

International Economics I

Lecture Set 8: Trade Policy

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Trade Policy: Goals

- we saw that trade, in general, is beneficial (with exceptions)
- trade policy can limit (or foster) trade between countries
- there are various instruments of trade policy, e.g.:
 - tariffs and quotas on import
 - subsidies and voluntary restrictions to export
- how should trade policy be conducted?
- still an open question
- first, we have to evaluate:
 - the effects of each intervention on prices and quantities
 - costs and benefits

Tariffs

- tariff = tax on import
 - **fixed** tariff: applied to each unit of imported good
 - **ad valorem** tariff: applied as a percentage of the value of imported good
- it is the oldest instrument of trade policy
 - main source of government revenues until the introduction of personal income tax
 - mainly used to protect national industries (e.g., agriculture)

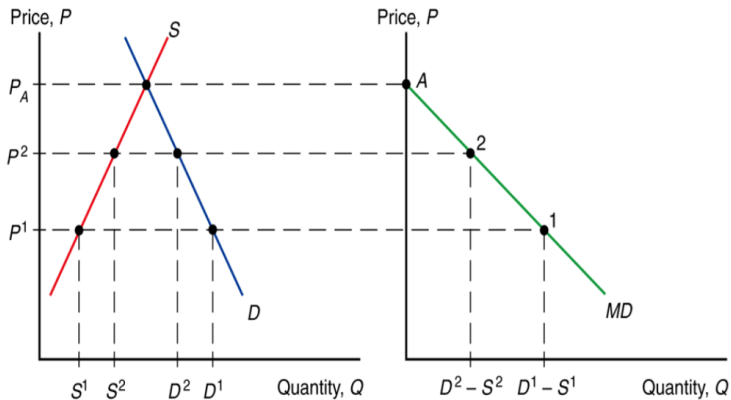
How to Evaluate the Effects? Simple Theoretical Framework

- So far we have modeled general equilibrium (prices adjust in all sectors and markets)
- But trade policy is often directed at very specific sectors
- In this case is not unreasonable to think in partial economy → trade policy will have small impact on factor markets nor induce income effects in consumption
- Implied assumption: The sector is small relative to the rest of the economy
- Then we can analyze the effects of the trade policy on a particular sector independently from the rest of the economy

How to Evaluate the Effects? Simple Theoretical Framework

- we use standard tools from demand and supply to determine equilibrium quantities and prices
- 1 good
- take as given domestic and foreign demand and supply
- study the effects on
 - price and quantities (produced and consumed)
 - costs/benefits (surplus) for consumers and firms
 - welfare of the country

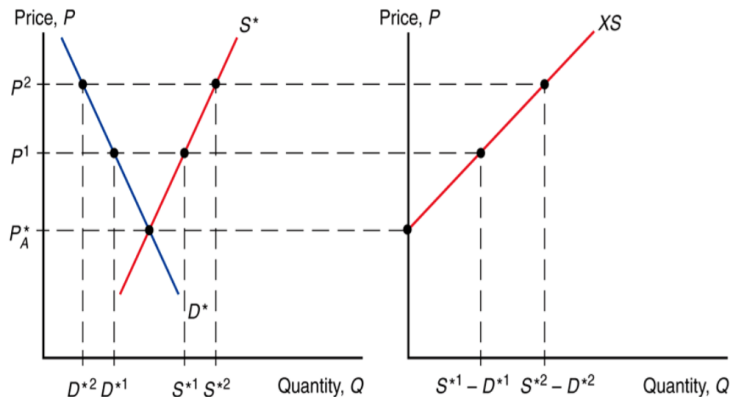
Demand, Supply and Import Demand



Demand, Supply and Import Demand

- given demand and supply
 - autarky equilibrium price is P_A
- for given price $P^1 < P_A$:
 - supply is smaller than demand: $S^1 < D^1$
 - import demand $MD = D^1 - S^1$
- for given price $P^2 < P^1$
 - supply is smaller ($S^2 < S^1$) and demand is larger ($D^2 > D^1$)
 - import demand is larger: $D^2 - S^2 > D^1 - S^1$

Demand, Supply and Foreign Export Supply



Trade and World Equilibrium

- domestic import = foreign export (balanced trade)

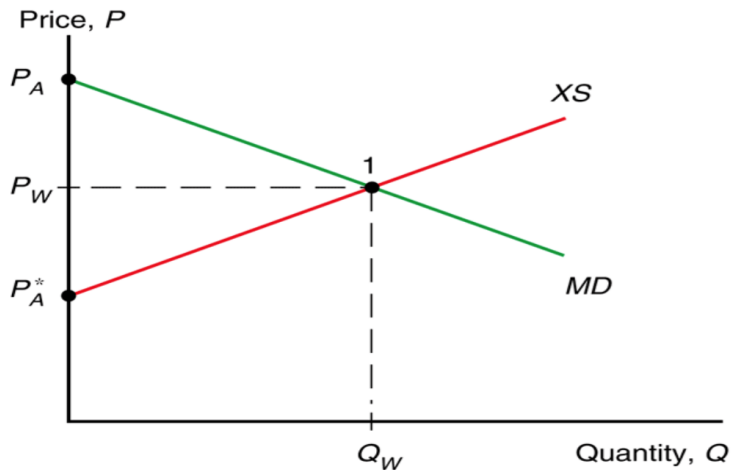
$$D - S = S^* - D^*$$

- equivalent to: world demand = world supply

$$D + D^* = S^* + S$$

- world equilibrium price: P_W
- equilibrium trade: Q_W
- note that the equilibrium P_W price is between both autarky prices
- the relative size of the countries will affect the slopes of the import demand/ export supply curves
- in the limit we will be in a Small Open Economy, where countries cannot affect international prices

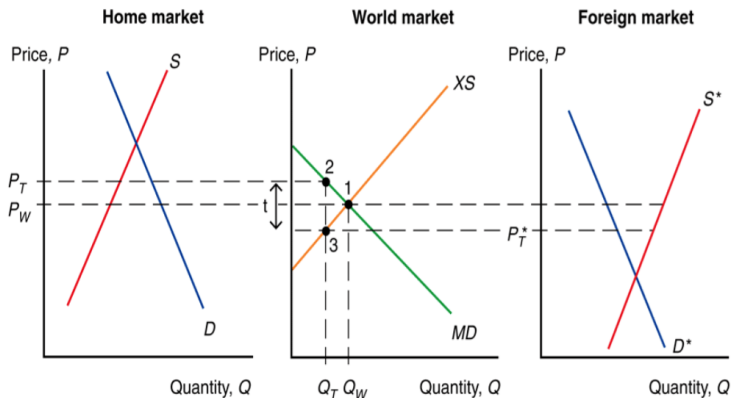
Trade and World Equilibrium



Effects of a Fixed Tariff

- consider a fixed tariff t :
 - import price becomes $P_T = P_T^* + t > P_W > P_T^*$
- effect of tariff on prices:
 - is partial on import price: $P_T - P_W < t$
 - the rest is reflected in the foreign export price: $-t < P_T^* - P_W < 0$
 - the more so, the steeper (inelastic) the XS
- effect of tariff on quantities:
 - domestic import demand falls
 - foreign export supply falls
 - trade falls

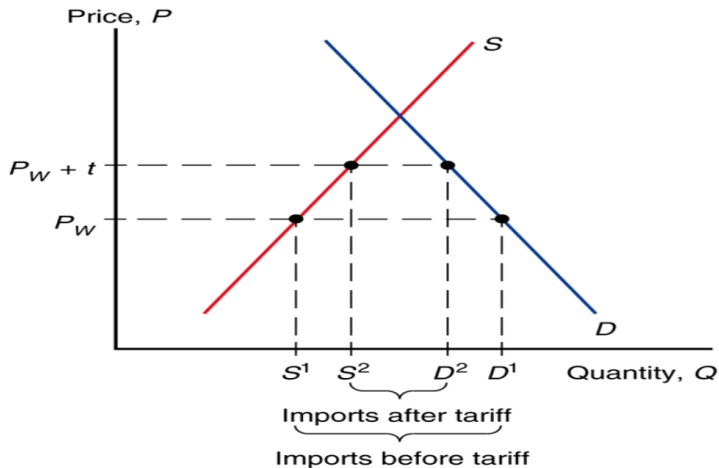
Effects of a Tariff (on a large country): Graph



Effects of a Tariff: Small Open Economy

- if the domestic country is small relative to the foreign
 - its demand can't affect export price (XS flat at P_W)
 - the tariff is entirely charged upon the import price: $P_T = P_W + t$
 - domestic import demand falls
 - foreign export supply is unaffected

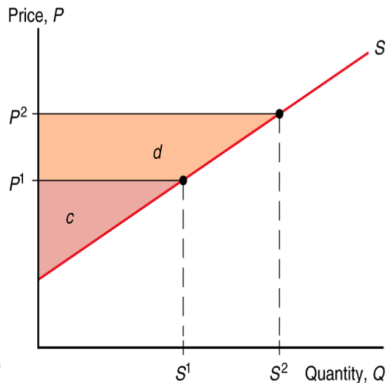
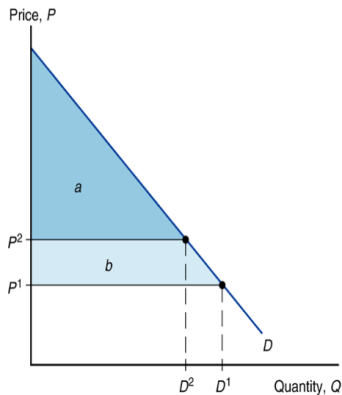
Effects of a Tariff in a SOE: Graph



Costs and Benefits of a Tariff

- compute costs and benefits in terms of:
 - recall: the demand curve represents mg benefit of consumption and supply curve represents mg cost of production
 - variation in consumer's surplus:
 - difference between the price that he/she is willing to pay and the price paid for each unit
 - graphically: area between demand and equilibrium price
 - decreasing in the equilibrium price
 - variation in producer's surplus:
 - difference between the equilibrium price and the minimum price he/she is willing to charge for each unit
 - graphically: area between equilibrium price and supply
 - increasing in the equilibrium price
 - government revenues: imported quantities \times tariff

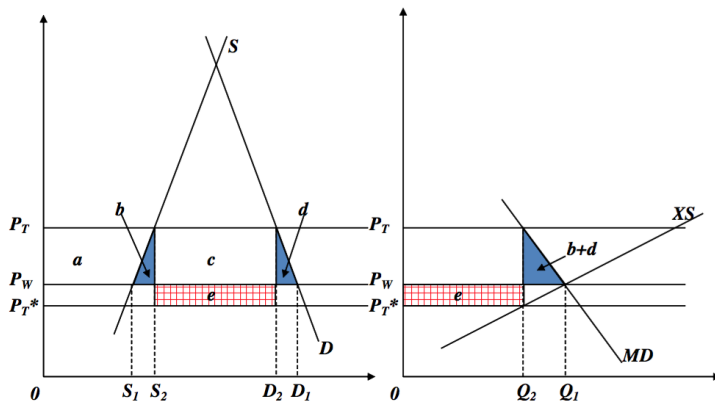
Consumer's and Producer's Surplus: Graph



Costs and Benefits of a Tariff

- a tariff increases the price:
 - reduces consumer's surplus: $-(a + b + c + d)$
 - increases producer's surplus: $+a$
- government revenues: $t * (D_2 - S_2) = c + e$
- net welfare effect is $e - (b + d)$
 - efficiency loss: $-(b + d)$
 - due to distortion in production (too much) and consumption (too little)
 - gains from terms of trade improvement: e
 - due to the fact that t reduces the price received by the foreign producer (steals him/her)
- a tariff $t > 0$ may generate gains as long as it affects the terms of trade (!!!)

Costs and Benefits of a Tariff: Graph



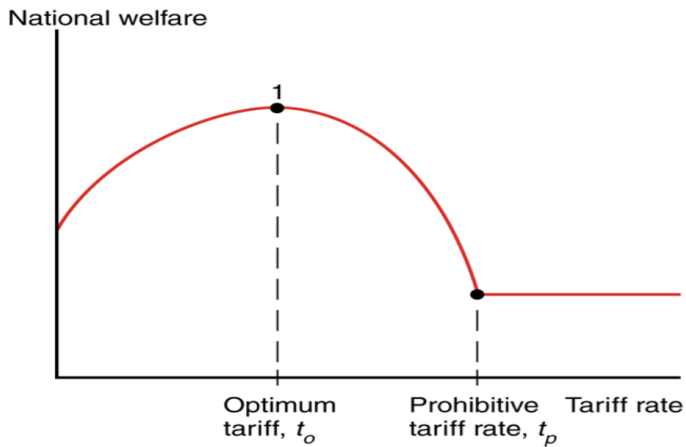
When tariffs generate welfare gains?

- If $e > b + d$
- e represents gains from terms of trade: recall $tot = p_x/p_m$
- in the case the country is large: the fall in the demand induced by tariffs decrease the international price of imports $\downarrow p_m$
- whereas in a small economy there are no terms of trade effects
- large countries have room for *Beggar-thy-neighbor* policies!
- welfare gains at the expense of foreign producers!
- the more inelastic XS is, the highest is the gains from tot .

Optimal tariff

- in large country, an increase in t :
 - increases tariff rate $\uparrow P_W - P_T^*(t) \rightarrow \uparrow e$
 - decreases the tax base $\downarrow Q \rightarrow \downarrow e$
 - distorts production and consumption $\uparrow P_T - P_W$ and $\downarrow Q \rightarrow \uparrow (b + d)$
- optimal tariff maximize $e - (b + d)$
- if t is too high, low imports and high distortions
- if t is too low, low gains from tot
- the more inelastic is XS the higher is the optimal tariff

Optimal Tariff: Graph



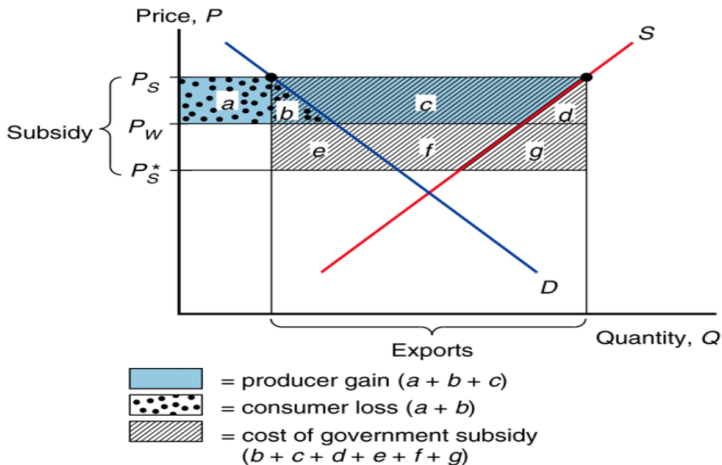
Limitations of the optimal tariff

- obviously cannot be used by small country
- even if there are gains for an individual country, the “optimal tariff” generates global welfare losses!
- the gains from terms of trade comes at the expense of the other country → zero sum game!
- other countries may retaliate → trade war!
- motivation behind the formation of GATT (now the WTO)

Effects of an Export Subsidy

- subsidy = payment (fixed or ad valorem) made to exporters
- effects of a fixed subsidy s on prices/quantities
 - domestic price increases $P_W < P_S < P_W + s \rightarrow D \downarrow$
 - export price falls $P_W - s < P_S^* < P_W \rightarrow S \uparrow$
- effects of a fixed subsidy s on quantities
 - domestic demand falls
 - domestic supply increases
 - domestic export supply increases

Effects of an Export Subsidy: Graph



Effects of an Export Subsidy

- effects of a fixed subsidy s on welfare
 - consumer loss: $-(a + b)$
 - producer gain: $+(a + b + c)$
 - gov't spends (loss): $-(b + c + d + e + f + g)$
 - net loss: $-(b + d + e + f + g)$
 - efficiency loss: $-(b + d)$
 - loss by terms of trade deterioration: $-(e + f + g)$
- in this simple framework export subsidy always generate losses
- why it exists?
 - political influence of producers (e.g. lobby)
 - production externalities / dynamic gains

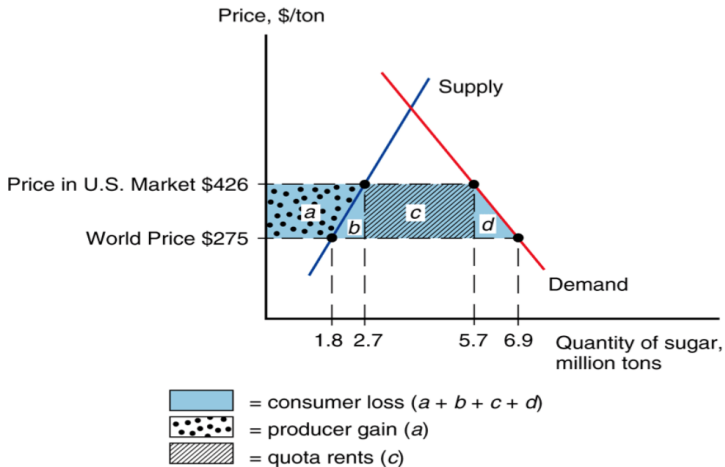
Import Quotas

- quota (\bar{Q}) = direct restriction to imported quantities
- give some firms (often foreign government agencies) a license to import (up to \bar{Q})
- for given int'l price P_W :
 - $D > S + \bar{Q}$
 - for D to fall and S to rise, national price P has to rise
- same effects on prices and quantities as a tariff aimed at reducing import to \bar{Q}
- differences with respect to a tariff:
 - no tariff revenue for the government
 - the licensee gains the equivalent (buys at P_W , sells at P) = quota rents

Import Quotas: Welfare Effects

- consumer's loss: $-(a + b + c + d)$
- producer's gain: $+a$
- quota rent: $+c + e$
 - only $+c$ in a small open economy
- net effect:
 - if rents accrue to domestic importers: $e - (b + d)$
 - only $-(b + d)$ in a small open economy
 - if rents are appropriated by a foreign gov't: $-(b + c + d)$
 - e paid by foreign producer \rightarrow remains abroad
 - c paid by domestic consumer \rightarrow goes abroad
 - same in a small open economy

Import Quotas: Graph (SOE)



Other Instruments

- Voluntary Export Restriction (VER)
 - equivalent to an import quota, but imposed by the exporter
 - since the rents of the restriction are absorbed by the exporter, the importer always lose
- local content requirements
 - requires that a share of (quantity or value of) final good be produced domestically
 - limits import of intermediate goods/raw materials
 - fosters export of intermediate goods/raw materials
 - is reflected by the increase in the final consumer price
- subsidies to export credit
- state purchases
- administrative barriers

Summary: Main Trade Policy Instruments

TABLE 9-1 Effects of Alternative Trade Policies				
	Tariff	Export Subsidy	Import Quota	Voluntary Export Restraint
Producer surplus	Increases	Increases	Increases	Increases
Consumer surplus	Falls	Falls	Falls	Falls
Government revenue	Increases	Falls (government spending rises)	No change (rents to license holders)	No change (rents to foreigners)
Overall national welfare	Ambiguous (falls for small country)	Falls	Ambiguous (falls for small country)	Falls