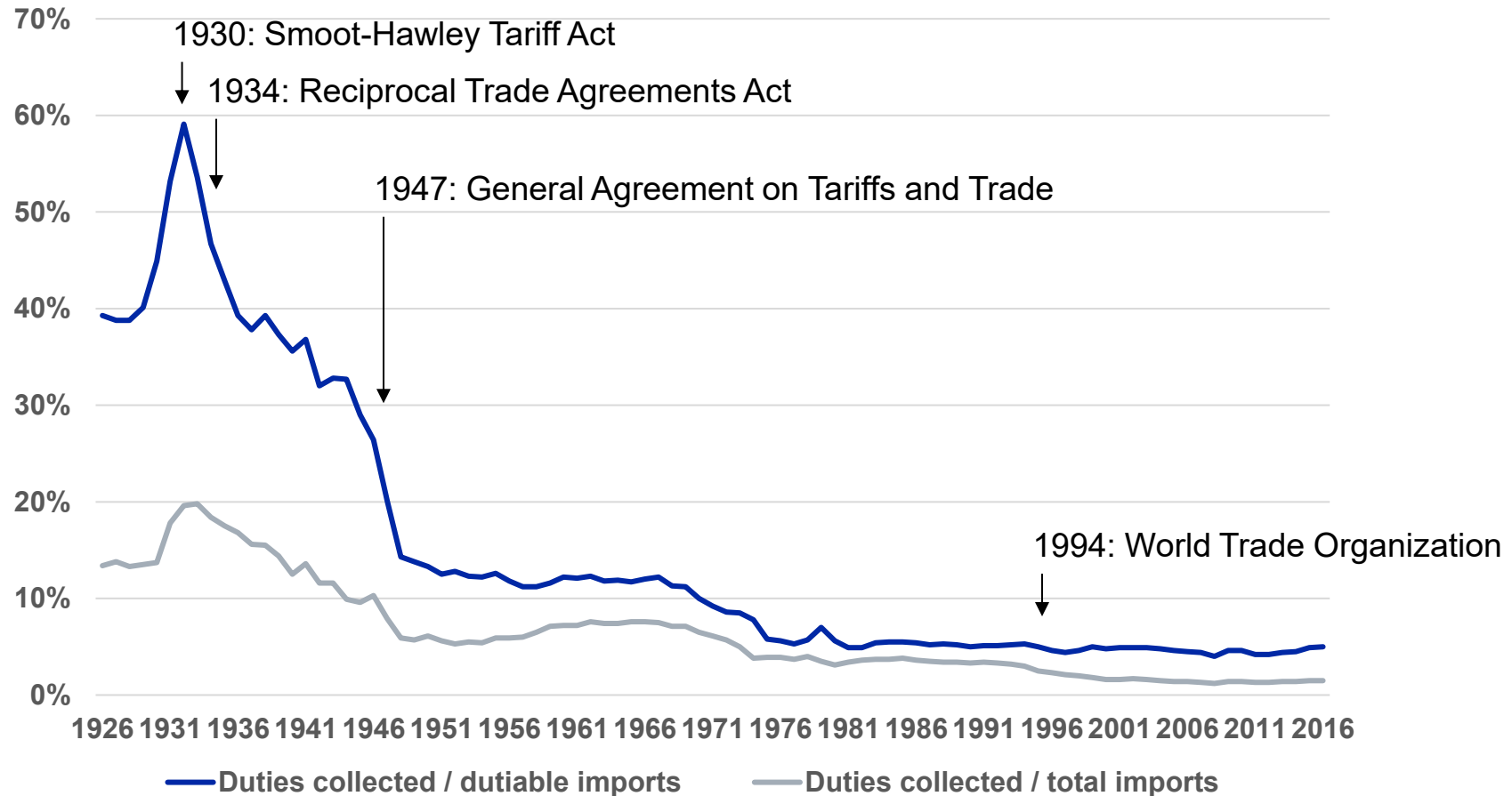




Topic 10 – Trade Wars and Trade Talks

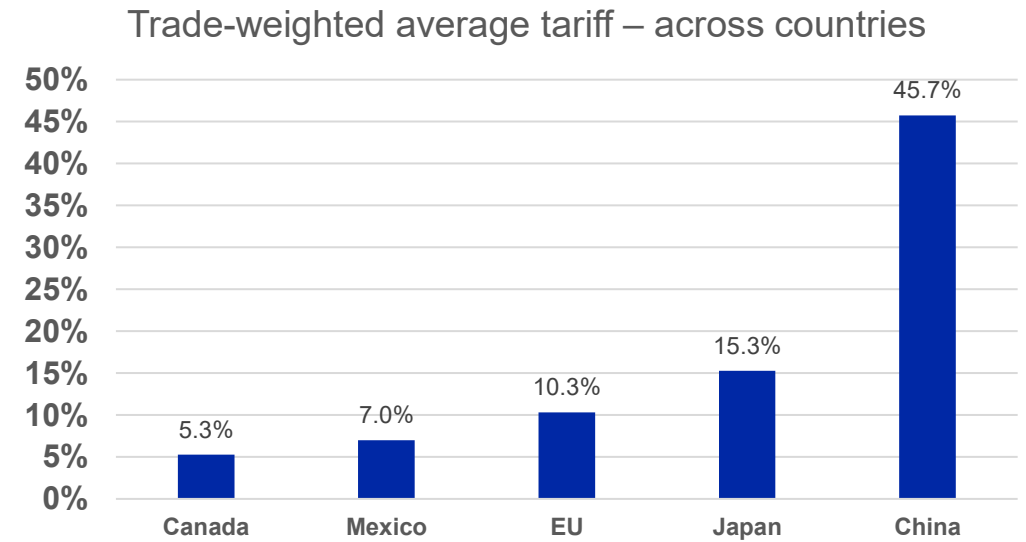
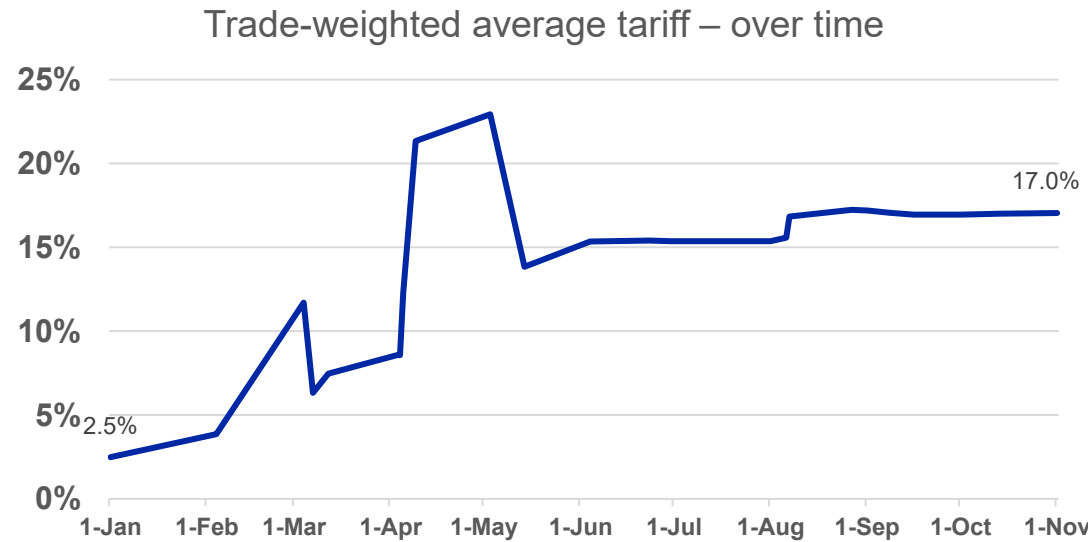
Prof. Ralph Ossa

Introduction - US tariffs 1926 - 2016



Source: USITC

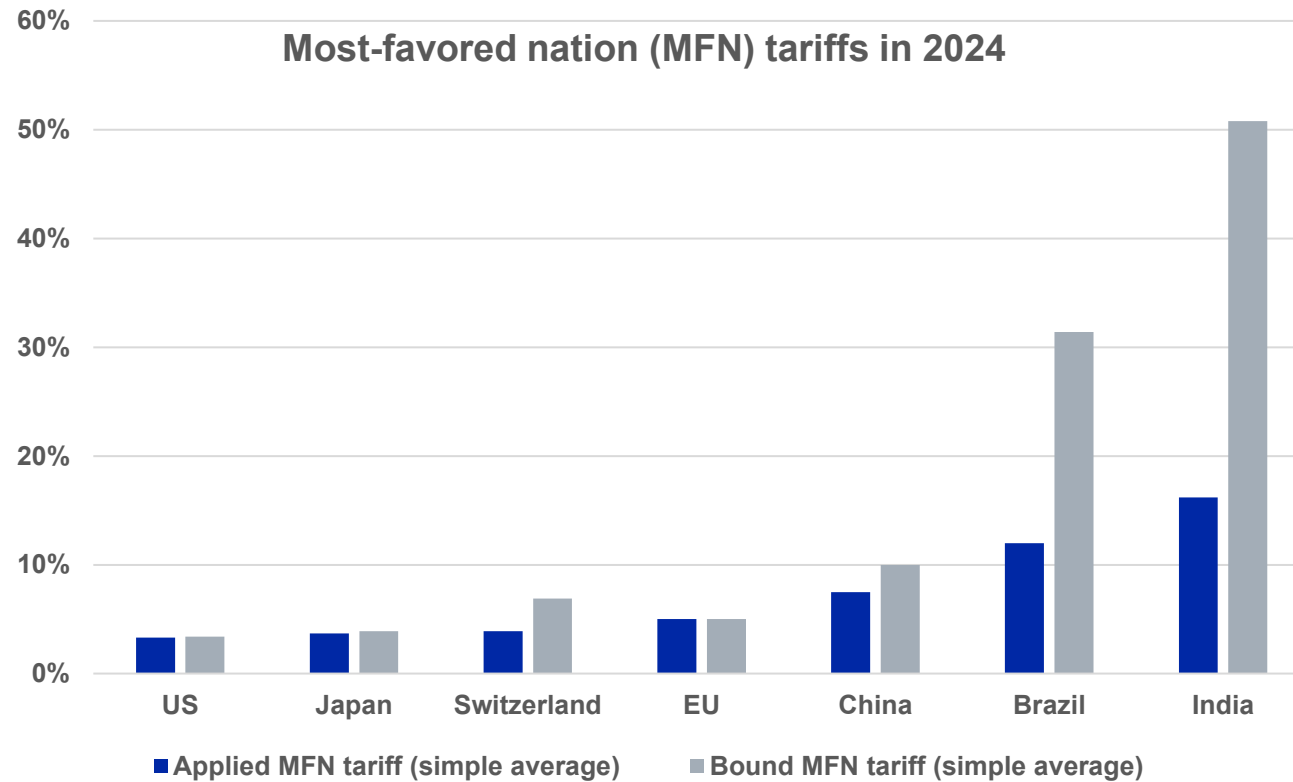
Introduction - US tariffs in 2025



Source: WTO



Introduction - Cross-country comparison of WTO tariffs



Source: WTO World Tariff Profiles 2025



Introduction – The basic puzzle

- This history of trade wars and trade talks seems puzzling in light of our earlier finding that there are large gains from trade
- Why would countries ever deviate from free trade? And why do they need to negotiate about tariff cuts?
- In this lecture, we provide an introduction to the literature on trade negotiations focusing largely on the canonical terms-of-trade theory
- Our main point is that trade negotiations internalize trade policy externalities which give tariffs a beggar-thy-neighbor character



Overview of the lecture

- Unilateral trade policy
- Trade wars and trade talks
- Evidence
- Beyond tariffs



Unilateral trade policy

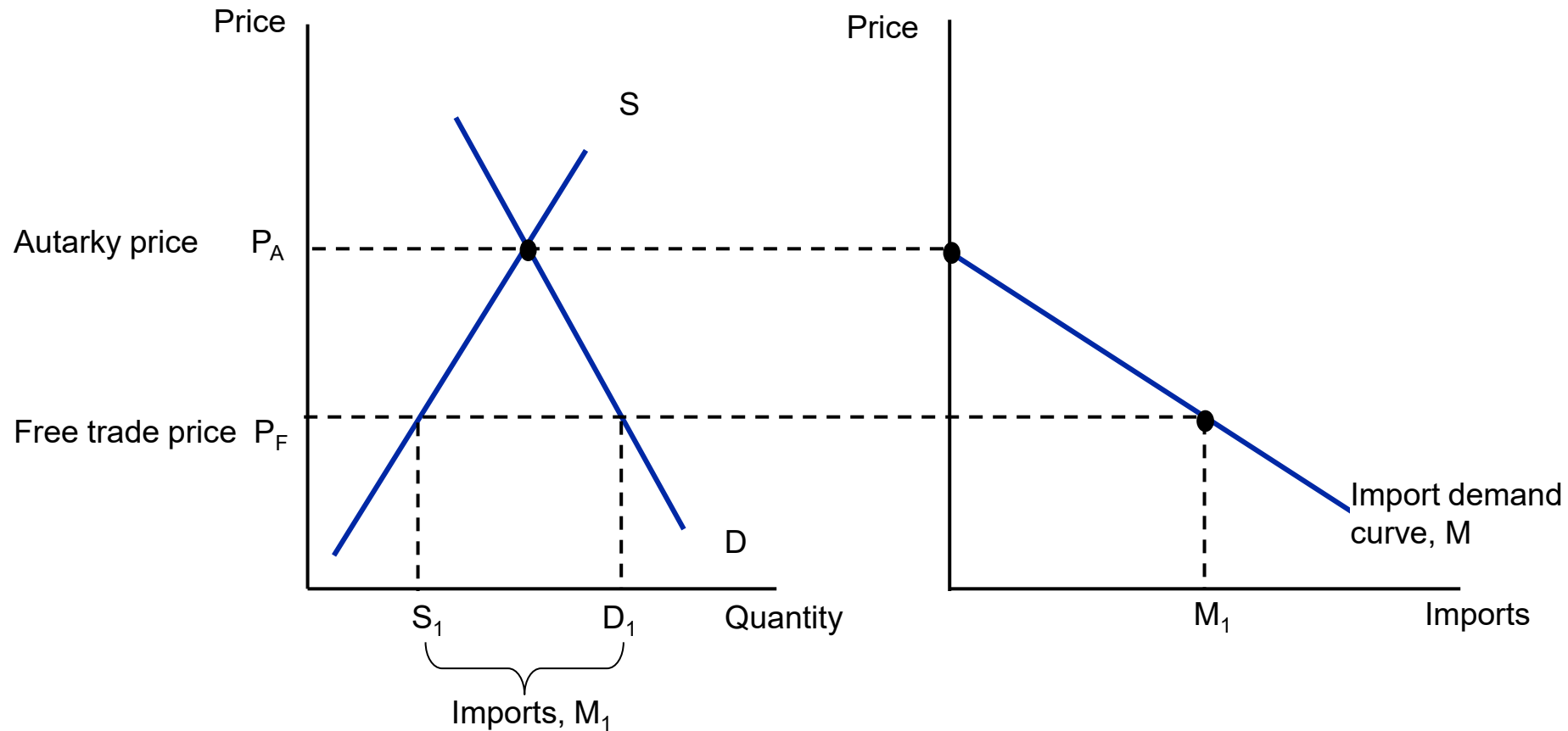
- We start by analyzing a country's incentives to impose import tariffs abstracting for now from the possibility of retaliation
- We do so in a simple partial-equilibrium model with perfect competition which is sufficient to illustrate the classic **optimal tariff argument**
- In particular, we consider two countries ("Home" and "Foreign") and one industry, assuming that Home is an importer and Foreign is an exporter in that industry
- We adopt a simple import demand-export supply framework which illustrates the world market equilibrium in which Foreign exports exactly as much as Home imports



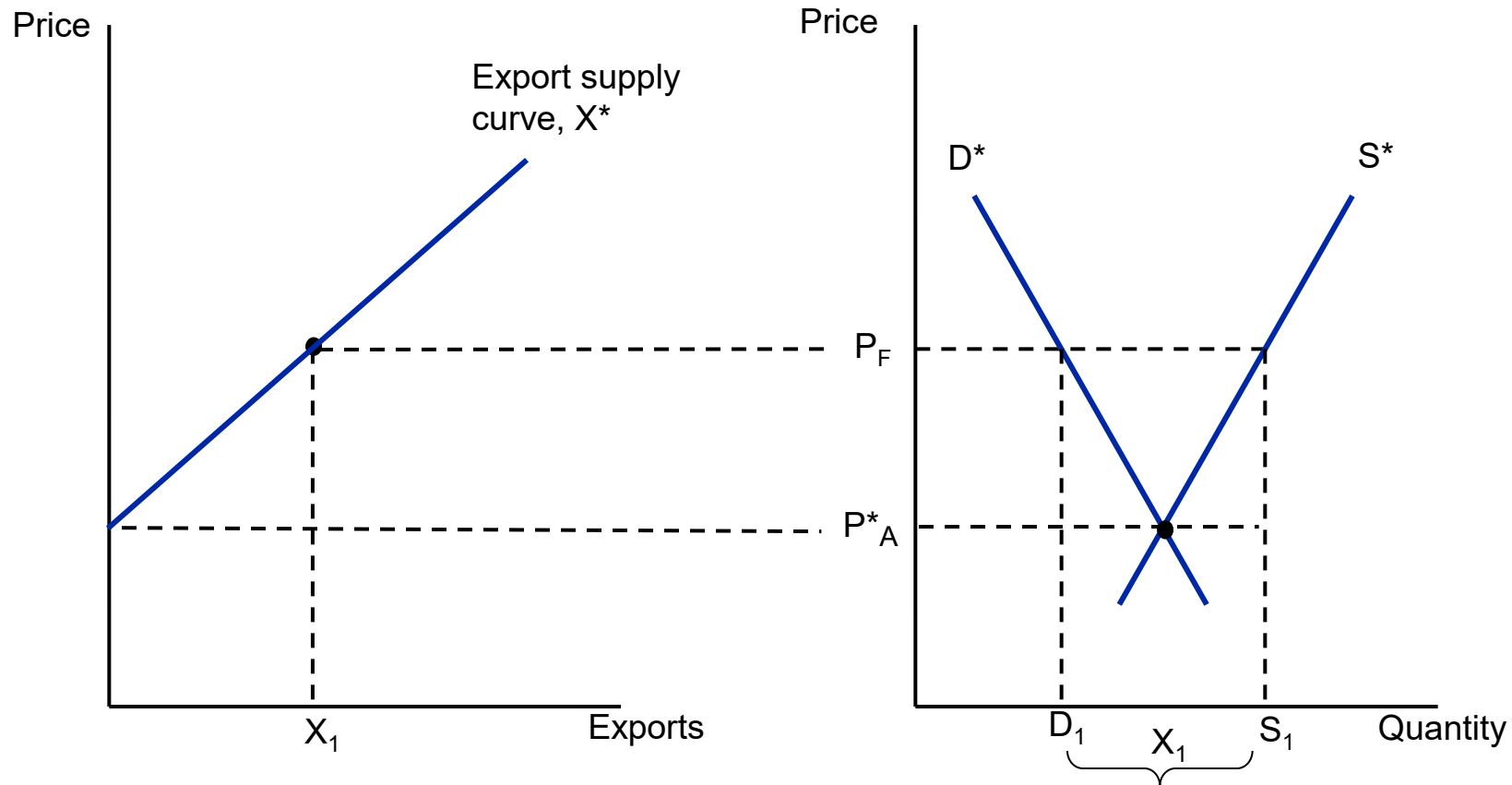
Unilateral trade policy - Import demand and export supply

- We capture Home's import demand with an **import demand curve**, which depicts the import demand as a function of the price
- Similarly, we capture Foreign's export supply with an **export supply curve**, which depicts the export supply as a function of the price
- They can both be constructed using the countries' domestic supply and demand curves because import demand and export supply are just excess demand and supply
- The free trade price is then determined by the intersection of the import demand and export supply curves because this is the price for which the world market clears

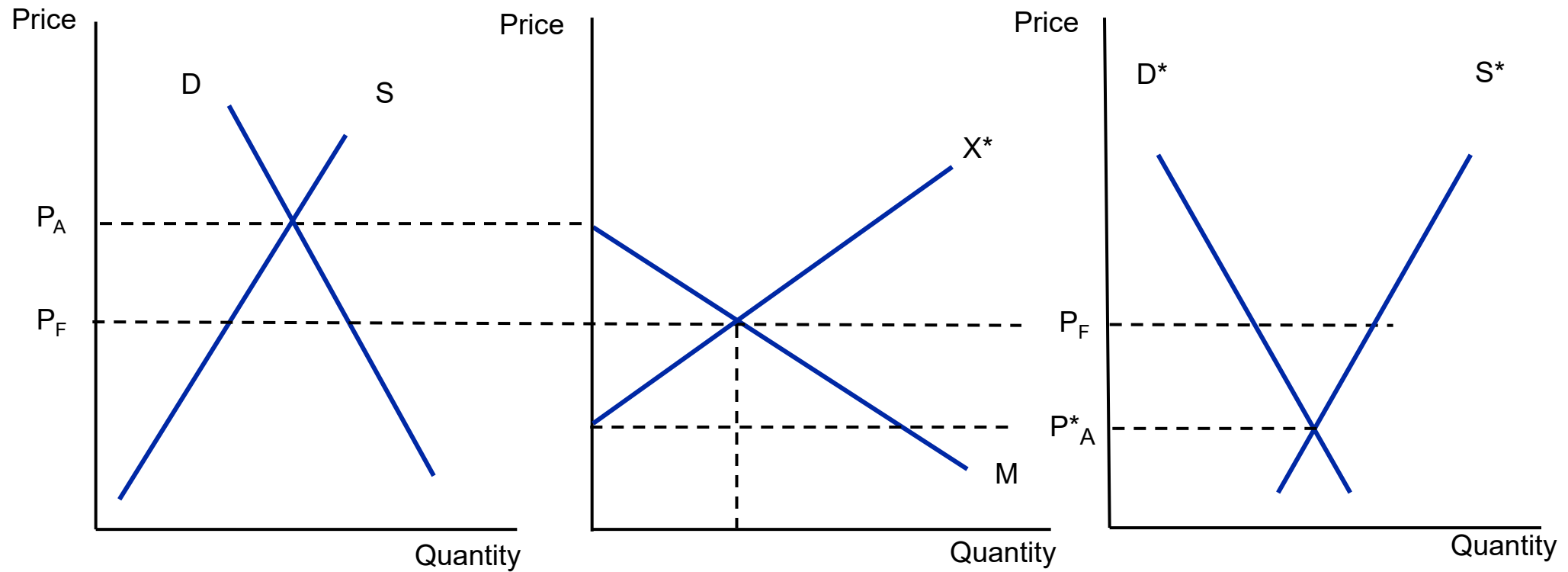
Unilateral trade policy – Home's import demand



Unilateral trade policy – Foreign's export supply



Unilateral trade policy – Free trade equilibrium

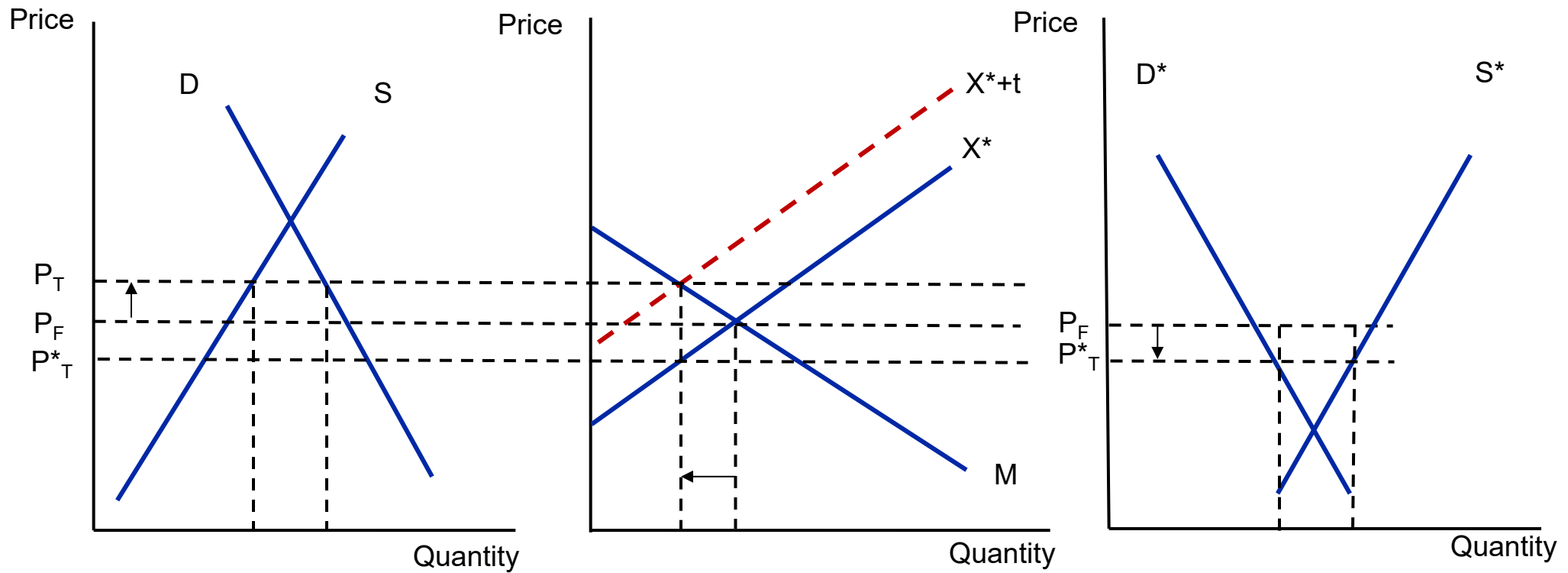




Unilateral trade policy – Effects of an import tariff

- Using this simple import demand-export supply framework, we now consider the effects of an import tariff imposed by Home
- For simplicity, we focus on a **specific tariff** (charged per unit) but the analysis would look very similar if we considered an **ad valorem tariff** (charged per value) instead
- To find the new equilibrium with the import tariff, we have to find new equilibrium prices P_T and P^*_T (T for tariff) such that:
 - 1) The price in Home is equal to the price in Foreign plus the tariff: $P_T = P^*_T + t$
 - 2) The world market clears at the prices prevailing in Home and Foreign: $M(P_T) = X^*(P^*_T)$

Unilateral trade policy – New equilibrium





Unilateral trade policy – New equilibrium (contd.)

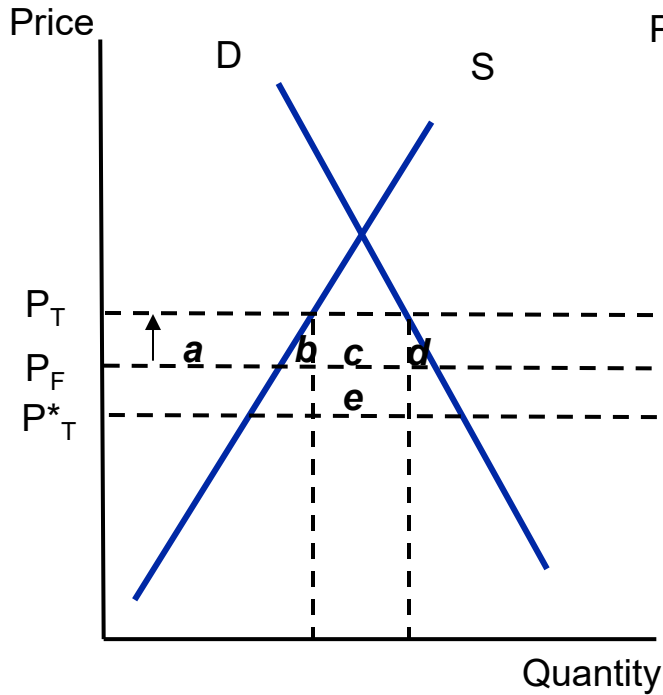
- As illustrated above, the new equilibrium can be found by drawing a curve which is parallel to Foreign's export supply curve with the vertical distance being equal to the tariff
- As can be seen, the price in Home rises, the price in Foreign falls, and trade between Home and Foreign falls as a result of the tariff
- Intuitively, the price in Foreign falls because Home has monopsony power in the world market and the tariff reduces its import demand
- Notice that this price change amounts to a deterioration in Foreign's terms-of-trade and an improvement in Home's terms-of-trade which has important welfare consequences



Unilateral trade policy – Welfare measures

- In order to understand the welfare effects of tariff changes, we need to know what they do to consumer, producer, and government welfare
- Changes in consumer welfare can be captured by changes in **consumer surplus**, which is the area below the demand curve and above the price
- Changes in producer welfare can be captured by changes in **producer surplus**, which is the area above the supply curve and below the price
- Changes in government welfare can be captured by changes in **tariff revenue**, which is equal to the tariff rate times the import volume

Unilateral trade policy – Welfare effects

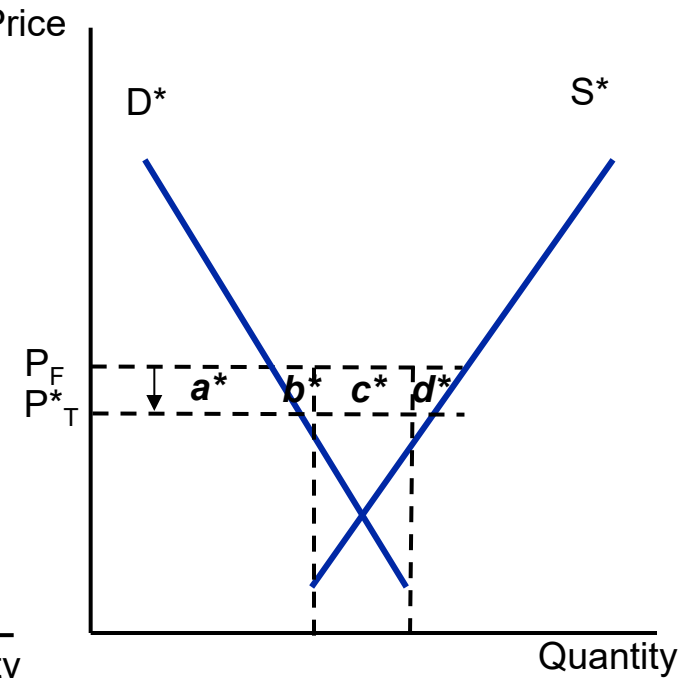
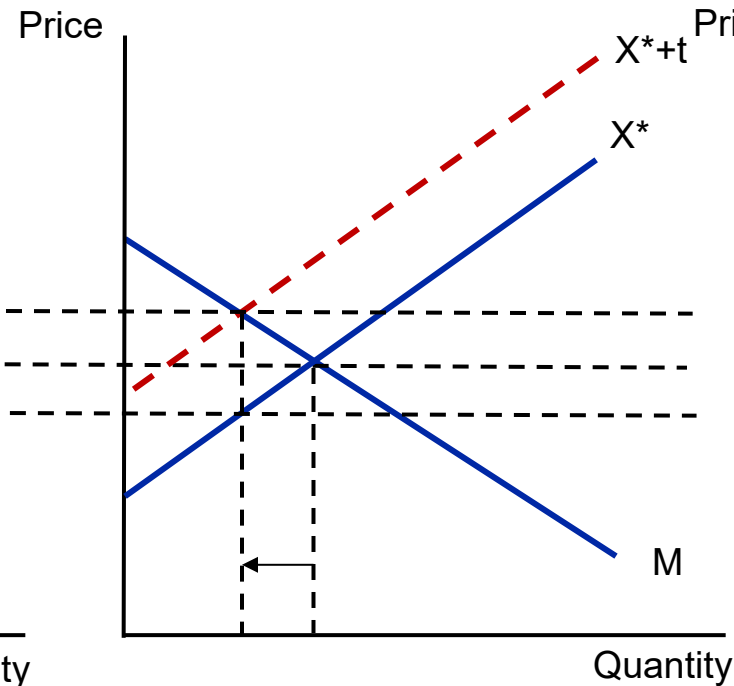


$$\Delta CS = -(a+b+c+d)$$

$$\Delta PS = +a$$

$$\Delta TR = +(c+e)$$

$$\Delta W = -(b+d)+e$$



$$\Delta CS = +a^*$$

$$\Delta PS = -(a^*+b^*+c^*+d^*)$$

$$\Delta TR = 0$$

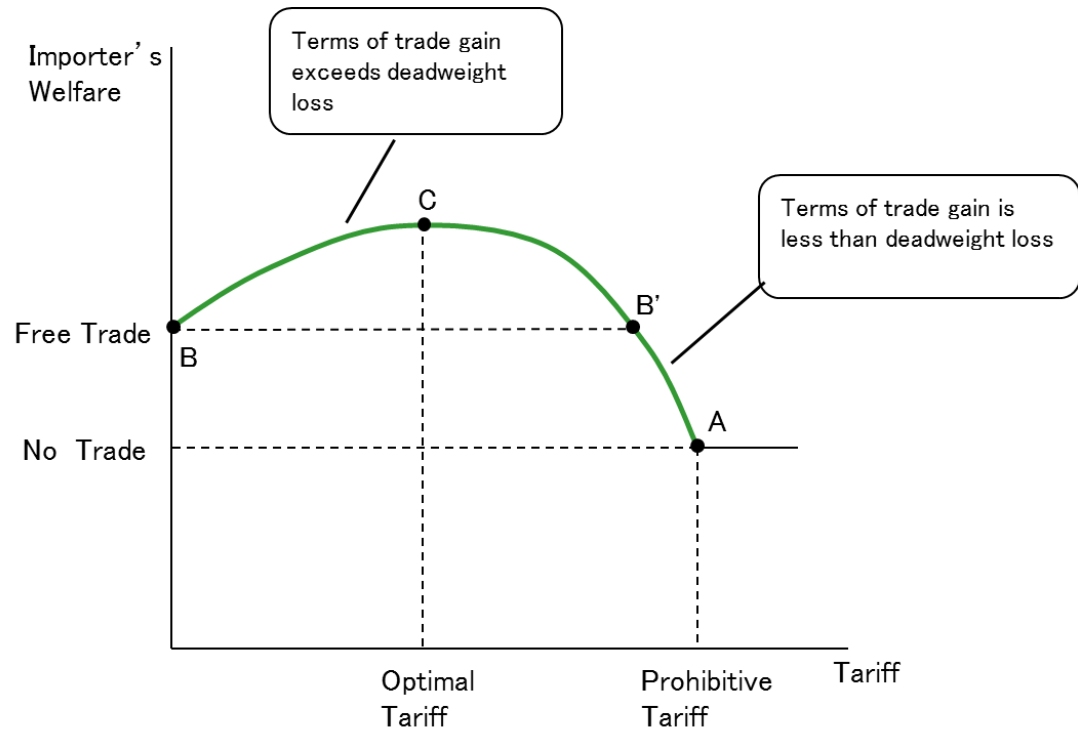
$$\Delta W = -(b^*+d^*)-c^*$$



Unilateral trade policy – Welfare effects (contd.)

- In Home, consumers lose, producers gain, and the government gains. The overall welfare effect is ambiguous
- In Foreign, consumers gain, producers lose, and the government is indifferent. The overall welfare effect is negative
- $(b+d)$ and (b^*+d^*) are **deadweight losses** because they represent losses which are not counterbalanced by any gains. They arise because tariffs are distortionary
- e is Home's **terms-of-trade gain** and c^* is Foreign's **terms-of-trade loss**. Notice that Home's terms-of-trade gain exactly equals Foreign's terms-of-trade loss

Unilateral trade policy – Optimal tariff



- It can be shown that Home's terms-of-trade gain exceeds its deadweight losses for sufficiently small tariffs so that the **optimal tariff** is positive
- The formula for the optimal tariff is given by $t^{opt} = \frac{1}{\varepsilon_X}$, where ε_X is the export supply elasticity (i.e. the price elasticity of the export supply curve)
- So, welfare-maximizing governments have an incentive to impose import tariffs in an attempt to manipulate the terms-of-trade



Trade wars and trade talks – Terms of trade theory

- However, Home's welfare gain comes entirely at Foreign's expense, so optimal tariffs have a **beggar-thy-neighbor** character
- The broader point is that import tariffs impose a **terms-of-trade externality** on other countries that is not internalized when tariffs are set non-cooperatively
- This creates incentives for cooperative trade policymaking aimed at internalizing the terms-of-trade externality
- This is the central idea of the **terms-of-trade theory of trade negotiations** first introduced by Johnson (1953–54)



Trade wars and trade talks – Terms of trade theory (contd.)

- To see this, suppose that there is a second industry in which Home is now an exporter, which is a mirror image of the industry discussed above
- It should be clear that Foreign then also has an incentive to impose an import tariff and that both countries' attempts to manipulate their terms-of-trade cancel out
- In the end, tariffs only bring about dead-weight losses in the non-cooperative equilibrium thus giving rise to incentives for trade negotiations

Trade wars and trade talks - Terms of trade theory (contd.)

		Foreign	
		Zero tariff	Optimal tariff
Home	Zero tariff	0	$-(b+d)+e > 0$ Gain $-(b^*+d^*)-e < 0$ Large loss
	Optimal tariff	$-(b^*+d^*)-e < 0$ Large loss $-(b+d)+e > 0$ Gain	$-(b+d) - (b^*+d^*) < 0$ Loss $-(b+d) - (b^*+d^*) < 0$ Loss

- This table lists the payoffs relative to free trade in such a mirror-image scenario
- As can be seen, protection is a dominant strategy so that a trade war is the unique Nash equilibrium
- Moreover, both countries lose relative to free trade in this Nash equilibrium – a prisoner’s dilemma
- Trade negotiations can thus be interpreted as helping countries escape this prisoner’s dilemma



Trade wars and trade talks - New trade theory

- While the terms-of-trade theory is the dominant framework for understanding trade negotiations, several influential alternatives have been proposed
- Ossa (2011) develops a “new trade” theory based on the Krugman model, showing that governments may use tariffs as instruments of industrial policy rather than to manipulate the terms of trade
- Because tariffs make the domestic market more attractive for firms, each country has an incentive to raise tariffs to pull firms and production toward its own market (recall the home market effect)
- But when all governments do this, the result is a prisoner’s dilemma: everyone imposes tariffs, prices rise, and production does not actually relocate—leaving all countries worse off



Trade wars and trade talks – Commitment theory

- Maggi and Rodríguez-Clare (2007) argue that governments cannot credibly resist protectionist pressure from domestic lobbies once firms have sunk their investments
- Because firms expect future protection, they overinvest in import-competing sectors, which strengthens lobbying power and makes high tariffs politically hard to refuse
- Trade agreements solve this credibility problem by binding future tariffs, enabling governments to commit in advance not to grant protection when lobbying pressures arise
- Thus, a key role of trade agreements is not only to reduce tariffs today, but also to help governments avoid protection in the future by limiting the influence of domestic lobbies



Trade wars and trade talks – Political economy theory

- A classic political-economy argument is that trade agreements reshape the domestic political equilibrium by changing whose interests are represented in trade policy decisions
- When tariffs are set unilaterally—and export subsidies are not available—import-competing firms dominate trade politics, because they gain directly from protection and have strong incentives to lobby for it
- Once countries negotiate, exporters also enter the political arena: they want foreign tariffs reduced and therefore support reciprocal liberalization at home, creating a counterweight to import-competing interests
- Maggi and Ossa (2023) show that this balancing mechanism does not necessarily carry over to domestic regulations: in regulatory negotiations, interest-group alignments can shift in ways that increase lobbying power and may even reduce welfare



Evidence – Terms-of-trade theory

- Motivated by the optimal tariff formula we saw earlier, Broda et al (2008) show that countries indeed impose higher tariffs in industries in which they face lower export supply elasticities
- They focus on countries which are not members of the World Trade Organization (WTO), since they arguably set their tariffs non-cooperatively
- Bagwell and Staiger (2011) document that countries joining the WTO tend to make deeper tariff cuts in industries in which they face higher import volumes
- This is consistent with the terms-of-trade theory since these are the industries in which tariffs generate the largest terms-of-trade externalities



Evidence – Terms-of-trade theory (contd.)

- Ludema and Mayda (2013) show that countries agreed on lower tariffs in industries in which there is a higher exporter concentration in the Uruguay Round of trade negotiations
- This is consistent with the terms-of-trade theory since these are the industries in which the terms-of-trade externalities are easiest to internalize
- Bown and Crowley (2013) find that temporary tariffs imposed under US antidumping and safeguard laws are higher in industries with higher import volumes
- This is consistent with the terms-of-trade theory since these are the industries with the highest temptation to defect



Evidence – Trump I – Fajgelbaum et al (2020)

- The 2018 US–China tariff war sharply reduced trade flows: imports hit by US tariffs fell by about one-third, and US exports facing retaliation fell by around 10%
- Surprisingly, US consumers and firms paid all the tariffs: foreign exporters did not cut their prices, so tariff-inclusive import prices rose one-for-one; this caused losses of about \$51 billion (0.27% of GDP)
- Aggregate effects were small but clearly negative: after counting tariff revenue and producer gains, aggregate US real income still fell by roughly \$7.2 billion (0.04% of GDP)
- Distributional impacts were large: US protection favored industries in politically competitive counties, while retaliation disproportionately harmed agricultural and Republican-leaning regions



Evidence – Trump I – Flaan et al (2020)

- Flaan et al. (2020) show that the 2018 washing-machine tariffs of 20% (and 50% above quota) sharply raised consumer prices: washers became about 12% more expensive, and dryers—though untaxed—rose by a similar amount because the two are typically sold together
- All major brands raised prices, increasing washer and dryer prices by 5–17%, indicating that the tariffs enabled domestic firms to raise markups
- The tariffs also triggered substantial production relocation, with manufacturers shifting output across East Asia and ultimately opening new plants in the US
- Consumer costs vastly exceeded benefits: annual costs of about \$1.5 billion compared with roughly \$82 million in tariff revenue imply a cost per job created of more than \$800,000.



Evidence – Trump II - Ignatenko et al. (2025)

- A natural question is whether the “Liberation Day” tariffs from 2 April 2025 are optimal – recall that they average about 17%, with substantial variation across trading partners
- Ignatenko et al. (2025) analyze these tariffs and find that they deliver at best modest welfare gains for the US due to their flawed design
- The problem lies not in their level but in their dispersion: according to their analysis, the optimal US tariff would be about 19% and uniform across trading partners
- The intuition is that a uniform tariff improves the terms of trade without distorting the composition of imports across partners



Evidence – Trade policy uncertainty

- In any case, such analyses abstract from an important real-world consideration: current US trade policy also generates substantial uncertainty
- The literature shows that trade policy uncertainty is highly detrimental to trade flows — or, conversely, that the predictability provided by a rules-based system is crucial for trade
- Uncertainty thus acts like a tariff but without generating revenue, thereby undermining the optimal-tariff rationale
- China's WTO accession in 2001 offers a striking example of the effects of reducing trade policy uncertainty



Evidence – Trade policy uncertainty – Handley & Limão (2017)

- Before China's WTO accession, its access to the US market was uncertain: it required annual renewal, and non-renewal would have meant a sharp jump in tariffs
- Accession made this access permanent and removed the risk: tariff levels did not change, but the possibility of a sudden move to very high rates disappeared
- Handley & Limão (2017) show that this reduction in uncertainty had large effects: it explains over one-third of China's post-accession export surge to the US
- For US consumers, the gains were substantial: the effect was similar to a 13-percentage-point tariff cut, even though tariffs themselves stayed unchanged



Beyond tariffs – NTBs as second-best instruments

- When tariffs are bound, governments lose their primary tool to influence domestic prices and the terms of trade
- As a result, they substitute into non-tariff barriers (NTBs)—such as standards, licensing, and subsidies—that can replicate the effects of tariffs on market access
- This means that the familiar terms-of-trade incentives simply migrate from tariffs to NTBs once tariff policy is constrained
- Therefore, binding tariffs alone is insufficient, because unconstrained NTBs can reintroduce the same trade-war logic through different instruments



Beyond tariffs – Coordination failures in domestic policies

- Many domestic rules—such as product safety standards and food-health requirements—differ across economies for legitimate, non-protectionist reasons
- When each economy designs these rules independently, the resulting regulatory heterogeneity fragments markets and raises trade costs
- Because no economy internalizes the burden its rules impose on foreign firms, unilateral choices lead to an inefficient equilibrium with unnecessary frictions
- Trade agreements therefore require coordination mechanisms that promote compatibility, transparency, and regulatory dialogue where such regulatory divergence hampers trade



Conclusion

- Unilateral trade policy
- Trade wars and trade talks
- Evidence
- Beyond tariffs



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