

Trade Policy Under Perfect Competition

ECON 171 · Spring 2026 · Week 5

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Today's Agenda

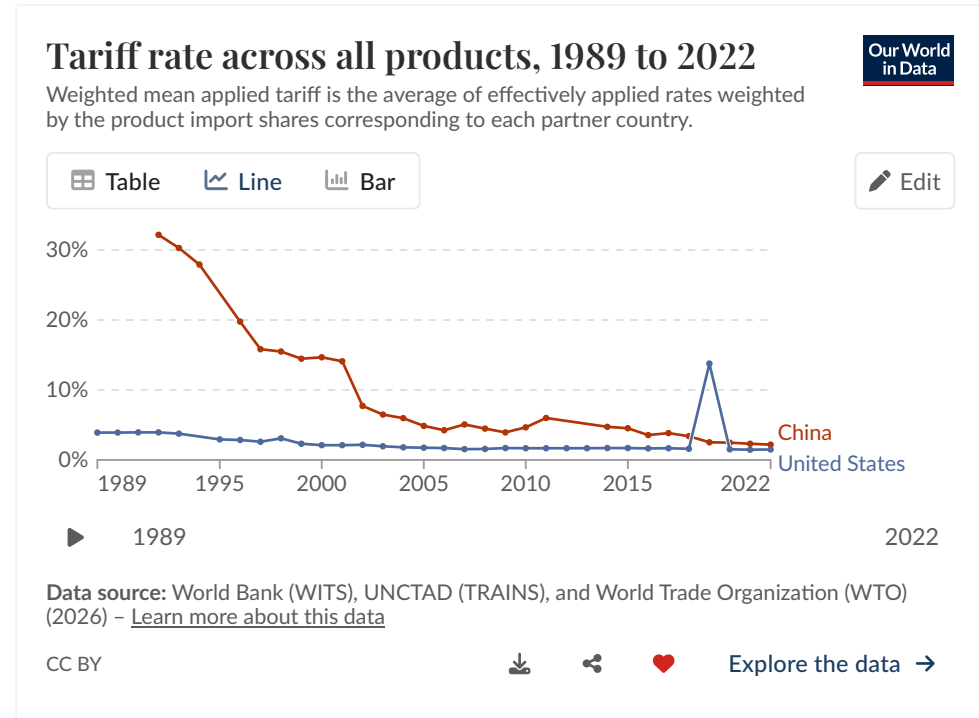
1. Tariffs: specific and ad valorem
2. Welfare effects of a tariff in a small country
3. Terms-of-trade effect in a large country

What We Aim to Learn

- How widespread is trade policy and how do tariffs work in practice?
- How does a tariff affect
 - prices, quantities, and welfare in a small country?
 - the terms of trade in a large country?

Motivation: why study tariffs now?

- After four decades of falling tariffs under the WTO, US policy reversed sharply in 2018.
- **2018–19 US-China trade war:** 25% duties on ~\$350 B of bilateral trade.
- **2018 Section 232:** 25% on steel, 10% on aluminum.
- **2025 “reciprocal” tariffs:** Yale Budget Lab estimates the US average effective tariff rate is at its **highest level since the 1930s**.
- This week’s question: *who actually bears the cost of a tariff, and by how much?*



Weighted-mean applied tariff rate, 1988–2022. Source: World Bank WDI via [Our World in Data](#).
2023+ US surge not yet in the series.

What are tariffs?

Specific vs. ad valorem tariffs

- **Specific:** rate s in \$/unit (e.g., \$0.063/L on still wine). Duty $= s \cdot M$.
- **Ad valorem:** rate t on declared value (e.g., 25% on light trucks). Duty $= t \cdot p^* \cdot M$.
- **Compound:** both at once (common for dairy and other agriculture).
- Each line is filed in **ACE** on **CBP Form 7501** with HTS code, value, and rate.

27. Line No.	28. Description of Merchandise			32. A. Entered Value B. CHGS C. Relationship	33. A. HTSUS Rate B. ADA/CVD Rate C. IRC Rate D. Visa No.	34. Duty and I.R. Tax	
	29. A. HTSUS No. B. ADA/CVD No.	30. A. Grossweight B. Manifest Qty.	31. Net Quantity in HTSUS Units			Dollars	Cents
001	8704310020	740.000 KGS	1 NO	700.00 C1240.00 Not Related	25% 323298489234562	\$175.00	
002	Motor vehicles for the transport of goods: Other, with spark-ignition internal combustion piston engine: G.V.W. not exceeding 5 metric tons: Other, with spark-ignition internal combustion piston engine: G.V.W. not exceeding 2.5 metric tons 1990 Suzuki Carry w/dump VIN DB71T-310716 RLNG 082797						

$$25\% \times \$700 = \$175 \quad \Leftarrow \text{ad valorem } t \cdot p^* \cdot M$$

Real 2015 entry at the Port of Tacoma. HTSUS heading **8704.31** (small light trucks) carries the 25% “chicken tax” — LBJ’s 1964 retaliation against EU duties on US frozen chicken. Source: drift-and-drive.com. For a *specific* duty, Box 33A would read e.g. \$0.063/L and would multiply Box 31 (quantity) instead.

What's on a complete Form 7501?



DEPARTMENT OF HOMELAND SECURITY
U.S. Customs and Border Protection

OMB APPROVAL NO. 1551-0022
EXPIRATION DATE 03/31/2025

ENTRY SUMMARY

1. Filer Code/Entry Number AAA12345679	2. Entry Type 01	3. Summary Date 02/07/2024	4. Surety Number 001	5. Bond Type 8	6. Port Code 5506	7. Entry Date 01/15/2024
8. Importing Carrier AA	9. Mode of Transport 40	10. Country of Origin United Kingdom of Great Britain and N	11. Import Date 01/13/2024			
12. B/L or AWB Number 22234519876	13. Manufacturer ID GBCOOT0Y12LO	14. Exporting Country United Kingdom of Great Britain and N	15. Export Date 01/12/2024			
16. I.T. Number 266186913	17. I.T. Date 01/14/2024	18. Missing Docs	19. Foreign Port of Lading 5501	20. U.S. Port of Unlading		
21. Location of Goods/G.O. Number 1823 : American Airlines	22. Consignee Number 11-123456789	23. Importer Number 11-12345789	24. Reference Number			
25. Ultimate Consignee Name (Last, First, M.I.) and Address Awesome Corp Street 113 Penny Ln City Austin State TX Zip 78749		26. Importer of Record Name (Last, First, M.I.) and Address Other Corp Street 1234 Sunny Ln City San Antonio State TX Zip				
27. Line No.	28. Description of Merchandise		32. A. Entered Value B. CHGS C. Relationship	33. A. HTSUS Rate B. AD/CVD Rate C. IRC Rate D. Visa Number	34. Duty and IR Tax Dollars Cents	
001	AWB 22234519876 Article of China, US NTE 20 (F) QTY: 1 PCS Transmission Shaft/Crank 8483.10.50000 972 907kg Merchandise Processing Fee		3870 C387	25% 0.3464%	967.5 13.41	
Other Fee Summary (for Block 39) 499 MPF 31.67			CBP USE ONLY		TOTALS	
35. Total Entered Value \$ 3,870			A. LIQ Code	B. Ascertained Duty	37. Duty 967.5	
Total Other Fees \$ 31.67			REASON CODE	C. Ascertained Tax	38. Tax 0	
36. Declaration of Importer of Record (Owner or Purchaser) or Authorized Agent I declare that I am the ☐ Importer of record and that the actual owner, purchaser, or consignee for CBP purposes is as shown above, OR ☒ owner or purchaser or agent thereof. I further declare that the merchandise ☒ was obtained pursuant to a purchase or agreement to purchase and that the prices set forth in the invoices are true, OR ☐ was not obtained pursuant to a purchase or agreement to purchase and the statements in the invoices as to value or price are true to the best of my knowledge and belief. I also declare that the statements in the documents herein filed fully disclose to the best of my knowledge and belief the true prices, values, quantities, rebates, drawbacks, fees, commissions, and royalties and are true and correct, and that all goods or services provided to the seller of the merchandise either free or at reduced cost are fully disclosed. I will immediately furnish to the appropriate CBP officer any information showing a different statement of facts.			D. Ascertained Other	39. Other 31.67		
41. Declarant Name (Last, First, M.I.) Awesome Brokers LLC A.I.F			E. Ascertained Total	40. Total 999.17		
42. Broker/Filer Information Name (Last, First, M.I.) and Phone Number Awesome Brokers LLC 5125122151			43. Broker/Importer File Number 1234567			

CBP Form 7501 (5/22)Page 1 of 3

- **Header (1–24):** filer/entry codes, port codes, country of origin, manufacturer ID, dates.
- **Parties (25–26):** ultimate consignee (where goods go) and **importer of record** (legally liable for duty).
- **Line items (27–34):** HTS code, value, rate, **duty** — one row per commodity.
- **Totals (35–40):** \$3,870 entered value × 25% = \$967.50 duty, plus \$31.67 MPF = **\$999.17 owed**.
- **Filer (41–43):** a licensed broker signs and certifies on the importer’s behalf in **ACE**.

Training sample (filer **Awesome Brokers LLC**, consignee **Awesome Corp**, Austin TX): transmission shaft, HTSUS 8483.10.5000, UK origin, American Airlines airfreight. Source: importsacademy.com.

A real-world Form 7501

DEPARTMENT OF HOMELAND SECURITY
U.S. Customs and Border Protection

ENTRY SUMMARY

OMB APPROVAL NO. 1551-0022
EXPIRATION DATE 11/01/2021
ESTIMATED BURDEN 10 MIN

1. Filer Code/Entry No. DP6-2043826-8	2. Entry Type 01 ABIIA	3. Summary Date 09/28/21
4. Surety No. 856	5. Bond Type 9	6. Port Code 2809
7. Entry Date 09/16/21	10. Country of Origin CN	11. Import Date 09/16/21
12. B/L or AWB No. CMDU SH24031612, OAK21729276P	13. Manufacturer ID CNSHEWHE401SHE	14. Exporting Country CN
15. Export Date 08/30/21	16. I.T. No.	17. I.T. Date
18. Missing Docs	19. Foreign Port of Lading 57078	20. U.S. Port of Unlading 2811
21. Location of Goods/G.O. No. Y874 Voyage: 0GX1L	22. Consignee No.	23. Importer No.
24. Reference No.	25. Ultimate Consignee Name and Address	26. Importer of Record Name and Address
Destination: CA City State CA Zip		
City State CA Zip		
27. 28. Description of Merchandise		
32. 33. 34.		
A. HTSUS Rate B. ADA/CVD Rate C. IRC Rate D. Visa No.		
Dollars Cents		
001 PLAYING CARDS 9504.40.0000 1,355 KG 3,333.00 PK		
499 - Merchandise Processing Fee 501 - Harbor Maintenance Fee		
Totals for Invoice Invoice Value		
+/- MMV Exchange Entered Value		
Other Fee Summary for Block 39		
499 - MPF 501 - HMF		
35. Total Entered Value		
Total Other Fees		
36. DECLARATION OF IMPORTER OF RECORD (OWNER OR PURCHASER) OR AUTHORIZED AGENT		
I declare that I am the Importer of record and that the actual owner, purchaser, or consignee for CBP purposes is as shown above. OR owner or purchaser or agent thereof. I further declare that the merchandise was obtained pursuant to a purchase or agreement to purchase and that the prices set forth in the invoices are true, OR was not obtained pursuant to a purchase or agreement to purchase and the statements in the invoices as to value or price are true to the best of my knowledge and belief. I also declare that the statements in the documents herein filed fully disclose to the best of my knowledge and belief the true prices, values, quantities, rebates, drawbacks, fees, commissions, and royalties are true and correct, and that all goods or services provided to the seller of the merchandise either free or at reduced cost are fully disclosed. I will immediately furnish to the appropriate CBP officer any information showing a different statement of facts.		
41. DECLARANT NAME TITLE SIGNATURE DATE		
09/10/21		
42. Broker/Filer Information (Name, address, phone number)		
43. Broker/Importer File No.		

CBP Form 7501 (2/18)

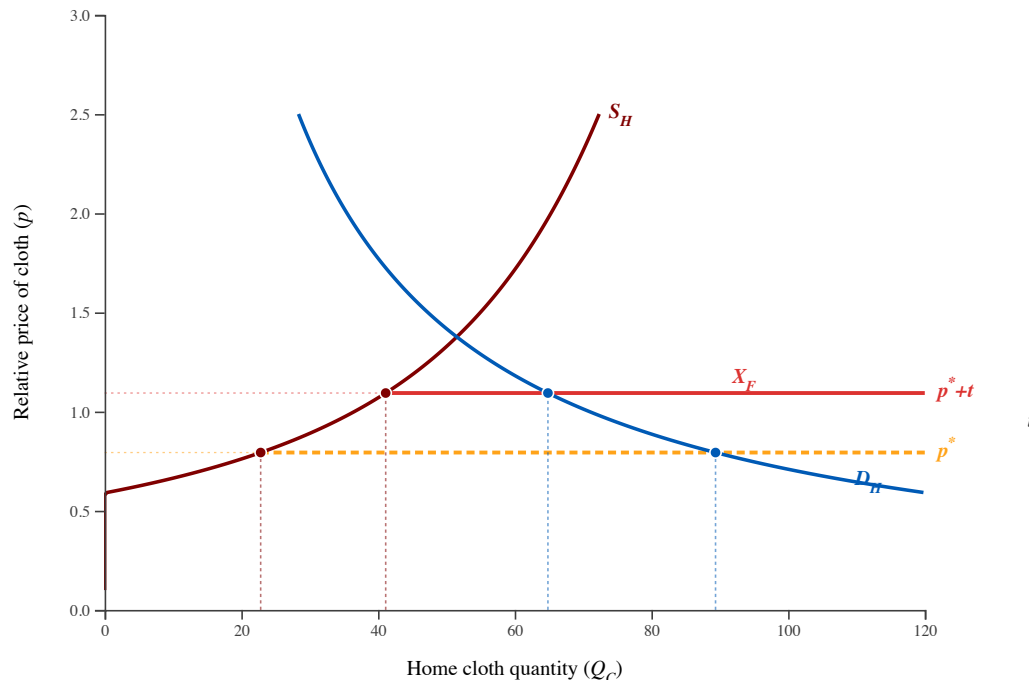
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- **Real entry** (Sept 2021): 3,333 packs of playing cards from China (HTSUS **9504.40.0000**), ocean freight on *CMA CGM Loire*.
- **Redacted in public**: importer (25–26), entered value (32A), duty (34), totals — privacy realities of 7501s shared on the open web.
- **Free MFN duty** for HTS 9504.40 (0%), but **MPF (0.3464%) + HMF (0.125%)** still apply — user fees on every formal entry.
- **Filer code DP6** = customs broker filing for the importer; box 26 names the legally liable importer of record.

Real entry by **Benebell Wen**, a US author who self-publishes tarot decks; she released the redacted form publicly while documenting her import process. Source: benebellwen.com.

How does a tariff affect a small country?

Price and quantity effects of a tariff



Tariff in effect. X_F shifts up to $p^* + t$: production rises to Q_S^t , consumption falls to Q_D^t .

- Tariff t : Foreign exporters now receive only (domestic price $- t$) per unit sold to Home
- At the old world price p^* , Foreign would net $p^* - t < p^*$. Too low — Foreign refuses; X_F collapses to zero
- A shortage opens at p^* : the full free-trade import volume goes unfilled
- Price bids up to clear the shortage. Domestic producers expand along S_H ; consumers contract along D_H
- At $p^* + t$ Foreign re-enters (nets p^* again). Imports settle at the smaller $Q_D^t - Q_S^t$

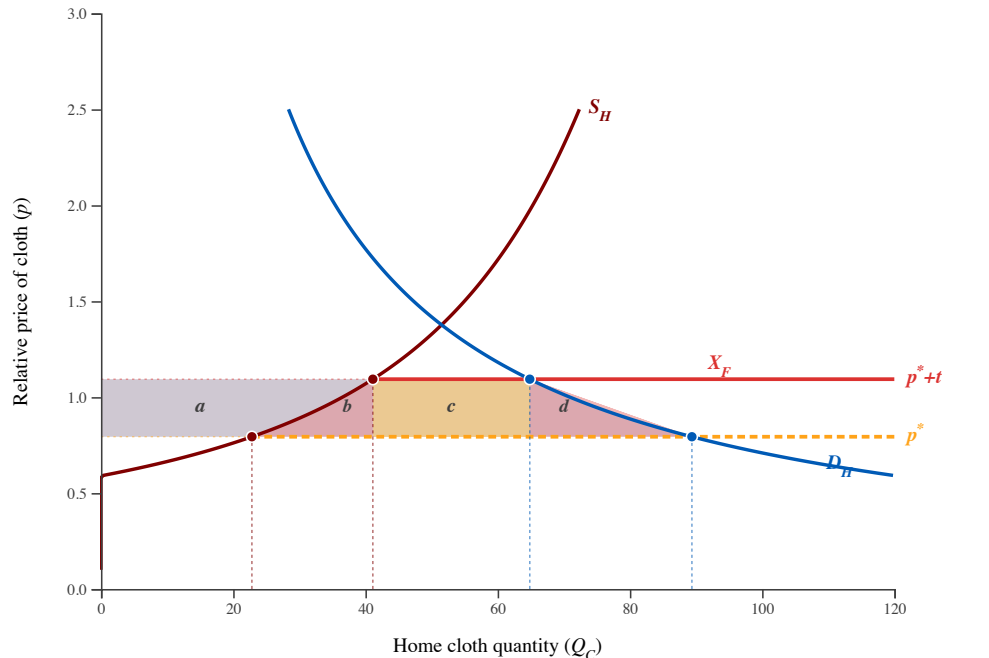
a = PS gain · b, d = DWL · c = tariff revenue · $a + b + c + d$ = CS loss

t (tariff rate)

0.3



Welfare effects of a tariff



$DWL = b + d$: b is production distortion (Home produces beyond Q_S^{FT}); d is consumption distortion (Home buys below Q_D^{FT}).

a = PS gain · b, d = DWL · c = tariff revenue · $a + b + c + d$ = CS loss

t (tariff rate)

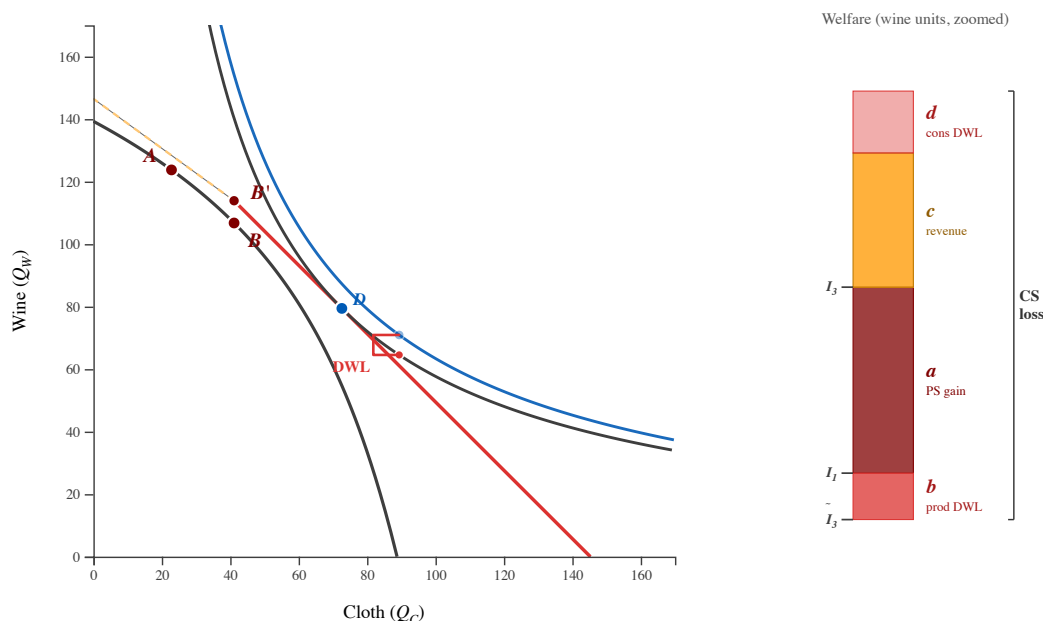
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- **Tariff arrives.** X_F shifts to $p^* + t$; production rises to Q_S^t , consumption falls to Q_D^t .
- **CS loss** = $a + b + c + d$ (full blue trapezoid): consumers pay t extra on every unit they still buy.
- **PS gain** a (maroon) + **tariff revenue** $c = t \cdot M^t$ (gold): transfers, rebated to consumers.
- **DWL** = $b + d$ (red triangles): production distortion + consumption distortion.

Net welfare: $\Delta W = -(b + d) < 0$. SOE tariff is purely deadweight — no TOT effect to offset.

Welfare on the PPF



- **Tariff arrives.** Budget kinks at A (import side $-(p^* + t)$, export side $-p^*$). Utility drops to U_1 .
- **Producers respond.** Kink follows $A \rightarrow B$ along the PPF. Utility rises to U_2 (PS gain a).
- **Rebate.** Kink shifts up to $B' = (Q_C^B, Q_W^B + tM)$. Utility rises to U_3 (revenue c).
- **DWL bracket at C^{FT} :**
 $U_1 - U_3 = b + d$ (production + consumption distortion remain).

DWL = $b + d$. The bracket at C^{FT} measures $U_1 - U_3$ — production + consumption distortion.

t (tariff rate)

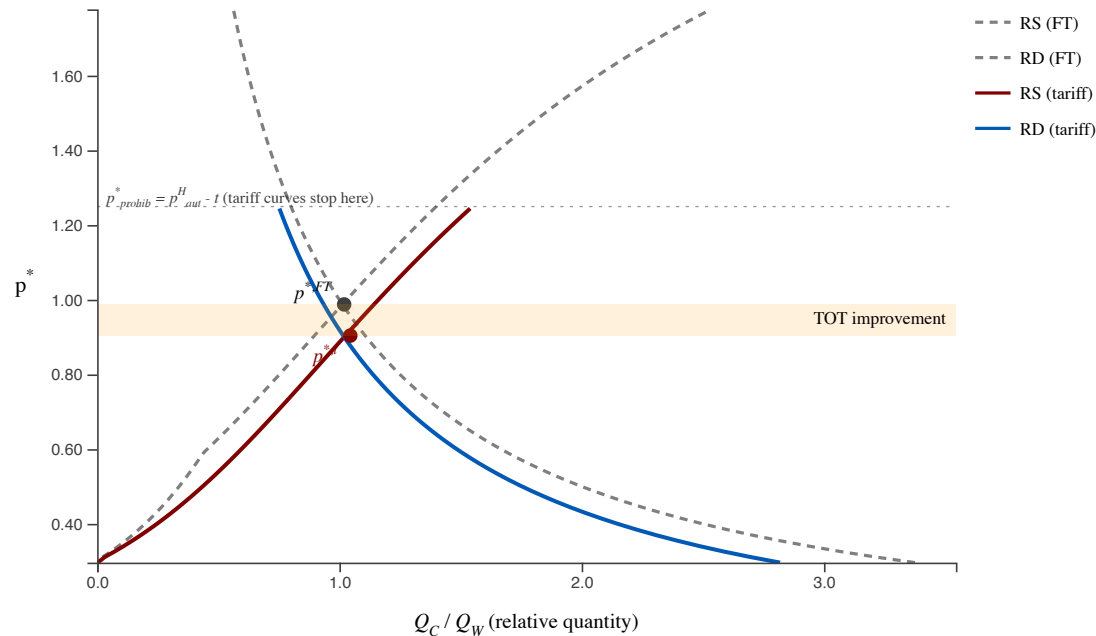
0.3

Tip — scroll on the chart to zoom, drag to pan, double-click to reset.

Same DWL as the PE picture — visualised as a utility gap rather than triangle areas.

What changes for a large country?

Tariff effect on the terms of trade



TOT improvement for Home. Foreign exporters absorb part of the tariff via lower p^* — beggar-thy-neighbor: Home's gain is Foreign's loss.

t (tariff rate)

0.3

λ (Foreign size)

2

Tip — scroll on the chart to zoom, drag to pan, double-click to reset.

- **Tariff arrives.** Wedge t between $p^* + t$ (Home) and p^* (Foreign). Country curves don't shift — agents move along them at their *effective* prices.
- World RS on the p^* axis appears to shift **right**; world RD appears to shift **left** (Home's contributions evaluated at $p^* + t$).
- New equilibrium: p^* **falls**. Home buys imports cheaper — the **TOT effect**.
- **Beggar-thy-neighbor:** Home's gain is Foreign's loss. $\lambda \rightarrow \infty$ recovers SOE.

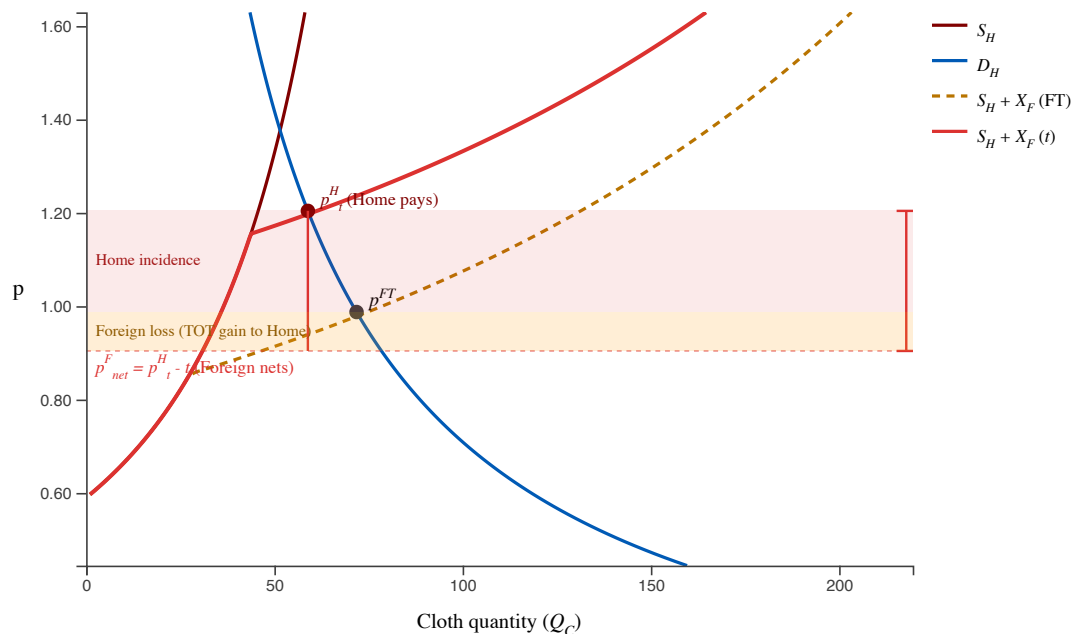
Foreign-side arbitrage

Foreign consumers buy in Foreign's *own* market — they don't observe Home's border. So where does the $p^* - t$ they “see” come from?

- **Two channels for Foreign producers.** Sell domestically at p^F , or export — gross border price p^* , net $p^* - t$ after remitting the tariff to Home's customs.
- **Arbitrage.** In equilibrium Foreign does both, so producers must be **indifferent** between channels: $p^F = p^* - t$.
- **Self-correcting.** If $p^F > p^* - t$: no exports → Home unfilled → p^* rises. If $p^F < p^* - t$: all output exported → Foreign shortage → p^F rises. Either way back to equality.
- **Foreign consumers** buy from these producers at the domestic price p^F . By the arbitrage, $p^F = p^* - t$. Their response to $p^* - t$ is mediated through producers' export option — not direct sensitivity to Home's border.

On the world *RS/RD* chart under foreigner-pays, **all** Foreign behaviour (production + consumption) is plotted at $p^* - t$ — through internal arbitrage in Foreign's market, not Home-side sensitivity.

Who absorbs the tariff?



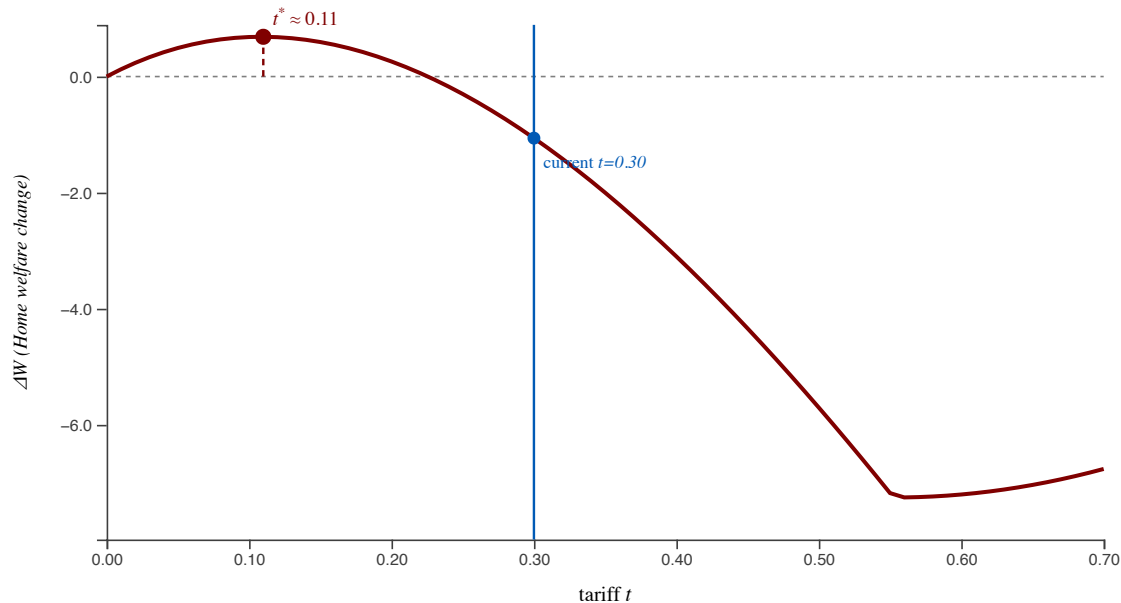
Incidence: top band = Home's price rise above p^{FT} (Home loss); bottom band = Foreign's price drop below p^{FT} (Foreign loss = TOT gain for Home).

t (tariff rate) λ (Foreign size)

Tip — scroll on the chart to zoom, drag to pan, double-click to reset.

- **Foreigner-pays.** Foreign nets $p - t$, so X_F contracts at every p . Combined supply $S_H + X_F$ shifts **left**; D_H stays put.
- New equilibrium at higher Home price p_t^H . S_H expands; Foreign exports shrink.
- Wedge t between p_t^H (Home pays) and $p_{net}^F = p_t^H - t$ (Foreign nets).
- **Incidence:** top band = Home's price rise (loss); bottom band = Foreign's price drop (= Home's TOT gain).

The optimal tariff t^*



- $\Delta W(t) = \Delta PS + G - \Delta CS$ from Home's perspective
- For small t : TOT gain (linear in t) beats DWL (quadratic). ΔW rises
- For large t : DWL dominates and imports collapse. ΔW falls
- Interior maximum at t^* — the **optimal tariff** for a large country
- $\lambda \rightarrow \infty$: curve flattens to the SOE shape — strictly negative for any $t > 0$

t (tariff rate)

0.3



λ (Foreign size)

2



But: Foreign loses more than Home gains. **Beggar-thy-neighbor** — and Foreign retaliates $\Rightarrow$ trade war.

Wrap-up

Key takeaways from today

- A tariff drives a **wedge** between domestic and border prices: $p_H = p_F + t$.
- **Small open economy**: Foreign supply is perfectly elastic — Home absorbs the full wedge. Welfare change $\Delta W = -(b + d) < 0$, purely deadweight.
- **Large open economy**: Home's tariff drags down the world price, transferring rents from Foreign (the TOT effect). The optimal tariff is **positive** — but it's beggar-thy-neighbor.
- **Strategic logic**: if Foreign retaliates, both lose (Pareto-dominated by free trade). WTO/GATT exists to discipline unilateral tariff use.

Tariffs aren't always welfare-reducing — but the cases where they help one country are the cases where they hurt another more.

Skills you've added to your toolkit

- **Decompose welfare** into four regions: PS gain a , production DWL b , tariff revenue c , consumption DWL d . CS loss = $a + b + c + d$.
- **Translate** between the partial-eq picture (Home market with S_H and foreign export supply X_F) and the GE picture (PPF + relative price line).
- **Pick the right assumption:** SOE when Home's market share is small; LOE when Home is big enough to move the world price.
- **Movement along $\neq$ shift:** the tariff changes the *effective price* each country faces — agents move along their unchanged curves. Only the *world* RS on the border-price axis appears to shift.
- **Incidence is about elasticities:** who legally writes the check (importer vs. exporter) does not change the equilibrium — the wedge is t either way.