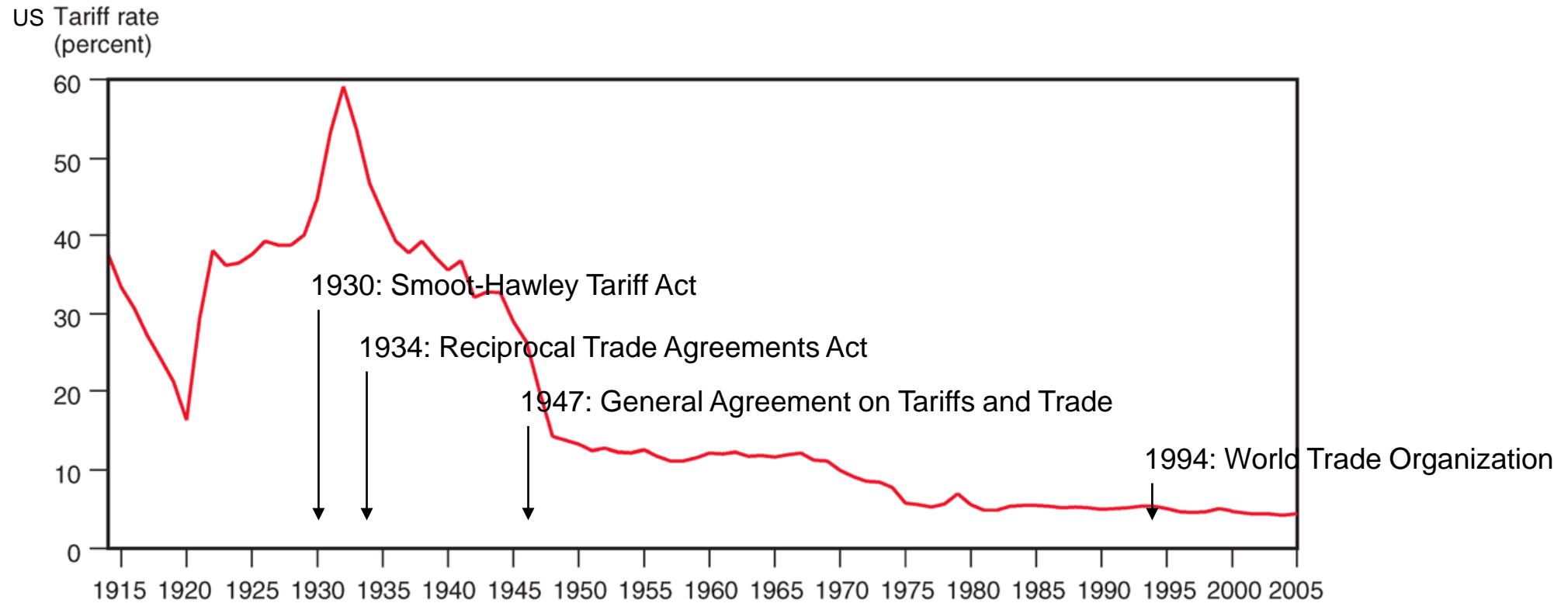




Topic 12 – Trade Wars and Trade Talks

Prof. Ralph Ossa

Introduction



Source: KMO textbook



Introduction (contd.)

- 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
- Quantification



Unilateral trade policy

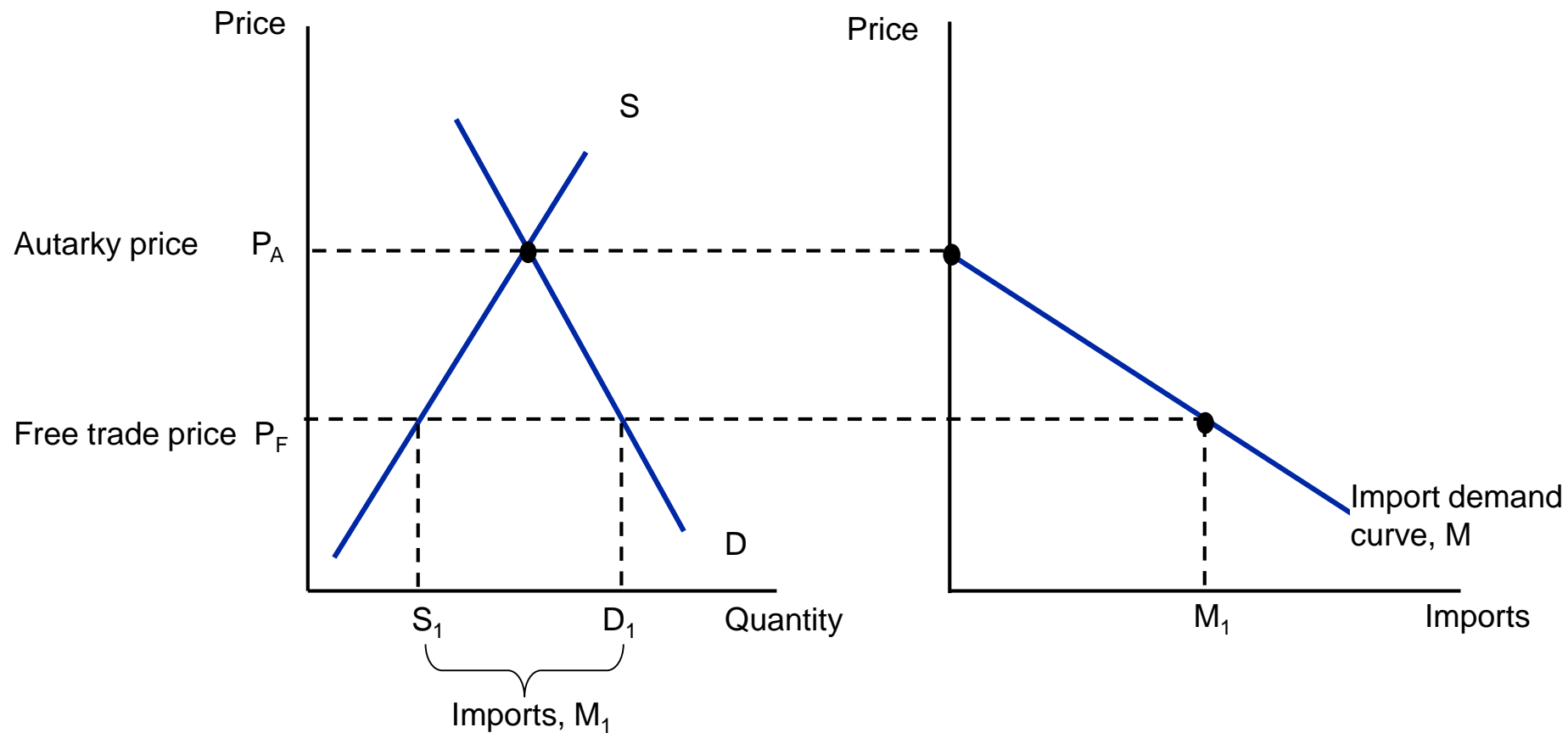
- We start by analyzing a country's incentives to impose import tariffs abstracting for now from the possibility of retaliation
- We do so in a simple partial-equilibrium model with perfect competition which is sufficient to illustrate the classic **optimal tariff argument**
- In particular, we consider 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



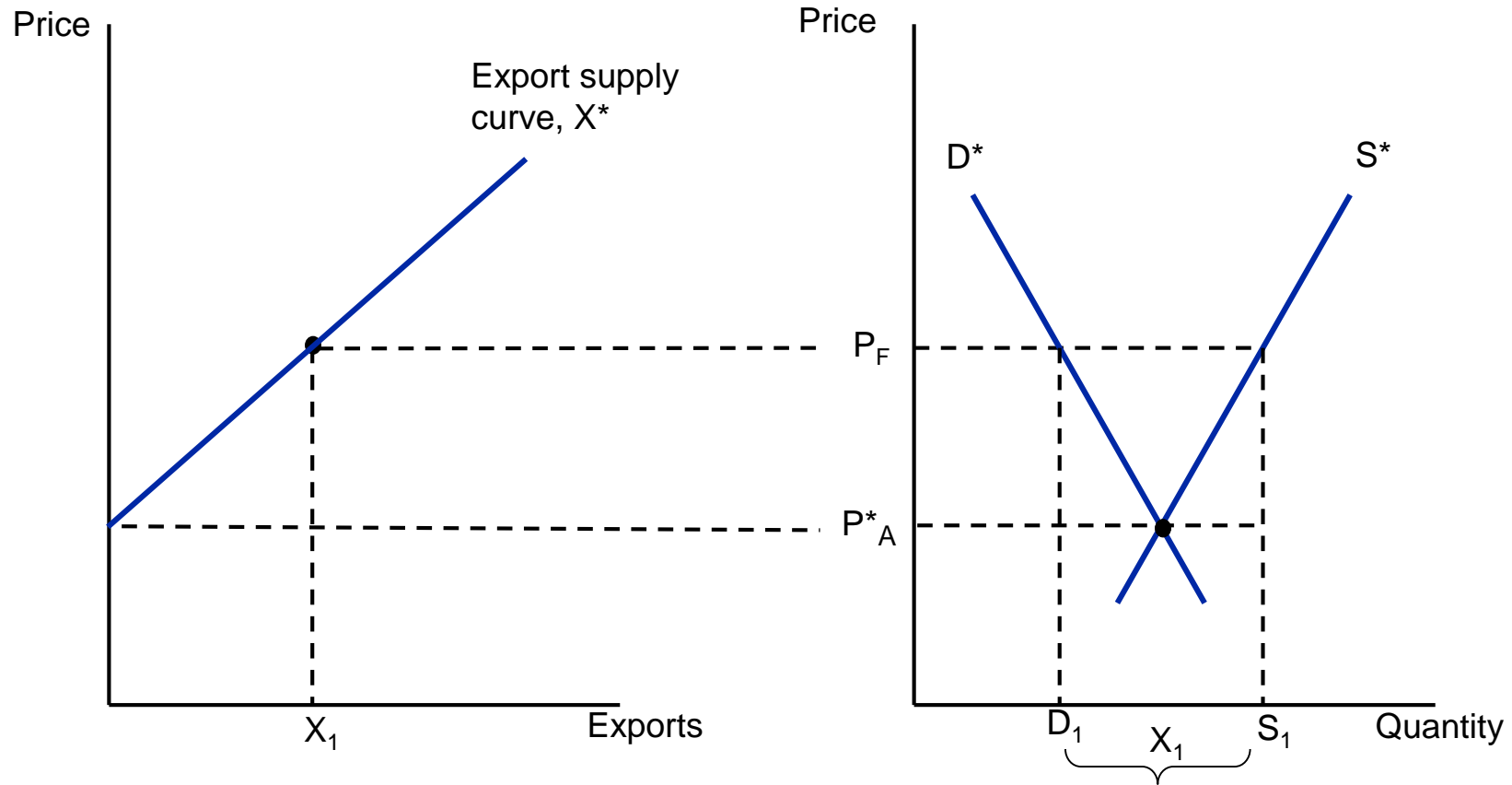
Unilateral trade policy - Import demand and export supply

- 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

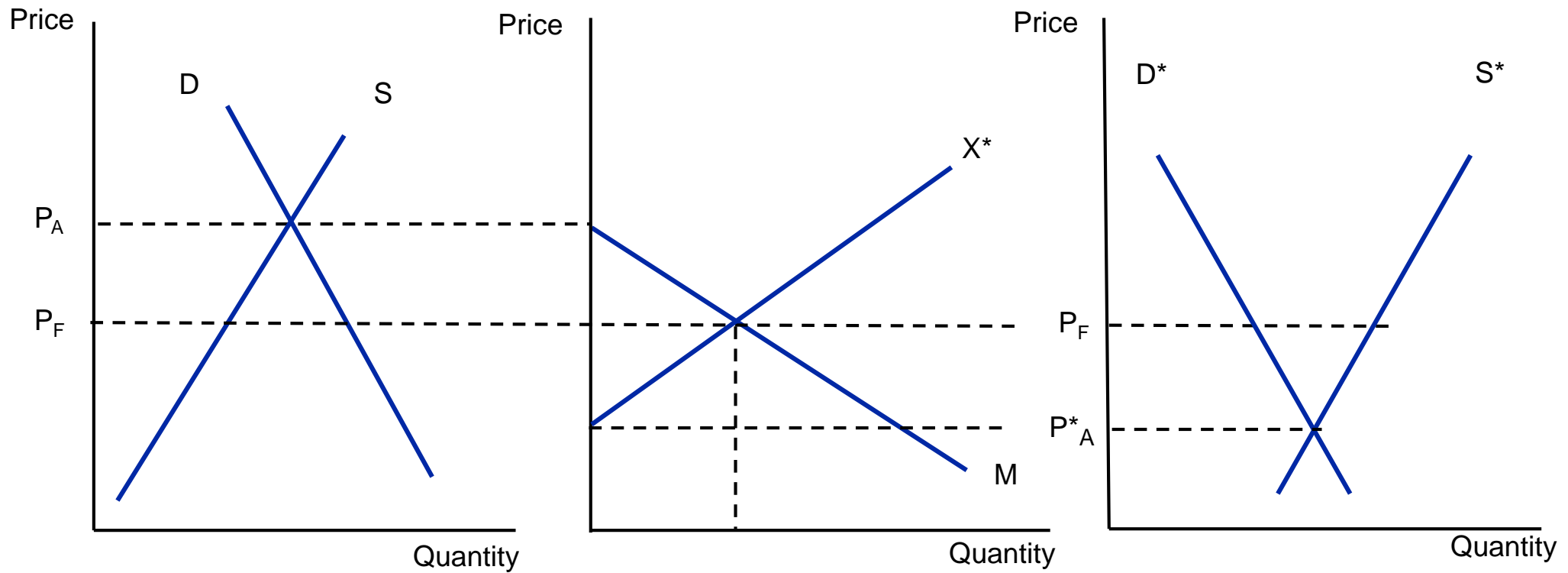
Unilateral trade policy – Home's import demand



Unilateral trade policy – Foreign's export supply



Unilateral trade policy – Free trade equilibrium

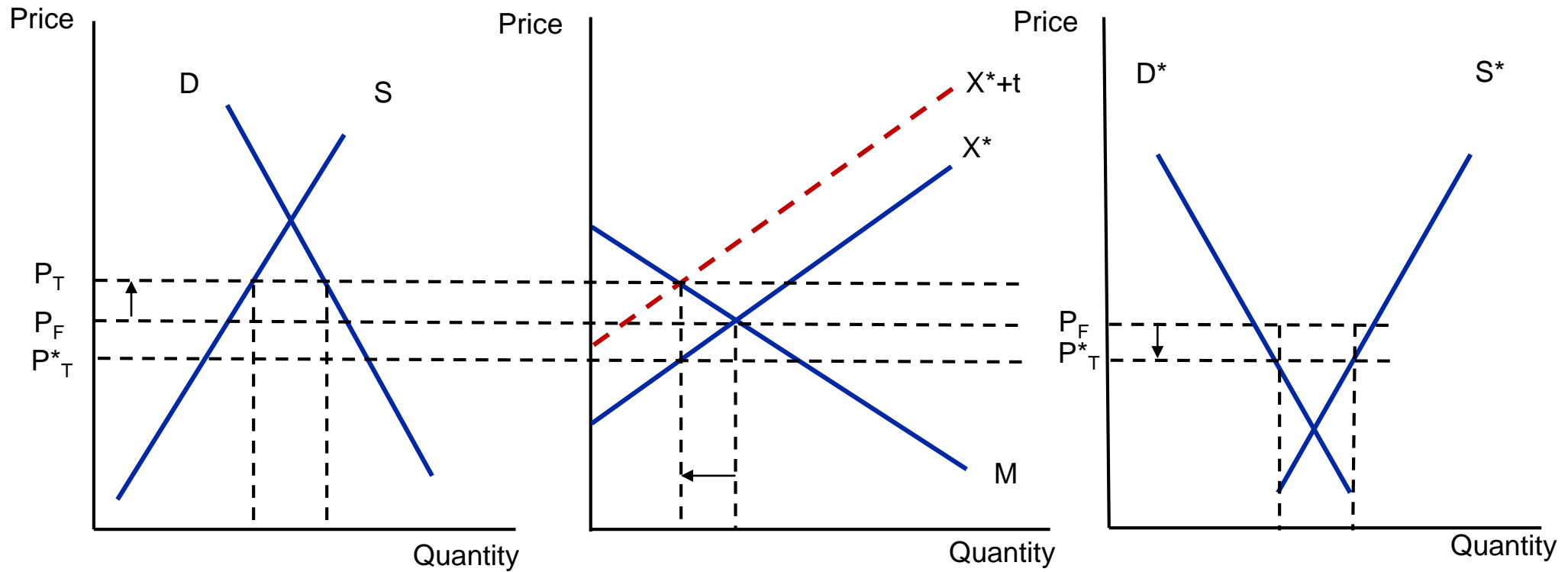




Unilateral trade policy – Effects of an import tariff

- 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.)

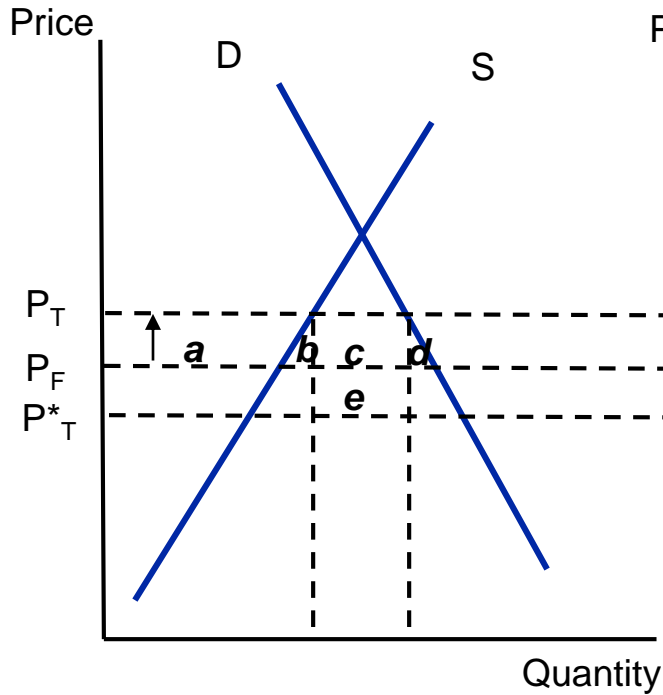
- As illustrated above, the new equilibrium can be found by drawing a curve which is parallel to Foreign's export supply curve with the vertical distance being equal to the tariff
- As can be seen, the price in Home rises, the price in Foreign falls, and trade between Home and Foreign falls as a result 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

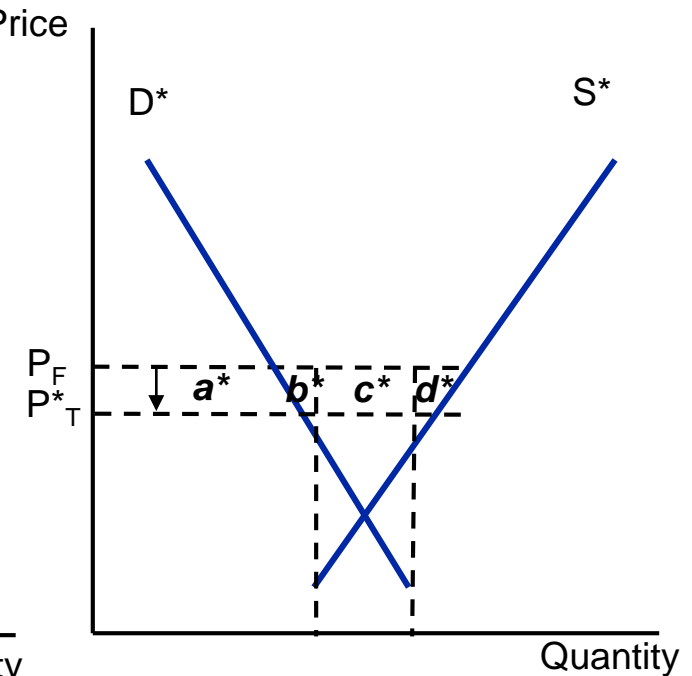
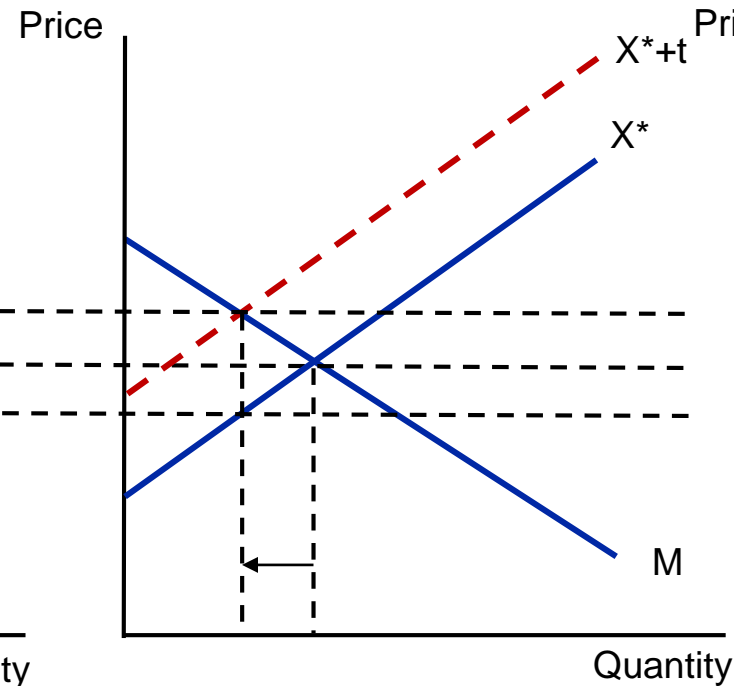


$$\Delta CS = -(a+b+c+d)$$

$$\Delta PS = +a$$

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

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



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

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

$$\Delta TR = 0$$

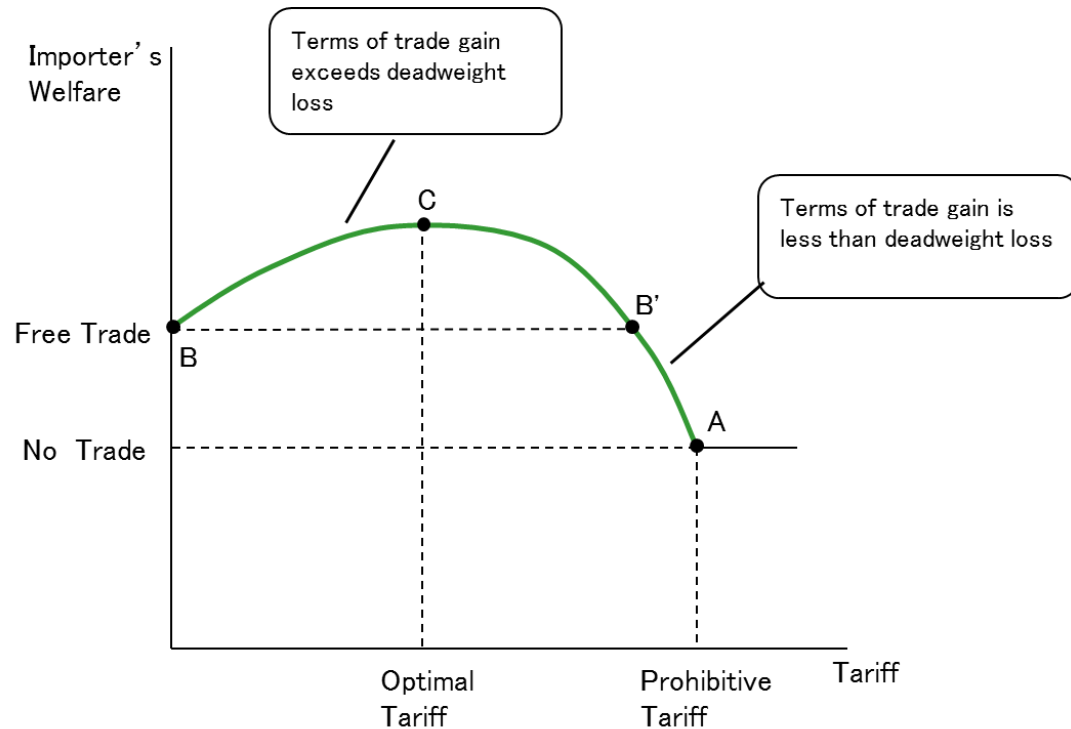
$$\Delta W = -(b^*+d^*)-c^*$$



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)



Unilateral trade policy – Optimal tariff (contd.)

- Hence, welfare-maximizing governments have an incentive to impose import tariffs in an attempt to manipulate the terms-of-trade
- However, all welfare gains come entirely at the expense of other countries so that such optimal tariffs have a **beggar-thy-neighbor** character
- Of course, Home might also want to impose import tariffs to cater to producer interests or to raise government revenue
- But even then, Foreign only cares if the terms-of-trade are affected which emphasizes the central role of **terms-of-trade externalities**



Trade wars and trade talks

- As pointed out by Johnson (1953-54), this classic optimal tariff argument naturally gives rise to a terms-of-trade theory of trade wars and trade talks
- 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 (contd.)

		Foreign	
		Zero tariff	Optimal tariff
Home	Zero tariff	0 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 - Caveats

While this **terms-of-trade theory of trade negotiations** is the dominant theory of trade negotiations, it is subject to a number of important caveats that we will now discuss:

1. It assumes that countries have market power in world markets
2. It cannot explain the treatment of export policy instruments
3. Economic historians tell a different story of the trade war in the 1930s



Trade wars and trade talks – Caveats – Market power

- A key assumption underlying the terms-of-trade theory of trade negotiations is that countries can actually affect the terms-of-trade
- This requires that they face an upward sloping export supply curve so that shifts in their import demands influence the world price
- In the literature, countries facing upward sloping (as opposed to horizontal) export supply curves are usually referred to as “large” (as opposed to “small”)
- However, it is important to keep in mind that even small countries can have market power if they produce differentiated products



Trade wars and trade talks – Caveats – Export policy instruments

- Real-world trade agreements tend to constrain export subsidies but not export taxes, which is hard to reconcile with the terms-of-trade theory
- In particular, export subsidies deteriorate a country's terms-of-trade and therefore should be welcomed by its trading partners
- Conversely, export taxes improve a country's terms-of-trade and have overall very similar effects to import tariffs
- Essentially, a country can improve its terms-of-trade either by using its monopsony power to reduce its import prices or by using its monopoly power to increase its export prices



Trade wars and trade talks – Caveats – The 1930s

- Irwin (2012) argues that the worldwide protectionism in the 1930s was a direct consequence of the financial turmoil of the 1930s which left countries struggling to keep their gold reserves
- Germany and the “exchange control bloc” countries did not change the gold parity of their currencies but imposed severe capital controls which impeded intertemporal trade
- Britain and the “sterling bloc” countries left the gold standard and imposed significant import barriers in an attempt to slow down the depreciation of their currencies
- France and the “gold bloc” countries kept the gold standard and tried to rebalance their current accounts through massive protectionism in the form of non-tariff measures such as quotas



Evidence

- Despite these caveats, the empirical literature broadly supports the terms-of-trade theory of trade negotiation
- We will now briefly discuss the most prominent contributions: Broda et al (2008), Bagwell and Staiger (2011), Ludema and Mayda (2013), and Bown and Crowley (2013)
- 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



Evidence (contd.)

- 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
- 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



Evidence (contd.)

- 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
- While I find these empirical results encouraging, I am concerned that none of these papers seriously considers any alternative hypotheses
- Alternative hypotheses are now available in the literature (see below) and my conjecture is that their predictions are similar



Quantification

- Recent research has also begun to develop quantitative models of trade wars and trade talks, which can be used to perform counterfactual experiments
- Ossa (2014), for example, simulates fully escalated trade wars and fully efficient trade talks and asks how far away we are from these extremes
- His results suggest that around 85% of the possible gains from trade negotiations have already been reaped in past trade negotiations
- His model features terms-of-trade effects but also includes profit-shifting effects, which arise in “new” trade models discussed in Topic 7



Conclusion

- Unilateral trade policy
- Trade wars and trade talks
- Evidence
- Quantification



References

- *K. Bagwell and R. Staiger. 2011. "What Do Trade Negotiators Negotiate About? Evidence from the World Trade Organization". American Economic Review*
- *C. Bown and M. Crowley. 2013. Self-Enforcing Trade Agreements: Evidence from Time-Varying Trade Policy. American Economic Review*
- *C. Broda, N. Limao, and D. Weinstein. 2008. "Optimal Tariffs and Market Power: The Evidence". American Economic Review*
- *D. Irwin. 2012. "Trade Policy Disaster: Lessons from the 1930s". MIT Press*
- *H. Johnson. 1953-54. "Optimum Tariffs and Retaliation". Review of Economic Studies*
- *R. Ludema and A. Mayda. 2013. "Do Terms-of-Trade Effects Matter for Trade Agreements? Evidence from WTO Countries". Quarterly Journal of Economics*
- *R. Ossa. 2014. "Trade Wars and Trade Talks with Data". American Economic Review*