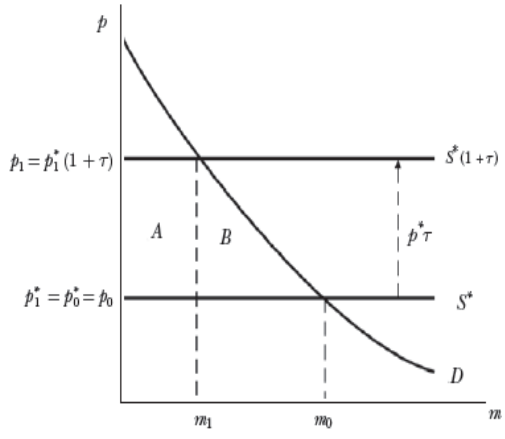
Finally, the impact of a tariff depends on the structure of competition and heterogeneity among firms. In sectors with imperfect competition, local producers can take advantage of protection to raise prices above the tariff, capturing additional rents at the expense of consumers (Flaaen et al., 2020). Furthermore, when firms differ in productivity, tariffs can shield the least efficient firms and distort the efficient reallocation of resources, reducing aggregate productivity (Melitz, 2003; Demidova, 2017; Costinot et al., 2020). Taken together, these dynamics show that the effects of a tariff extend beyond prices and can generate additional distortions in allocation efficiency.

FIGURE 2 THEORETICAL IMPACT OF TARIFFS ON PRICES

(a) Impact of a tariff on prices



(b) Impact of a tariff on prices with perfectly elastic export supply



Source: Figures 1 and 2, Amitil et al. (2019).

2.4 Empirical evidence of the effects of imposing a tariff

2.4.1 Global effects

The new wave of tariffs, imposed outside the WTO institutional framework and other multilateral agreements, has triggered trade wars that are affecting the global economy. This scenario sends signals of institutional weakening, heightening uncertainty (Caldara et al., 2020) and affecting the entire value chain in international trade (Freund et al., 2024). It also alters the geographic distribution of production plants (Flaaen et al., 2020) and raises the costs of finding new suppliers (Grossman et al., 2024).

The 2018 trade war heightened concerns among economic agents about trade policy (Beige Book, 2019). This prompted the work of Caldara et al. (2020), who measured trade policy uncertainty (TPU) and then studied its effects on firms and aggregate investment. Using quarterly financial reports from companies in the U.S. they constructed a measure of TPU, which predicts negative effects on investment resulting from trade uncertainty. Similar exercises have been applied to South Korea (Cho and Kim, 2023) and Japan (Arbatli-Saxegaard et al., 2022). For Chile, the Central Bank's Monetary Policy Report (IPoM) for Q2 2025 analyzes the effect on local firms', reporting a statistically significant negative effect. In addition, the May 2025 Business Perceptions Survey (EPN)—also from the Central Bank—includes questions on potential effects for firms from the increases in tariffs. For example, "In which areas do you expect these effects to occur, and what would you do in the face of these new tariffs?"

The expansion of international trade in recent decades has distributed value chains across different economies around the world, with products crossing borders back and forth before production is completed. This means that tariffs on specific goods and countries reverberate throughout the entire production network on which they depend or feed from. Freund et al. (2024) study this reorganization of international trade using microdata on U.S. imports between 2017 and 2022 and assess whether the imposition of tariffs led to relocation close to the U.S., or toward strategic partners.

The first thing the authors report is that China's share of U.S. imports declined only modestly, from 22% to 16% between 2017 and 2022, returning to 2007 levels. While imports of tariffed goods fell sharply, they were largely replaced by imports from other emerging economies, illustrating no significant relocation or substitution by domestic suppliers. In fact, this reorganization was stronger among countries more integrated with China. A hypothetical country that moves from the 25th to the 75th percentile in terms of how integrated it is with China increases its exports to that country by 2.6 percentage points on tariffed goods. Furthermore, for strategic industries, the substitution occurred in economies geographically close to the United States. Amiti et al. (2019) estimate that the value of imports that were redirected as a result of these new tariffs amounted to $132 billion, thus impacting distribution chains considerably.

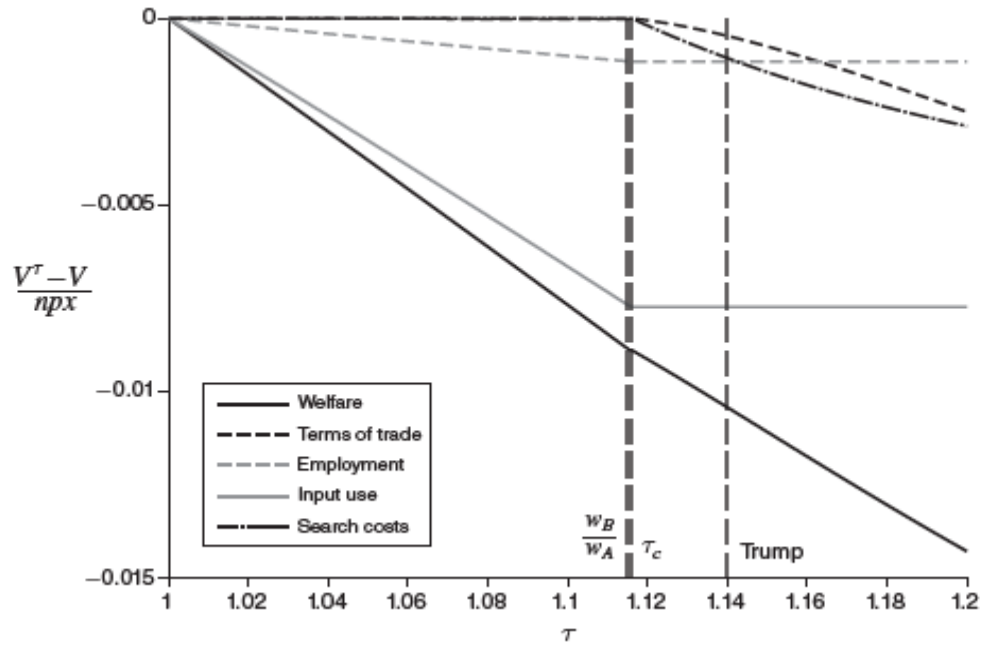
Grossman et al. (2024) propose a global value chain model, where the effects of tariffs vary by magnitude, creating three different zones. In the first, small tariff increases do not lead to factory relocation or supplier replacement; however, they do reduce buyers' external options, leading them to renegotiate at lower prices, which are more favorable to exporters. In the second zone, slightly higher tariffs cause links between firms to break down and purchasing firms to seek new suppliers within or outside the country. Potentially, the buyer has better options than the supplier, achieving lower prices with the original suppliers. Finally, the third zone, prohibitively high tariffs cause supplier relocation and result in higher prices. The authors calibrate the model for the United States and estimate welfare losses from tariffs, decomposed into terms of trade, employment, use of intermediate inputs, and costs of finding new suppliers.

Figure 3 shows on the vertical axis a measure of welfare as a function of spending in the differentiated pre-tariff sector (which uses intermediate goods) and on the horizontal axis the level of taxes. The intermediate zone between w_A/w_B and τ_C is virtually nonexistent. Tariffs imposed in 2018-2019 fall within the range where search costs and differences in supplier prices (terms of trade) generate significant welfare losses, estimated at 1.04% of pre-tariff spending in the differentiated sector or 0.12% of pre-tariff GDP. This impact is considerably larger than estimates from studies that exclude global supply chains, such as Amiti et al. (2019) or Fajgelbaum et al. (2020), where the effect is roughly 0.04% of GDP.

Flaaen et al. (2020) study the U.S. washing machine market following successive trade policies, such as anti-dumping measures and safeguard tariffs. In 2012 an anti-dumping order was issued against South Korea and Mexico that prompted a production shift to China, where then similar measures were imposed in 2016, leading to further relocation of production to Thailand and Vietnam (Figure 4). Until 2016, the share of imported washing machines into the United States remained stable, indicating no significant substitution. Furthermore, the effect on prices was modest, with increases of between 1.5% and 3.5%. However, the global safeguard tariffs implemented in 2018 triggered partial relocation to the United States, resulting in sharper price increases of about 11%.

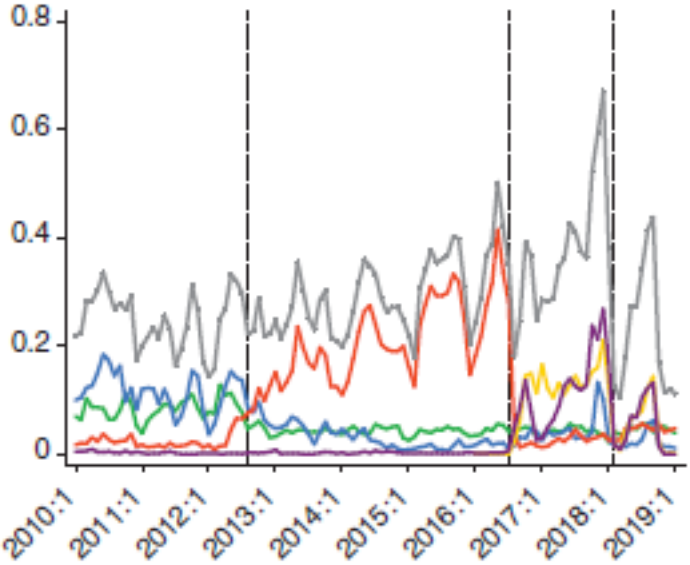
[9] Trade Policy Uncertainty Index.

FIGURE 3 WELFARE COSTS AS A FUNCTION OF TARIFFS



Source: Figure 5, Grossman et al. (2024).

FIGURE 4 MONTHLY U.S. IMPORTS OF WASHING MACHINES BY COUNTRY AND YEAR
(millions of units)



Source: Figure 1, Flaaen et al. (2020).

2.4.2 Effects on tariff-imposing countries

Prices. Evidence of the 2018 trade war between the United States and China indicates that tariffs substantially increased import prices. The main academic studies analyzing this episode find a full pass-through to import prices, meaning that importers absorbed virtually the entire tariff cost (Amiti et al., 2019; Fajgelbaum et al., 2020). Neither the United States nor China managed to improve their terms of trade: existing export prices have not changed with the new tariffs, so their entire burden has fallen on the buyers.

Fajgelbaum et al. (2020) document tariff pass-through using an event study that captures price changes in response to tariff shocks, which is based on the exact enactment dates of the tariffs. The methodology compares targeted and untargeted products, and accounts for the tariff intensity of each product. The authors estimate unit value regressions with and without tariffs, on fixed effects that control for product variety (product-origin tuple) and origin characteristics and include dichotomous time variables for the months close to implementation. This design allows for a clear comparison of how prices evolve between treated and untreated products. Figure 5 presents the results of their regressions.

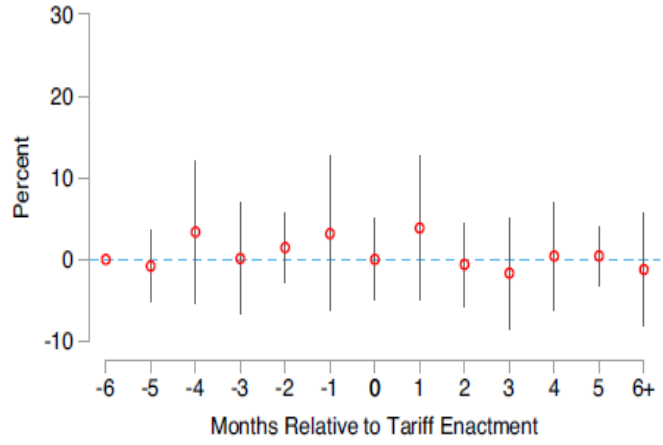
Following implementation, the unit price without tariffs (panel(a)) remains stable, while the unit price including tariffs (panel (b)) rises sharply to a level 20% higher, matching the average tariff imposed by the United States on China. This implies a near-complete pass-through of the tariff, with foreign exporters not reducing prices to offset the new tax burden. The empirical design allows this result to be interpreted as causal, assuming that there were no simultaneous shocks that differentially affected the products in question, which is supported by price stability in the months prior to the event.

Fajgelbaum and Khandelwal (2022) explore why export prices showed no response despite tariff hikes. The finding of full pass-through is somewhat counterintuitive in the case of large economies such as the U.S. or China, which might be expected to exert market power to negotiate lower prices. The authors highlight several mechanisms: advanced purchases before tariffs take effect, which raised costs temporarily; changes in the quality of imported products, which could keep unit prices stable while the goods' composition is adjusted; and complex interdependencies in global value chains, where exporters may find it difficult to adjust prices quickly without disrupting production or logistics. In addition, expectations that tariffs would be temporary may have discouraged renegotiation. Taken together, these factors help explain why exporters did not absorb part of the tariff, leaving border prices unchanged. As a result, tariffs functioned primarily as a tax on importers rather than as an instrument to improve the terms of trade.

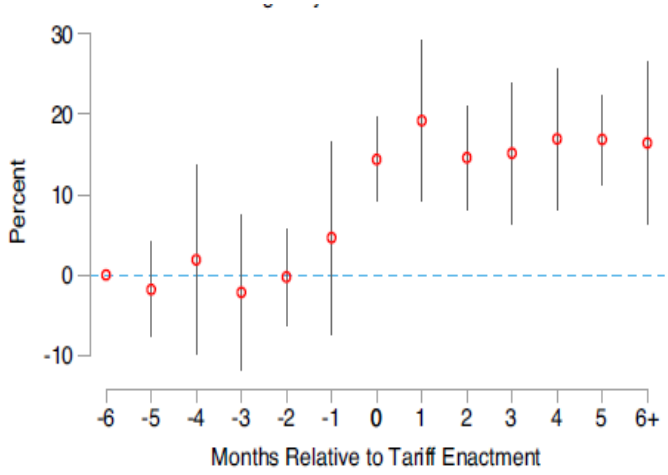
Another possible explanation is China's ability to redirect its exports to other destinations when demand from the U.S. falls. This hypothesis implies that, although Chinese exports to the U.S. declined due to the new tariffs, total sales to the rest of the world should have remained stable. Jiao et al. (2024) support this mechanism, showing that Chinese firms' global sales did not fall despite reduced U.S. sales, reinforcing the notion of effective trade reallocation. This mechanism has taken center stage given the magnitude of the tariffs imposed in 2025, which initially reached 145% on Chinese products. This sparked a debate about their prohibitive nature and the potential trade diversion they would generate. While subsequent announcements reduced these rates, the tariffs are still of magnitude that fuels the discussion about this effect. Pustilnik et al. (2025) offer a more detailed analysis of tariff-driven trade diversions and their potential effects on global prices.

FIGURE 5 EVENT STUDY BY FAJGELBAUM ET AL. (2020)

(a) Log unit value



(b) Log duty-inclusive unit value



Fuente: Figure 2, Fajgelbaum et al. (2020).

Evidence regarding the 2018 trade war shows that most of the pass-through to prices occurred in import costs, known as border prices, with evidence of a smaller pass-through to retail prices. Cavallo et al. (2021) show that a 10% import tariff raised retail prices by only 0.4% in the short term, suggesting that firms absorbed a significant portion of the tariff by compressing their profit margins. As a robustness check, they show additional evidence from two large retailers that accepted lower margins on tariffed goods without raising prices on non-tariffed ones to compensate for losses. Furthermore, they show that, when controlling for the effect of inventory build-up, the pass-through tends to be lower even for border prices. Finally, there is evidence that the incomplete pass-through depends on the type of good, as some exhibit greater pass-through than others (Amiti et al., 2019; Flaaen et al., 2020).

Finally, some studies consider the effect of tariffs on inflation. Barbiero and Stein (2025) show that in the United States approximately 10% of personal consumption expenditure (core PCE) is either directly or indirectly linked to imported goods. Figure 6 shows their estimates assuming full pass-through at the border and different scenarios for the reaction of margins: a constant-dollar scenario (margins compressed) and a constant-percentage scenario (margins unchanged). Their results show that the initial pass-through may be moderated before reaching consumer prices, and that the 2018 tariffs contributed between 0.1 and 0.2 percentage points to core inflation—equivalent to 5-10% of the 1.9% total inflation recorded that year.

In line with this estimate, Minton and Somale (2025) show that the 2018 tariffs were fully passed through to consumer prices, and that the new tariffs introduced in March and April 2025 have already begun to push up the prices of underlying goods: within a few months, prices for basic staples rose 0.3%, equivalent to a 0.1% increase in core PCE. However, while consumers faced price hikes in certain goods, the aggregate inflationary impact was relatively modest thanks to margin absorption by retailers and substitution toward non-tariffed goods.

Trade flows. The main effect of tariffs on trade flows was seen in imports of directly affected goods, which fell sharply. Analyses of U.S. tariffs in 2018–2019 estimate declines of around 25% in import values once the measures came into effect (Amiti et al., 2019; Fajgelbaum et al., 2020). On average, Fajgelbaum et al. (2020) document a 31.7% drop in traded quantities for the specific product-country combinations targeted by the tariffs. In many cases, import volumes fell to zero, especially for goods subject to prohibitive tariffs. These magnitudes—well beyond normal trade fluctuations—suggest a price elasticity of imports of around 1.3–1.5 and potentially close to 6 for varieties whose imports were completely halted (Amiti et al., 2019).

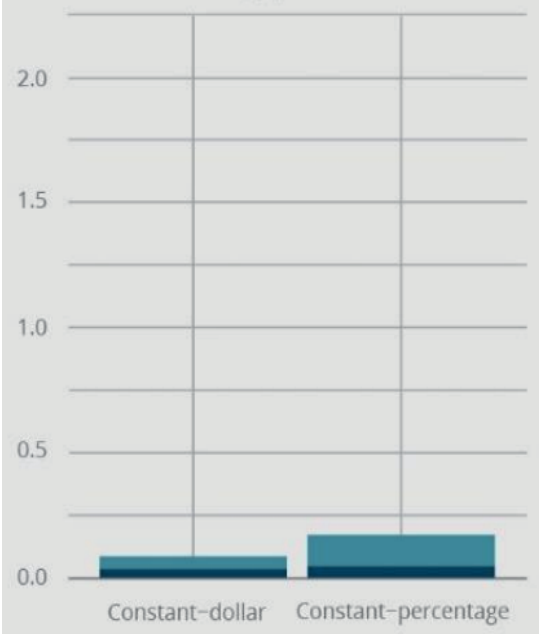
Tariffs also led to a significant diversion of trade, as U.S. buyers shifted purchases to origins and products not subject to the new tariffs. Amiti et al. (2019) document that imports from unaffected countries or products rose by about 10%, partially offsetting the decline in targeted flows. Once this substitution is factored in, the net reduction in import volume was much smaller than the decline in imports from China. Fajgelbaum et al. (2020) estimate that, across all origins, imports in the affected categories fall by only 2.5%.

This was amplified by substitution towards other products within the same sector (i.e., completely avoiding tariffed goods), where the total decline in imports for the sector was only 0.2%. This evidence suggests a high degree of substitution by origin and product: many trade flows were redirected to non-tariffed sources, or consumers opted for alternative goods, leaving aggregate spending in some categories relatively unchanged. Another interpretation is that the varieties affected by the tariffs represented a small portion of total consumption in that sector, so their removal had a limited impact on aggregate imports.

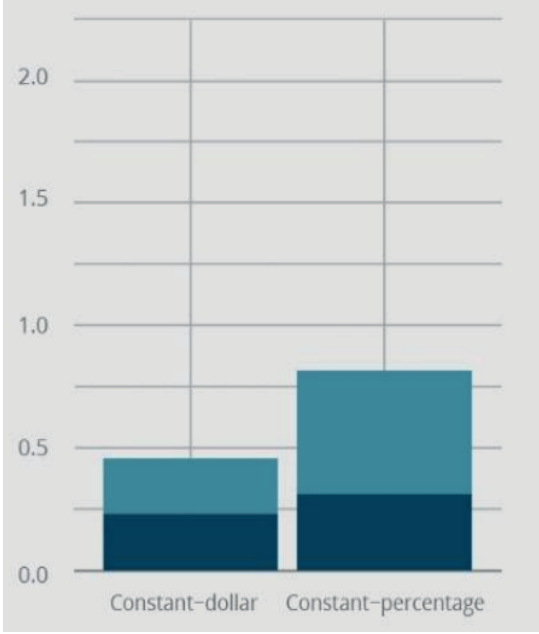
The increase in imported input costs associated with tariffs also affected exports and local production, even in sectors that were not subject to trade retaliation. Many U.S. manufacturing industries rely on intermediate goods from abroad—such as steel and electronic components, among others—whose prices rose due to tariffs. Studies show that the sectors most exposed to these inputs experienced significant cost increases and declines in exports. Flaaen and Pierce (2024) note that sectors in the 75th percentile of exposure to tariffs on inputs increased their factory prices by about 4% relative to less exposed sectors. This deterioration in international competitiveness contributed to the reduction in exports. Benguria and Saffie (2019) document that firms affected by tariffs on inputs reduced their export volumes, compared to unaffected. Handley et al. (2025) show that U.S. exports of products affected by tariffs fell between 1.3% and 2.9% compared to similar products outside the trade war. This drop is equivalent to facing an implicit foreign tariff of 2-4%, suggesting substantial indirect effects even without retaliation.

FIGURE 6 CONTRIBUTION OF 2018 AND 2025 TARIFFS TO INFLATION
(percentage points)

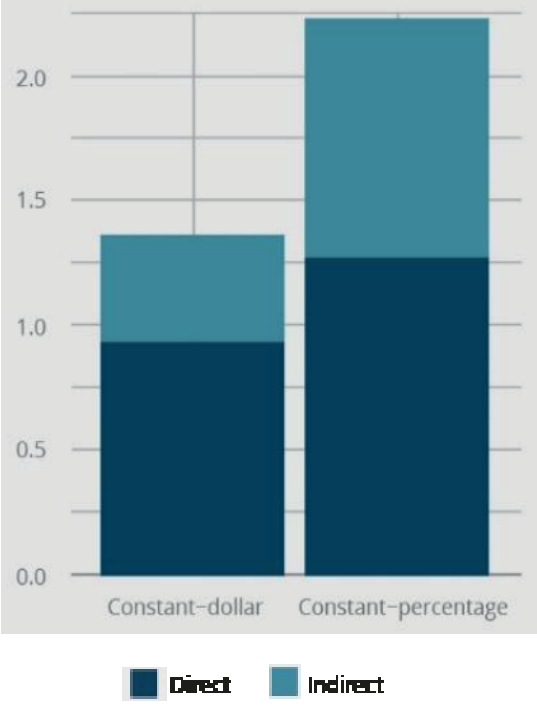
(a) Tariffs 2018



(b) Tariffs 2025: 10% China, Canada, Mexico



(c) Tariffs 2025: 60% China, 10% others



Source: Figure 4, Barbiero and Stein (2025).

Macroeconomic effects. One way to gauge of the aggregate effect of tariffs on the economy is the decline in Americans' purchasing power, net of tariff revenue, as they pay more to access the same imported goods previously bought at a lower price. Fajgelbaum and Khandelwal (2022) estimate that the direct cost to importers from higher import prices is roughly equivalent to a loss in real income of nearly 0.58% of U.S. GDP. The approximate calculation is obtained under the assumption of full pass-through---supported by the empirical evidence mentioned above---and is calculated by multiplying the share of imports in GDP (15%), the fraction of imports affected by tariffs (17%), and the increase in the tariff level (25%).

Two mitigating factors are tax revenue and the fact that the now-costlier inputs are used to produce exports, which also became more expensive but were not paid for by U.S. consumers. In the authors' simulations, these mitigating factors are 0.35% and 0.13% of GDP, respectively. The net figure shows a decline in purchasing power of approximately 0.1% of GDP. The gap between consumers costs and tariff revenue underscores the distortions tariffs introduce: import quantities shift not only due to higher prices but also because buyers substitute toward more expensive non-tariffed sources to avoid duties. Considering these changes in allocations, the fraction of imports affected by tariffs is no longer 17% of the approximate calculation above. A second approximation, which includes second-order effects, estimates the decline in purchasing power at 0.04% of GDP. Although tariffs resulted in an economic cost for the U.S., this was smaller than expected given the flexibility of trade flows.

Meanwhile, simulations based on computable general equilibrium (CGE) models, which incorporate multilateral trade structures, estimate that tariffs reduced real GDP in the United States by between 0.2% and 0.4% compared to a counterfactual scenario without tariffs (Bollen and Rojas-Romagosa, 2018; Bellora and Fontagné, 2019). Studies conducted by institutions such as the IMF, the OECD, and central banks, using global models such as the Global Trade Analysis Project (GTAP), conclude that the 2018–2019 tariffs would have lowered U.S. GDP by only a few tenths of a percentage point once full adjustment occurred. Similarly, dynamic stochastic general equilibrium (DSGE) models, which include capital accumulation, investment responses, and monetary channels, suggest GDP declines in the range of 0.3% to 0.5% (Berthou et al., 2018; Georgiadis et al., 2021). Overall, these projections align with empirical welfare estimates: the trade war's economic impact was negative, but relatively modest.

Finally, the 2018 tariff conflict had macroeconomic effects primarily through the uncertainty it generated. The announcements of tariffs and the trade escalation caused immediate stock market declines: U.S. stocks fell 4.3% after the first announcement of tariffs on China in March 2018 (Huang et al., 2020), and cumulative market losses associated with these events reached 12.9% in 2019 (Amiti et al., 2021). Volatility also skyrocketed, with the VIX index doubling in several episodes to levels typical of financial crises. Investors took refuge in safe assets, such as 10-year Treasury bonds, whose yields fell systematically in response to adverse trade news (Carlomagno and Albagli, 2022). International markets also weakened, and emerging market currencies depreciated, especially in countries integrated into U.S.-China value. Uncertainty further weighed on business investment: analysis of corporate transcripts shows an increase in mentions of trade concerns (Caldara et al., 2020), which ultimately resulted in reduced capital expenditure.

2.4.3 Effects on tariffed countries

During the 2018-2019 trade war, China was the main target of the tariff measures imposed by the U.S. administration. These measures consisted of a series of significant increases in tariffs on

Chinese products, with the aim of reducing the bilateral trade deficit and pressuring China to change certain commercial practices. As a result, China became the country most affected by this increased protectionism, which has prompted a series of empirical studies on the effects of these tariffs on the Chinese economy.

The literature has documented that the impact of these measures was not uniform across the country, but varied considerably by region, industry type, and firm characteristics. Chinese regions most exposed to tariffs—that is, those with a high concentration of industries exporting to the United States—experienced more pronounced declines in both per capita income and manufacturing employment (Chor and Li, 2024).

At industry level, Chinese exporters' response to U.S. tariffs was largely mixed. Faced with the loss of access to the U.S. market, many firms chose to redirect their trade flows to other destinations, particularly bigger neighboring economies. This market diversification strategy partially mitigated the decline in their exports to the United States. According to Jiang et al. (2023), this ability to redirect was more pronounced in sectors that are intensive in research and development, physical and human capital, and those linked to primary goods. In contrast, industries with a comparative advantage, high export growth, high export value, and high elasticity of substitution were more affected by trade protectionism and saw more pronounced declines in their exports.

A not so visible, but equally important, channel was the uncertainty associated with trade policy, which was heightened during the trade conflict, affecting the investment and development decisions of Chinese firms. Empirical evidence suggests that smaller, less diversified companies with less access to financing were the most vulnerable to this volatile environment (Benguria et al., 2022). During the trade war, every business subject to trade policy uncertainty suffered a notable deterioration in their operations and reduced their investment, R&D spending, and profits as additional effects to the direct impact of tariffs.

Trade wars tend to worsen the terms of trade for the affected country. During the conflict, China redirected its exports meant for the United States to other markets with lower purchasing power, which drove down export prices and, consequently, worsened its terms of trade. Moreover, the depreciation of the yuan, used as a tool to maintain export competitiveness, made imports more expensive, which also contributed to the deterioration of the terms of trade.

Finally, facing excessive tariffs can lead the affected country to retaliate. Although China is now a country that imposes tariffs, consequences are part of the effects faced by countries subject to tariffs, as they are forced to respond in the context of a commercial escalation. In this context, Chor and Li (2024) focus on the potential adverse effects that these retaliatory tariffs may have within China, especially when applied to intermediate goods used as inputs in production. Although these tariffs could have made it more expensive for firms importing inputs from the United States, the authors find no statistically significant effects on aggregate activity, partly because many firms resorted to the processing trade regime, which allows inputs to be imported without paying tariffs if they are destined for export.

2.4.4 Effects on third countries

Aside from the effects on the countries directly involved, tariff measures can also generate spillovers for third countries or bystander economies. The primary transmission channel trade diversion, where international trade flows are rearranged in response to the tariffs imposed by participating countries.

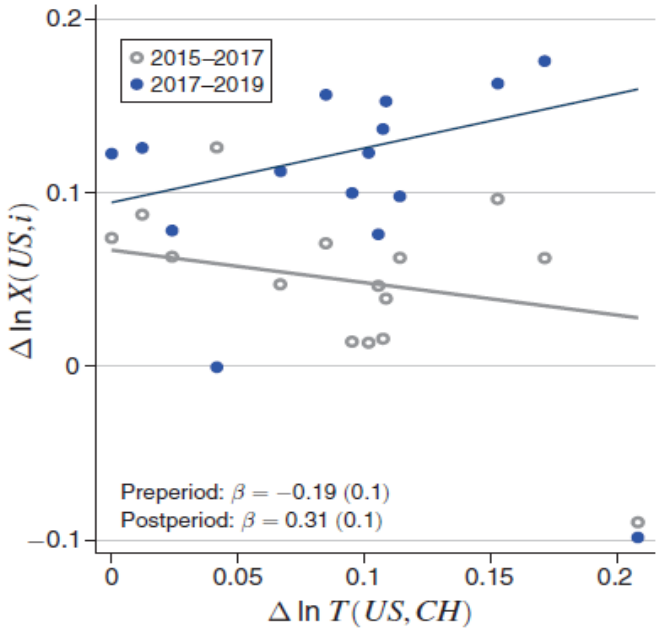
Fajgelbaum et al. (2024) study how exports from bystander countries to the United States and China changed during the 2018-2019 trade war. Panel (a) of Figure 7 shows that exports from third countries to the U.S. increased for those goods where tariffs on Chinese exports rose the most, suggesting a benefit to these economies that cannot be explained by domestic supply replacing Chinese exports. Similarly, Ito (2022) reports the same diversion of international trade, along with additional evidence that the prices of these redirected exports to the U.S. declined. Grossman et al. (2024) also show that exports from other Asian countries to the United States increased the most where tariffs on China were highest.

Panel (b) of Figure 7 shows that exports to China from the same countries do not vary as intensively as the retaliatory tariffs imposed by China to the United States.

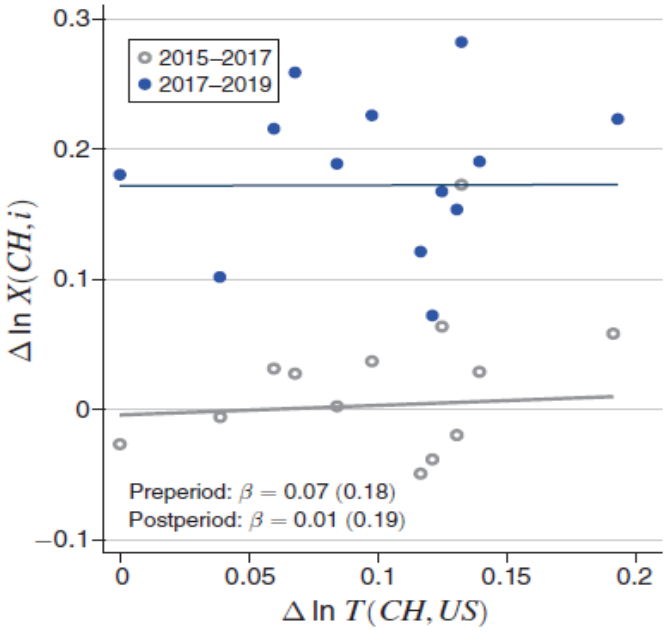
Focusing on U.S. exports, Benguria and Saffie (2024) document a decline in exports to countries that imposed retaliatory tariffs, partially offset by increased exports to bystander countries--- again corroborating the notion that these countries benefited. These new destinations were concentrated in economies with export baskets similar to those sent to China, such as some in South and East Asia. In addition, the authors analyze the role of financial frictions among U.S. firms, finding that those facing tighter constraints experienced a sharper drop in sales to retaliating countries but also a larger increase in exports to third markets.

FIGURE 7 EXPORT DIVERSION

(a) Bystanders´ export value to the United States



(b) Bystanders´ export value to China



Source: Figure 1, Fajgelbaum et al. (2024).

3. SANCTIONS

Economic sanctions have increasingly become the preferred instrument of many countries to respond to international political challenges (Felbermayr et al., 2020). Their use has risen steadily increasing since the mid-twentieth century, with more than 1,300 documented episodes globally since 1950 and nearly 600 active cases today (Figure 8). Nearly one-third of countries—which together account for almost one-third of the global economy—are subject to some form of economic sanctions imposed by Western powers or the United Nations (Rodriguez, 2024). Trade sanctions stand out as one of the most common forms of these coercive measures, seeking to alter the decisions of a target state without resorting to direct military force. In fact, many analysts point out that sanctions offer a visible and less costly alternative to armed intervention, occupying a middle ground between traditional diplomacy and military action (van Bergeijk, 2012).

Economic sanctions are utilized with a wide range of geopolitical purposes, including:

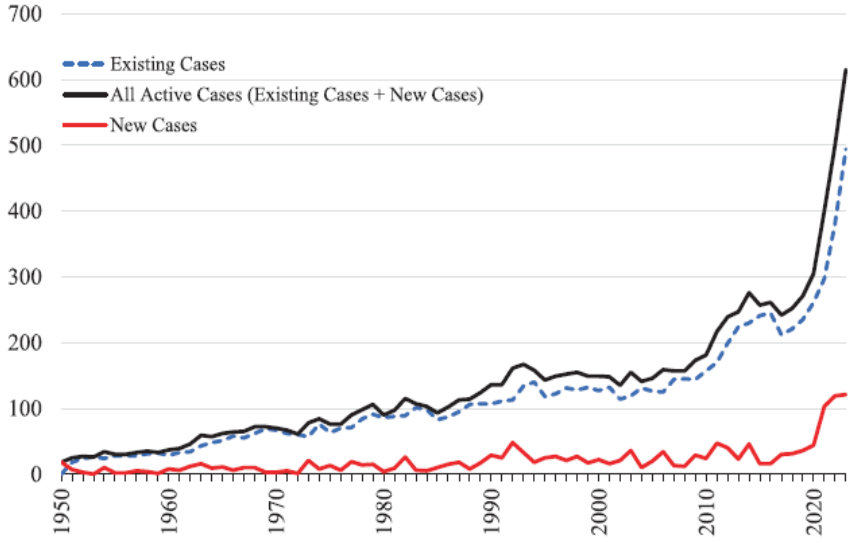
- Force policy or behavioral changes in a target government (e.g., reversing decisions that contravene international law);
- Destabilize or replace a regime considered a threat to international security or values;
- Resolve territorial disputes, or prevent or end wars between states without resorting to direct military action;
- Combat terrorism, drug trafficking, or the proliferation of weapons of mass destruction;
- Promote democracy and human rights by putting pressure on autoritarian governments.

Historically, trade embargoes and other commercial sanctions were the predominant form of economic sanction, especially during the Cold War (Morgan et al., 2023). A notable example is the trade embargo imposed by the United States on Cuba in 1960 and still in effect today. However, with the end of the Cold War and the advance of globalization, sanctions regimes have diversified. Since the 1990s, there has been an increase in the use of financial sanctions (such as asset freezes and exclusion from capital markets), technology bans, travel restrictions, and other targeted measures. Hafbauer and Jung (2020) contend that this shift also sought to minimize the collateral humanitarian damage associated with total trade embargoes, a lesson reflected in the shift toward more targeted sanctions with explicit humanitarian exceptions in recent decades.

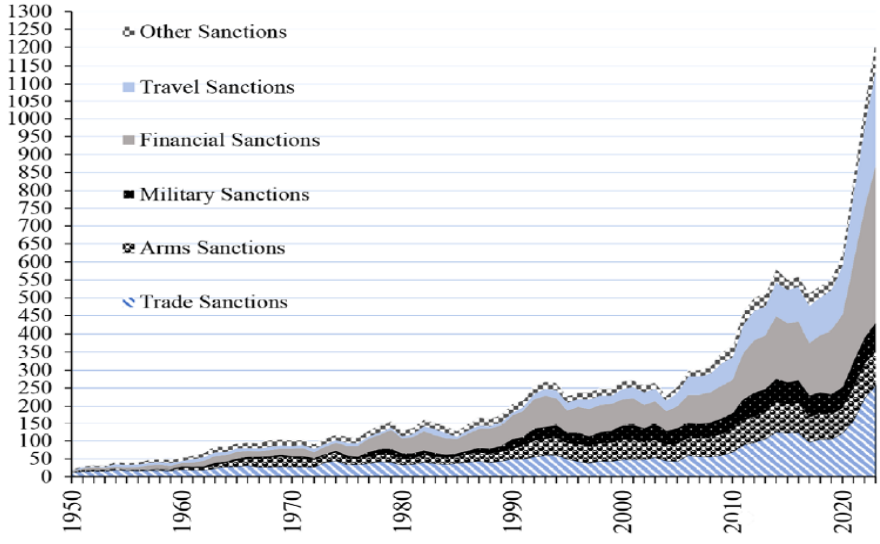
The growing interdependence of the global economy has amplified the global impact of contemporary sanctions. Today, restricting trade and finance in a large economy has far greater global impact than in the past (Mulder, 2022a). Mulder (2022b) highlights this point in the context of sanctions against Russia: "The toughest sanctions of the Cold War period, such as those imposed by the UN and the West against Rhodesia (now Zimbabwe) and Apartheid South Africa, or the U.S. sanctions against Cuba and Iran, did not target big economies. [...] Russia is the world's eleventh largest economy, and its position as the leading exporter of commodities among emerging markets grants it a structurally important position. Among advanced economies, only the U.S., Canada, and Australia have a comparable presence in global energy, agriculture, and metals markets."

FIGURE 8 EVOLUTION OF SANCTIONS BY TYPE

(a) New vs. existing cases



(b) Frequency by sanction type



Source: Figures 1(a) and 2(a) in Yalcin et. al. (2025) with updated data from The Global Sanctions Database, Felbermayr et al. (2020).

The effectiveness of these measures in achieving their political objectives remains a subject of intense academic debate. Nonetheless, trade sanctions have become a central instrument in the current geopolitical landscape, underscoring their great historical significance as a tool of economic coercion. The following section reviews some of the macroeconomic and microeconomic effects studied in academic literature.

3.1 Macroeconomic effects

Economic sanctions —particularly when imposed by major actors such as the United States or the United Nations—tend to have significant negative macroeconomic effects on the target countries. In general terms, there is a contraction in the GDP growth rate, accompanied by declines in consumption, investment, international trade, and foreign direct investment (Gutmann et al., 2023).

One of the most evident channels is the deceleration of GDP growth. Neuenkirch and Neumeier (2015) analyze the impact of sanctions imposed by the UN and the United States and find that UN sanctions—due to their more comprehensive and multilateral nature—tend to have more severe and lasting effects on the economic activity of sanctioned countries.

A notable example is Russia after the annexation of Crimea in 2014. According to Gurvich and Prilepskiy (2015), the sanctions imposed by the West led to a significant drop in GDP and investment, accompanied by a sharp outflow of capital, higher external borrowing costs, and a substantial depreciation of the Russian ruble. These effects were amplified by the loss of investor confidence and restricted access to international financial markets.

In Iran, the reimposition of sanctions by the United States in 2018 had even more severe macroeconomic consequences. According to the World Bank (2018), the Iranian currency suffered a sharp devaluation and inflation soared, signaling a profound disruption of macroeconomic stability.[7]/ The combination of restrictions on oil trade, financial isolation, and a decline in foreign direct investment led to a protracted recession and a deterioration of the population's well-being.

More recently, Baqaee and Malmberg (2025a) offer a quantitative framework to assess the effects of sanctions imposed on Russia upon its invasion of Ukraine. The authors argue that sanctions, which restrict access to imported capital goods and intermediate inputs, can have persistent and profound effects on the sanctioned economy. Their model suggests that these effects may be much more severe than estimated by static models, implying that economic sanctions can have a significant cumulative impact on productive capacity and consumption, particularly for Russia and Eastern Europe.

These cases illustrate how sanctions, especially when they are broad and sustained over time, can have strong contractionary effects on the sanctioned economies, affecting both their fundamental macroeconomic variables and their financial and foreign exchange rate stability.

[7] In 2018, the government devalued its official exchange rate to 42,000 Iranian rials per dollar, while on the informal market the dollar traded at over 140,000 rials. Over a four-month period, CPI inflation tripled, reaching 24.2% in August 2018, Iran's highest recorded level since 2013.

3.2 Microeconomic effects

Most of the evidence on the effects of sanctions comes from macroeconomic aggregate studies. These are useful for comparing economies but struggle to separate sanctions' impacts from other factors. For example, at the time of Russia's invasion of Ukraine in 2022, the Russian Central Bank sharply raised interest rates, while Western countries imposed various trade sanctions. Studies using micro-level, disaggregated data are better suited to isolate sanctions' effects. Given the origin of this data and its methodology, these studies focus only on recent sanctions.

Ahn and Ludema (2020) study the effects of "targeted sanctions," which focus on specific businesses, individuals, or sectors rather than entire countries. These sanctions aim to reduce the damage to the broader civilian population and unaffected parts of the economy. The authors analyze measures imposed by the U.S. and E.U. in Russia following its 2014 invasion of Crimea. To do so, they use a difference-in-differences approach, where the treated group consists of approximately 3,000 firms around the world. Controlling for sector and country, the results show statistically significant adverse effects on firm survival, sales, assets, and employment.

Additionally, these authors study how Russia can potentially protect "strategic" businesses at the cost of possibly incurring a higher cost to the economy. In particular, 374 strategic firms are identified based on official documentation from the Russian Federation. This category is justified on the basis of their systemic importance in terms of defense or job creation, or their financial importance for the proper capitalization of the economy. Repeating the analysis with an interaction of whether the firm is strategic or not, they find that this variable is not statistically significant, implying that these types of firms are unaffected by sanctions.

Crozet and Hinz (2016) also analyze the sanctions imposed on Russia following the invasion of Crimea, showing the effects on exports to Russia. First, using aggregate data from 37 countries and sanctions related to international trade, they estimate damage equivalent to 7.4% of annual exports for Russia and 0.3% for the sanctioning countries. Interestingly, the damage to other economies does not come from Russian retaliation, but from a self-imposed cost. The authors explore this channel, showing that international trade that relies heavily on the financial system for its operation is the most affected. In other words, even though many goods were not subject to embargoes or other restrictive measures, the inability to link that trade to Russia-related financing had negative effects on exports to that country.

The aforementioned studies use global firms or firms that are not based in Russia, while Gaur et al. (2023) use microdata from Russian companies and conclude that the effects on them are not persistent. The authors show, in connection with the findings of Crozet and Hinz (2016), that the financial channel is important. However, firms use different strategies to adapt to sanctions, which means that in the long term the effects dissipate.

Box I: Foreseen effects of the Trump administration's announcements of 2 April

On Thursday, 2 April 2025, U.S. President Donald Trump announced a sweeping set of tariffs affecting virtually every economy in the world, except for Canada and Mexico, which had secured a prior agreement. This new round of measures brought the average rate in the U.S. to around 25% —levels not seen in over a century. For several countries, including China, these new tariffs were a de facto embargo.

Since then, there has been a series of announcements. Many of the proposed tariffs did not materialize, while others were subsequently reduced, leaving most countries facing general tariffs of about 10%. In response to these developments, several studies have sought to understand the potential effects of this new wave of tariffs, mainly on the U.S. economy.

Regarding inflationary effects, Cavallo et al. (2025) extend their earlier work on the first trade war (Cavallo et al., 2021), by analyzing high-frequency consumer price data linked to customs codes and product origins. Data for the first half of 2025[8]/ reveal rapid, albeit modest, increases in the prices of imported goods as a result of the new tariffs, with China showing the largest hikes. Kalemli-Özcan et al. (2025) employ a Neo-Keynesian open-economy model with intermediate goods, which predicts a 0.8pp increase in inflation. This considers the direct effects on inflation, the indirect impacts on marginal costs and aggregate demand, and adjustments on inflation expectations. The same study also projects a 1.6pp drop in GDP.

Auclert et al. (2025) explore whether the new tariff episode could trigger a recession, focusing on the extent to which higher import costs and less competitive exports---due to pricier imported intermediates---can be offset by domestic adjustments. After parameterizing and estimating their model, the authors conclude that a recession is likely. Rodríguez-Clare et al. (2025) estimate an international trade model for the U.S. economy, finding that GDP falls by 1% nationally and by up to 3% in certain states. Baqaee and Malmberg (2025b) incorporate capital as an additional channel, showing that the long-run impact exceeds short-term estimates because tariffs raise the relative price of capital, which is slower to adjust, and dampen investment. Finally, Ignatenko et al. (2025) project a 0.5% drop in global employment in a model calibrated to 123 countries.

One of the reasons cited by the U.S. government for raising tariffs is the large trade deficit. However, Auclert et al. (2025) show that the deficit only decreases in the absence of retaliation. Werning and Costinot (2025) argue that the potential reduction depends on the convexity of the Engel curve for exports and imports. For example, if imports consist mainly of luxury goods, tariffs are more likely to reduce the trade deficit.

Lastly, the effects on the exchange rate are analyzed. Kalemli-Özcan et al. (2025) estimate a nominal effective appreciation of 4.8% in the event of a full-blown trade war and 10% if only the U.S. imposes tariffs. Both scenarios are counterfactual, as the U.S. dollar (USD) has depreciated since the beginning of the year—though other factors likely explain this trend. In their work, the authors acknowledge that the final effect will depend on how aggressive the reaction of other countries' central banks is. If the war is highly inflationary and they react strongly, then the dollar may indeed depreciate. This is consistent with the evidence found by Ostry et al. (2025) using a comprehensive database of tariff announcements and implementations in the U.S., China, and other countries.

[8] The Cavallo et al. (2025) study is updated constantly. The version cited herein uses data up to 1 June 2025.

The literature has identified that tariff-induced inflation can, in principle, be fully offset by exchange rate appreciations--- a mechanism known as the "exchange rate offset" (Mundell, 1961; Ostry, 1991; Jeanne and Son, 2024). Empirical evidence from the first trade war shows that the USD appreciated following announcements of new tariffs in the U.S., while the renminbi also depreciated, albeit to a lesser extent (Jeanne y Son, 2024).

Box II: Monetary policy responses to tariffs

It is important to bear in mind that this analysis adopts the perspective of the tariff-imposing country. Most of the studies cited use models calibrated for the U.S. economy. The existing literature suggests that, in general, tariffs have recessionary effects on economic activity, and that the optimal monetary policy response to their implementation is usually expansionary.

A temporary increase in tariffs can lead to economic contraction if the intertemporal substitution effect dominates the import substitution effect (Auclert et al., 2025). This scenario is common because many tariff-affected imports are durable goods, such as automobiles and electronic equipment. In the short term, purchases of durables are far more intertemporally substitutable than those of nondurables; in other words, households are more likely to postpone durable purchases when prices rise. Added to this are retaliatory measures by other countries, which hit export sectors, exacerbate the recession, and generally lead to a deterioration in the trade balance.

Other studies find that tariffs act simultaneously as supply and demand shocks, triggering endogenous fragmentation of global value chains through shifts in trade and production linkages. The net impact of tariffs on inflation and output depends critically on the endogenous response of monetary policy---both in the tariff-imposing country and in the affected economies (Kalemli-Özcan et al., 2025). These authors argue that when the dominant effect is a fall in aggregate demand, monetary policy should be expansionary to sustain economic activity. Conversely, if tariffs exert a strong inflationary impact through their supply shock component, the optimal response could be contractionary to prevent inflation expectations from becoming unanchored.

Several studies converge on the view that, in most scenarios, the optimal monetary policy response to tariff shocks is expansionary. Bergin and Corsetti (2023) find that such a stance supports economic activity and producer prices, albeit at the cost of higher inflation in the short term—which runs counter to the standard Taylor rule prescription. This recommendation becomes even more compelling when the domestic currency is dominant in international trade pricing. Similarly, Bianchi and Coulibaly (2025) advocate an expansionary monetary policy under a wide range of conditions. This conclusion holds true irrespective of whether tariffs are imposed on final consumer goods or intermediate inputs, whether the shock is temporary or permanent, and whether the terms of trade are determined exogenously or respond endogenously to the conditions of the model.[9]/

Werning et al. (2025) interpret tariffs as cost shocks that create a classic dilemma for monetary policy: whether to prioritize price stability or support economic activity. In their analysis, they show that, in the presence of nominal rigidities, optimal monetary policy should not respond contractively to the tariff-induced increase in inflation. On the contrary, allowing a temporary rise in inflation to smooth the adjustment and prevent a deeper recession.

As Monacelli (2025) notes, the impact of import tariffs can be contractionary or expansionary depending on the monetary authority's target---whether it seeks to stabilize CPI inflation or a narrower index of domestic goods prices, such as the PPI. Under flexible domestic prices, tariffs are expansionary if the elasticity of substitution between imported and domestic goods is sufficiently high. From a policy perspective, an optimal monetary policy involves partial manipulation of the exchange rate: in the face of import tariffs, the aim is to avoid excessive appreciation that could halt domestic demand.

[9] The work of Bianchi and Coulibaly (2025) has been criticized because of their assumption that the US model economy can be treated as a small, open economy.

Taken together, recent theoretical evidence suggests that tariffs create tensions between inflation and output objectives, and that a strictly contractionary monetary stance can amplify the real costs of protectionism. While approaches differ, the literature broadly agrees that an expansionary response is generally preferable to mitigate the adverse effects of tariffs in most scenarios.

REFERENCES

Arbatli-Saxegaard, E.C., S.J. Davis, A. Ito, and N. Miake (2022). "Policy uncertainty in Japan." Journal of the Japanese and International Economies 64: 101192.

Ahn, D.P. and R.D. Ludema (2020). "The sword and the shield: The economics of targeted sanctions." European Economic Review 130: 103587.

Alfaro, L. and D. Chor (2023). "Global supply chains: The looming "great reallocation" (No. w31661). National Bureau of Economic Research.

Amiti, M., S.J. Redding, and D.E. Weinstein (2019). "The impact of the 2018 trade war on U.S. prices and welfare." Journal of Economic Perspectives 33(4): 187–210.

Amiti M, S.H. Kong, and D. Weinstein (2021). "Trade protection, stock-market returns, and welfare. NBER Working Paper No. 28758

Anderson, J. and P. Neary (2005). Measuring the Restrictiveness of Trade Policy. Boston, MA: MIT Press.

Auclert, A., M. Rognlie, and L. Straub (2025). "The macroeconomics of tariff shocks." NBER Working Papers 33726, National Bureau of Economic Research.

Autor, D.H., D. Dorn, and G.H. Hanson (2013). "The China syndrome: Local labor market effects of import competition in the United States." American Economic Review 103(6): 2121–68.

Bagwell, K. and S.H. Lee (2020). "Trade policy under monopolistic competition with firm selection." Journal of International Economics 127: 1–25.

Baldwin, R.E. (1948). "Equilibrium in international trade: A diagrammatic analysis." Quarterly Journal of Economics 62(5): 748-62.

Baldwin, R.E. (1969). "The case against infant-industry tariff protection." Journal of Political Economy 77(3): 295–305.

Baqaee, D. and H. Malmberg (2025a). "Long-run consequences of sanctions on Russia." AEA Papers and Proceedings 115: 583–7.

Baqaee, D. and H. Malmberg (2025b). "Long-run effects of trade wars." NBER Working Papers 33702, National Bureau of Economic Research.

Barbiero, O. and H. Stein (2025). "The impact of tariffs on inflation." Current Policy Perspectives 25-2, Federal Reserve Bank of Boston.

Bellora, C. and L. Fontagné (2019). "Shooting oneself in the foot? Trade war and global value chains." CEPII Working Papers 2019-18, Centre d'Etudes Prospectives et d'Informations Internationales, Paris, France.

Benguria, F., J. Choi, D.L. Swenson, and M. Xu (2022). "Anxiety or pain? The impact of tariffs and uncertainty on Chinese firms in the trade war." Journal of International Economics 137: Article 103608.

Benguria, F. and F. Saffie (2019). Dissecting the impact of the 2018–2019 trade war on U.S. exports. SSRN 3505413.

Benguria, F. and F. Saffie (2024). "Escaping the trade war: Finance and relational supply chains in the adjustment to trade policy shocks." Journal of International Economics 152 (C).

Bergin, P.R. and G. Corsetti (2023). "The macroeconomic stabilization of tariff shocks: what is the optimal monetary response?" Journal of International Economics 143: 103758.

Berthou, A., C. Jardet, D. Siena, and U. Szczerbowicz (2018). "Costs and consequences of a trade war: a structural analysis." Rue de la Banque, Banque de France 72: 1-6. Paris.

Bianchi, J. and L. Coulibaly (2025). "The optimal monetary policy response to tariffs." NBER w33560). National Bureau of Economic Research.

Bollen, J. and H. Rojas-Romagosa (2018). "Trade wars: Economic impacts of U.S. tariff increases and retaliations. An international perspective." CPB Background document, Netherlands Bureau for Economic Policy Analysis, The Hague.

Bown, C.P. (2016). "Should the United States recognize China as a market economy?" Peterson Institute for International Economics Policy Brief 16–24.

Bown, C.P. and M.A. Crowley (2016). "The empirical landscape of trade policy." In Handbook of Commercial Policy, vol. 1B, edited by K. Bagwell and R.W. Staiger. Elsevier.

Brander, J.A. and B.J. Spencer (1981). "Tariffs and the extraction of foreign monopoly rents under potential entry." The Canadian Journal of Economics 14: 371-89.

Brander, J.A. and B.J. Spencer (1985). "Export subsidies and international market share rivalry." Journal of International Economics 18(1–2): 83–100.

Caldara, D., M. Iacoviello, P. Molligo, A. Prestipino, and A. Raffo (2020). "The economic effects of trade policy uncertainty." Journal of Monetary Economics 109: 38–59.

Caliendo, L., M. Dvorkin, and F. Parro (2019). "Trade and labor market dynamics: general equilibrium analysis of the China trade shock." Econometrica 87: 741-835.

Caliendo, L. and F. Parro (2022). Trade policy. In Handbook of International Economics, vol. 5, edited by G. Gopinath, E. Helpman, and K. Rogoff. Elsevier.

Caliendo, L. and F. Parro (2023). "Lessons from U.S.-China trade relations." Annual Review of Economics 15: 513–47.

Carlomagno, G. and E. Albagli (2022). "Trade wars and asset prices." Journal of International Money and Finance 124: 102631.

Cavallo, A., G. Gopinath, B. Neiman, and J. Tang (2021). "Tariff pass-through at the border and at the store: evidence from U.S. trade policy." American Economic Review: Insights 3(1): 19–34.

Cho, D. and H. Kim (2023). "Macroeconomic effects of uncertainty shocks: Evidence from Korea." Journal of Asian Economics 84: 101571.

Chor, D. and B. Li (2024). "Illuminating the effects of the U.S.-China tariff war on China's economy." Journal of International Economics 150, Article 103832.

Correa, R., J. di Giovanni, L.S. Goldberg, and C. Minoiu (2025). "Trade uncertainty and U.S. bank lending." Federal Reserve Bank of New York Staff Reports No. 1076.

Costinot, A., D. Donaldson, J. Vogel, and I. Werning (2015). "Comparative advantage and optimal trade policy." Quarterly Journal of Economics 130(2): 659–702.

Costinot, A., A. Rodríguez-Clare, and I. Werning (2020). Micro to macro: Optimal trade policy with firm heterogeneity." Econometrica 88: 2739-76.

Crozet, M. and J. Hinz (2016). "Collateral damage: the impact of the Russia sanctions on sanctioning countries' exports." Working Papers 2016-16, CEPII Research Center.

Das, S.P. and S. Donnenfeld (1989). "Oligopolistic competition and international trade: Quantity and quality restrictions." Journal of International Economics 27(3–4): 299–318.

Demidova, S. (2017). "Trade policies, firm heterogeneity, and variable markups." Journal of International Economics 108: 260–73.

Dixit, A. (1985). "Tax policy in open economies." In Handbook of Public Economics, vol.1, edited by A.J. Auerbach and M. Feldstein. Elsevier.

Fajgelbaum, P.D., P.K. Goldberg, P.J. Kennedy, and A.K. Khandelwal (2020). "The return to protectionism." Quarterly Journal of Economics 135(1): 1–55.

Fajgelbaum, P.D., P. Goldberg, P. Kennedy, A. Khandelwal, and D. Taglioni (2024). "The U.S.–China trade war and global reallocations." American Economic Review: Insights 6(2): 295–312.

Fajgelbaum, P.D. and A.K. Khandelwal (2022). "The Economic Impacts of the U.S.–China Trade War." Annual Review of Economics 14: 205–28.

Feenstra, R.C. (1995). "Estimating the effects of trade policy." In Handbook of International Economics, vol. 3, edited by G.M. Grossman and K. Rogoff. Elsevier.

Felbermayr, G., A. Kirilakha, C. Syropoulos, E. Yalcin, and Y.V. Yotov (2020). "The global sanctions data base." European Economic Review 129(C). Elsevier.

Flaaen, A. and J. R. Pierce (2024). "Disentangling the effects of the 2018–2019 tariffs on a globally connected U.S. manufacturing sector." Review of Economics and Statistics 106(2): 327–43.

Flaaen, A., A. Hortaçsu, and F. Tintelnot (2020). "The production relocation and price effects of U.S. trade policy: The case of washing machines." American Economic Review 110(7): 2103–27.

Freund, C., A. Mattoo, A. Mulabdic, and M. Ruta (2024). "Is U.S. trade policy reshaping global supply chains?" Journal of International Economics 152 (C).

Galtung, J. (1967). On the effects of international economic sanctions, with examples from the case of Rhodesia. World Politics 19(3): 378–416.

Gaur, A., A. Settles, and J. Väätänen (2023). "Do economic sanctions work? Evidence from the Russia-Ukraine conflict." Journal of Management Studies 60(6): 1391–414.

Georgiadis G., S. Hildebrand, M. Ricci, B. Schumann, and B. van Roye (2021). ECB-Global 2.0: A global macroeconomic model with dominant-currency pricing, tariffs and trade diversion. ECB Working Papers 2021/2530, European Central Bank, Frankfurt, Germany.

Gopinath, G., P.-O. Gourinchas, A.F. Presbitero, and P. Topalova (2025). "Changing global linkages: A new Cold War? Journal of International Economics 153.

Grossman, G.M. (1986). "Imports as a cause of injury: The case of the U.S. steel industry." Journal of International Economics 20: 3–4.

Grossman, G.M. (1987). "The employment and wage effects of import competition in the United States." Journal of International Economic Integration 2(1): 1–23.

Grossman, G.M., E. Helpman, and S.J. Redding (2024). "When tariffs disrupt global supply chains." American Economic Review 114(4): 988–1029.

Gurvich, E. and I. Prilepskiy (2015). "The impact of financial sanctions on the Russian economy." Russian Journal of Economics 1(4): 359–85.

Gutmann, J., M. Neuenkirch, and F. Neumeier (2023). "The economic effects of international sanctions: An event study." Journal of Comparative Economics 51(4): Article 101998.

Handley, K., F. Kamal, and R. Monarch (2025). "Rising import tariffs, falling exports: When modern supply chains meet old-style protectionism." American Economic Journal: Applied Economics 17(1): 208–38.

Handley, K. and N. Limão (2017). "Policy uncertainty, trade, and welfare: Theory and evidence for China and the United States." American Economic Review 107(9): 2731–83.

Helpman, E. and P.R. Krugman (1989). Trade policy and market structure. Boston, MA: MIT Press.

Huang, Y., C. Lin, S. Liu, and H. Tang (2020). "Trade networks and firm value: Evidence from the U.S.–China trade war." CEPR Discussion Papers DP14173, Centre for Economic Policy Research, London, U.K.

Hufbauer, G.C. and E. Jung (2020). "What's new in economic sanctions?" European Economic Review 130: 103572.

Ignatenko, A., A. Lashkaripour, L. Macedoni, and I. Simonovska (2025). "Making America great again? The economic impacts of Liberation Day tariffs." Journal of International Economics 157: 104138.

Ito, T. (2022). "Third country effects of Trump tariffs: Which countries benefited from Trump's trade War?" Discussion papers 22007, Research Institute of Economy, Trade and Industry (RIETI).

Itskhoki, O. and E. Ribakova (2024). "The economics of sanctions." Brookings Papers on Economic Activity.

Jeanne, O. and J. Son (2024). "To what extent are tariffs offset by exchange rates?" Journal of International Money and Finance 142: 103015.

Jiang, L., Y. Lu, H. Song, H., and G. Zhang (2023). "Responses of exporters to trade protectionism: Inferences from the U.S.-China trade war." Journal of International Economics 140(C): Article 103792.

Jiao, Y. Z. Liu, Z. Tian, and X. Wang (2024). "The impacts of the U.S. trade war on Chinese exporters." Review of Economics and Statistics 106(6): 1576–87.

Johnson H.G. (1953). "Optimum tariffs and retaliation." Review of Economic Studies 21(2): 142–53.

Kaldor, N. (1940). "A note on tariffs and the terms of trade." Economica 7(28): 377–80.

Kalemli-Özcan, □., C. Soylu, and M.A. Yildirim (2025). "Global networks, monetary policy and trade." NBER w33686). National Bureau of Economic Research.

Kee, H.L., A. Nicita, and M. Olarreaga (2009). "Estimating trade restrictiveness indices." Economic Journal 119(534): 172–99.

Klomp, J. (2025). "Trump tariffs and the U.S. defense industry." PLOS ONE, 20(1).

Krishna, K. (1989). "Trade restrictions as facilitating practices." Journal of International Economics, 26(3–4): 251–70.

Limão, N. (2018). Policy externalities and international trade agreements. World Scientific.

Markusen, J.R. (1981). "Trade and the gains from trade with imperfect competition. Journal of International Economics, 11(4), 531–551.

Melitz, M.J. (2003): "The impact of trade on intra-industry reallocations and aggregate industry productivity." Econometrica 71(6): 1695–725.

Minton, R. and M. Somale (2025). "Detecting tariff effects on consumer prices in real time." FEDS Notes. Washington: Board of Governors of the Federal Reserve System, 9 May.

Monacelli, T. (2025). "Tariffs and monetary policy." CEPR Discussion Paper No. 20142, Centre for Economic Policy.

Morgan, C., C. Syropoulos, and Y.V. Yotov (2023). "Economic sanctions: Evolution, consequences, and challenges." Journal of Economic Perspectives 37(1): 3–30.

Mulder, N. (2022a). The Economic Weapon: The Rise of Sanctions as a Tool of Modern War. Yale University Press.

Mulder, N. (2022b). "El arma de las sanciones." Finanzas y Desarrollo 59(2): 20. International Monetary Fund.

Mundell, R. (1961). "Flexible exchange rates and employment policy." Canadian Journal of Economics and Political Science 27(4): 509–17.

Mussa, M. (1974). "Tariffs and the distribution of income: The importance of factor specificity, substitutability, and intensity in the short and long run." Journal of Political Economy 82(6): 1191–203.

Neuenkirch, M. and F. Neumeier (2015). "The impact of UN and U.S. economic sanctions on GDP growth." European Journal of Political Economy 40(PA): 110–25.

Ossa, R. (2014). "Trade wars and trade talks with data." American Economic Review 104(12): 4104–46.

Ostry, D., S. Lloyd, and G. Corsetti (2025). "Trading blows: The exchange-rate response to tariffs and retaliations." RSCAS Working Paper RSC 2025/25, European University Institute, Robert Schuman Centre for Advanced Studies (June). The Pierre Werner Chair Programme.

Ostry, J. (1991). "Tariffs, real exchange rates, and the trade balance in a two-country world." European Economic Review 35(5): 1127–42.

Pustilnik, B., M.T. Reszczynski, I. Swett, and J.M. Wlasiuk (2025), "Efectos de las tensiones comerciales sobre los precios globales." In minutes cited in June Monetary Policy Report, Central Bank of Chile.

Rodríguez, F. (2024), "The human consequences of economic sanctions." Journal of Economic Studies 51(4): 942–63.

Rodríguez-Clare, A., M. Ulate, and J.P. Vasquez (2025). "The 2025 trade war: Dynamic impacts across U.S. States and the Global Economy." NBER Working Papers 33792, National Bureau of Economic Research."

Rodrik, D. (1995). "Getting interventions right: How South Korea and Taiwan grew rich." Economic Policy 10(20): 53–107.

Rodrik, D. (1998). "Why do more open economies have bigger governments? Journal of Political Economy 106(5): 997–1032.

Van Bergeijk, P.A.G. (2012). "Failure and success of economic sanctions." VoxEU.org, 25 April.

Venables, A.J. (1985). "Trade and trade policy with imperfect competition: The case of identical products and free entry." Journal of International Economics 19(1–2): 1–20.

Venables, A.J. (1987). "Trade and trade policy with differentiated products: A Chamberlinian-Ricardian model." Economic Journal 97(387): 700–17.

Werning, I., G. Lorenzoni, and V. Guerrieri (2025). "Tariffs as cost-push shocks: Implications for optimal monetary policy." NBER w33772). National Bureau of Economic Research.

Werning, I. and A. Costinot (2025). "How tariffs affect trade deficits." NBER Working Papers 33709, National Bureau of Economic Research.

World Bank (2018). Iran economic monitor: Weathering economic challenges.

Yalcin, E., G. Felbermayr, H. Kariem, A. Kirilakha, O. Kwon, C. Syropoulos, and Y.V. Yotov (2025). "The global sanctions data base—Release 4: The heterogeneous effects of the sanctions on Russia." The World Economy 48(9): 2003–17.