

Economics 452 International Trade Theory and Policy Spring 2011FOREIGN DIRECT INVESTMENT

- 1-4 Starbucks acquired a U.K. firm to operate as its subsidiary there.
1. Starbucks must have an internalization advantage that ensures
 - a) that the subsidiary's profit motives match its own
 - b) production should take place in the United Kingdom
 - c) there's something that makes Starbucks better than other firms
 - d) Starbucks would earn more in the United States than in the United Kingdom
 - e) all of the above
 2. The United Kingdom must have a location advantage that ensures
 - a) that the subsidiary's profit motives should match its own
 - b) production should take place in the United Kingdom
 - c) there's something that makes Starbucks better than other firms
 - d) Starbucks would earn more in the United States than in the United Kingdom
 - e) all of the above
 3. Which of the following is an example of a location advantage?
 - a) Starbucks coffee tastes better than UK firms
 - b) coffee shops need to be located close to customers
 - c) a licensee might produce bad coffee to save on costs
 - d) Starbucks buys most of its coffee from Columbia
 - e) none of the above
 4. Which of the following is an example of an internalization advantage?
 - a) Starbucks coffee tastes better than UK firms
 - b) coffee shops need to be located close to customers
 - c) a licensee might produce bad coffee to save on costs
 - d) Starbucks buys most of its coffee from Columbia
 - e) none of the above

INTERTEMPORAL TRADE

- 5-8 Suppose the United States currently borrows from the ROW.
5. Which of the following is NOT true?
- a) The ROW currently consumes less than it produces in value.
 - b) The United States currently consumes more than it produces in value.
 - c) The ROW will be able to consume more than produces in value sometime in the future.
 - d) The United States must produce more than consumes in value sometime in the future.
 - e) No country can import more than export in the current period
6. In an intertemporal budget constraint, $1 + r$ represents the
- a) relative price of current to future, P_C / P_F
 - b) relative price of future to current, P_F / P_C
 - c) price of current consumption and production, P_C
 - d) price of future consumption and production, P_F
 - e) autarky level of consumption and production
7. This pattern of intertemporal trade could stem from the United States, at the same interest rate:
- a) consuming more current to future than the ROW
 - b) consuming less current to future than the ROW
 - c) producing more current to future than the ROW
 - d) producing less current to future than the ROW
 - e) a) and d)
8. If the real interest rate increases while under intertemporal trade, who gains and loses?
- a) United States and ROW gain; none lose
 - b) United States gains and ROW loses
 - c) ROW gains and United States loses
 - d) United States and ROW lose; none gain
 - e) Cannot determine based on the information provided

TRADE POLICIES

- 9-12 Suppose the United States *increases* its binding quota on imports of sugar from 1.2 million tons to 1.5 million tons.
9. The quantity demanded of sugar and consumer surplus in the United States
- rises due to the US price of sugar rising
 - rises due to the US price of sugar falling
 - remains the same
 - falls due to the US price of sugar rising
 - falls due to the US price of sugar falling
10. The quantity supplied of sugar and producer surplus in the United States
- rises due to the US price of sugar rising
 - rises due to the US price of sugar falling
 - remains the same
 - falls due to the US price of sugar rising
 - falls due to the US price of sugar falling
11. Compared to a tariff that generates the same volume of imports as the quota, a quota is less likely to cause foreign retaliation due to:
- consumption distortions caused by too little consumption
 - production distortions caused by too much production
 - quota rents being transferred to ROW sugar producers
 - all of the above
 - a) and b)
12. What would change if the United States auctioned off the quota rights instead of handing them out for free?
- U.S. sugar consumers would be hurt more
 - U.S. sugar consumers would be hurt less
 - U.S. sugar producers would gain more
 - U.S. sugar producers would gain less
 - U.S. government would collect revenue, making U.S. welfare better than when gave away the quota rights

- 13-16 Suppose the European Commission imposes a specific subsidy of 420 euros per metric ton on its sugar exports.
13. If the price of a metric ton of sugar in Europe is 630 euros, the price of sugar in the rest of the world would be _____ euros.
- a) 1050
 - b) 840
 - c) 630
 - d) 420
 - e) 210
14. If the European Commission exports one million metric tons of sugar, the export subsidy would cost _____ million euros in subsidy payments.
- a) 1050
 - b) 840
 - c) 630
 - d) 420
 - e) 210
15. The export subsidy causes European welfare to fall due to
- a) consumption distortions
 - b) production distortions
 - c) terms of trade loss due to allowing the ROW to buy European sugar exports cheaper
 - d) all of the above
 - e) a) and b)
16. What would change if the European Commission replaced the export subsidy with a lump sum transfer to its sugar producers that gave them the exact same producer surplus as they had with the export subsidy?
- a) consumption distortion would be eliminated
 - b) production distortion would be eliminated
 - c) consumer surplus would rise to free trade levels
 - d) sugar in Europe would become less expensive
 - e) all of the above

TRADE POLICY PROBLEMS

In the United States (US), inverse demand is $P = 88 - 2Q_D$, while inverse supply is $P = 28 + 2Q_S$. In the rest of the world (ROW), inverse demand is $P^* = 50 - 2Q_D^*$, while inverse supply is $P^* = 2 + 2Q_S^*$.

1. Derive the US autarky price and quantity.

Derive the US import demand (including slope-intercept form).

Derive the ROW autarky price and quantity.

Derive the ROW export supply (including slope-intercept form).

2. Derive the free trade price and US imports under free trade.

Derive US quantity demanded and quantity supplied under free trade.

3. Derive the US tariff-ridden import demand for a specific tariff $t = 16$ (including slope-intercept form).

Derive the ROW price, the US price, and US imports with the tariff.

Derive US quantity demanded and quantity supplied with the tariff.

How large of a tariff would the United States need to impose to prohibit all imports?

4. Derive the change in consumer surplus, producer surplus, and government revenue in the United States due to the tariff (starting with the general equations and being sure to indicate the areas corresponding to each on the US graph).

5. Define and derive the US consumption distortion and production distortion.

Define and derive the US efficiency loss and terms of trade gain.

6. Derive the change in welfare in the United States due to the tariff. Confirm that the net welfare calculation yields the same answer.

Is the United States better or worse off with the tariff and why?

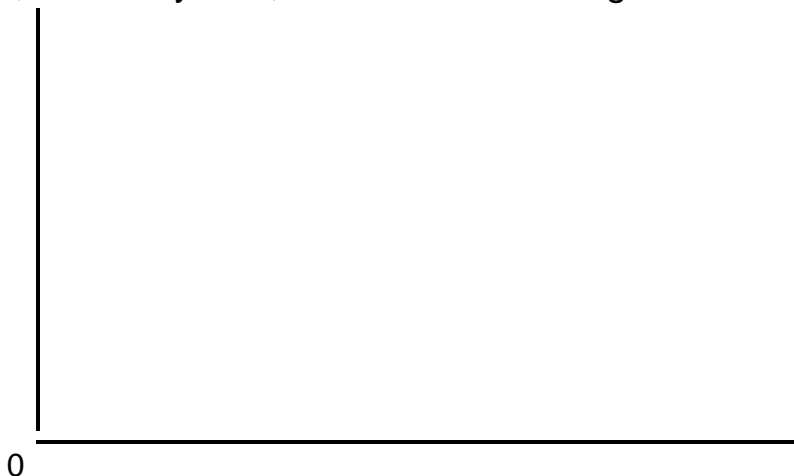
DRAW WORLD MARKET GRAPH HERE: US IMPORT DEMAND, ROW EXPORT SUPPLY, US TARIFF-RIDDEN IMPORT DEMAND

Indicate US and ROW autarky prices, free trade price, US imports under free trade, US tariff-ridden price, ROW tariff-ridden price, and US tariff-ridden imports.



DRAW US MARKET GRAPH HERE: US DEMAND, US SUPPLY

Indicate free trade price, US quantity demanded and quantity supplied under free trade, US tariff-ridden price, US quantity demanded and quantity supplied with the tariff, and ROW tariff-ridden price. Label areas corresponding to change in consumer surplus, change in producer surplus, change in government revenue, production distortion, consumption distortion, efficiency loss, and terms of trade gain.



On my honor as an Aggie, I have neither given nor received unauthorized aid on this exam.

Signature _____

FINAL EXAM SOLUTIONS

Economics 452 International Trade Theory and Policy Spring 2011

- 1a Starbucks must have an internalization advantage that ensures that the subsidiary's profit motives match its own.
- 2b The United Kingdom must have a location advantage that ensures production should take place in the United Kingdom.
- 3b Coffee shops needing to locate close to customers is a location advantage.
- 4c That a licensee might produce bad coffee to save on costs is an internalization advantage.
- 5e A country can import more than export in the current period.
- 6a $1 + r$ represents the relative price of current to future, P_C / P_F .
- 7e This pattern of intertemporal trade could stem from the US at the same interest rate: a) consuming more current to future than the ROW and d) producing less current to future than the ROW.
- 8c If the real interest rate increases, ROW gains and US loses.
- 9b The quantity demanded of sugar and consumer surplus in the US rises due to the US price of sugar falling.
- 10e The quantity supplied of sugar and producer surplus in the United States falls due to the US price of sugar falling.
- 11c Compared to a tariff that generates the same volume of imports, a quota is less likely to cause foreign retaliation due to quota rents being transferred to ROW sugar producers.
- 12e If the United States auctioned off the quota rights instead of handing them out for free, U.S. government would collect revenue, making U.S. welfare better than when gave away the quota rights
- 13e If the price of sugar in Europe is 630 euros (per metric ton), the price of sugar in the rest of the world would be 210 euros.
- 14d If the European Commission exports one million metric tons of sugar, the export subsidy would cost 420 million euros in subsidy payments.
- 15d The export subsidy causes European welfare to fall due to: consumption and production distortions, and terms of trade loss due to allowing the ROW to buy European sugar exports cheaper.
- 16e If the European Commission replaced the export subsidy with a lump sum transfer to its sugar producers that gave them the exact same producer surplus, consumption distortion would be eliminated, production distortion would be eliminated, consumer surplus would rise, and sugar in Europe would become less expensive.

PROBLEMS

1 Derive US autarky price and quantity.

$$88 - 2Q^A = 28 + 2Q^A, 4Q^A = 60, Q^A = 15$$

$$P^A = 88 - 2Q^A = 88 - 30 = 58$$

Derive the US import demand (including slope-intercept form).

$$P = 88 - 2Q_D, Q_D = 44 - \frac{1}{2}P$$

$$P = 28 + 2Q_S, Q_S = -14 + \frac{1}{2}P$$

$$M = Q_D - Q_S = 44 - \frac{1}{2}P - \left(-14 + \frac{1}{2}P\right)$$

$$M = 58 - P, P = 58 - Q_M$$

Derive the ROW autarky price and quantity.

$$50 - 2Q^{A*} = 2 + 2Q^{A*}, 4Q^{A*} = 48, Q^{A*} = 12$$

$$P^{A*} = 50 - 2Q^{A*} = 50 - 24 = 26$$

Derive the ROW export supply (including slope-intercept form).

$$P^* = 2 + 2Q_S^*, Q_S^* = -1 + \frac{1}{2}P^*$$

$$P^* = 50 - 2Q_D^*, Q_D^* = 25 - \frac{1}{2}P^*$$

$$X^* = Q_S^* - Q_D^* = -1 + \frac{1}{2}P^* - \left(25 - \frac{1}{2}P^*\right)$$

$$X^* = -26 + P^*, P^* = 26 + Q_X^*$$

2. Derive the free trade price and US imports under free trade.

$$M = X^*, 58 - P = -26 + P^*, 84 = 2P, P = P^* = 42$$

$$M = 58 - P = 58 - 42 = 16$$

Derive US quantity demanded and quantity supplied under free trade.

$$P = 88 - 2Q_D, 42 = 88 - 2Q_D, D^1 \equiv Q_D = 23$$

$$P = 28 + 2Q_S, 42 = 28 + 2Q_S, S^1 \equiv Q_S = 7$$

3. Derive the US tariff-ridden import demand for a specific tariff $t = 16$ (including slope-intercept form).

$$M_T = 58 - P_T = 58 - (P_T^* + 16) \quad M_T = 42 - P_T^*, P_T^* = 42 - Q_{M_T}$$

Derive the ROW price, the US price, and US imports with the tariff.

$$M_T = X^*, 42 - P_T^* = -26 + P_T^*, 68 = 2P_T^*, P_T^* = 34$$

$$P_T = P_T^* + t = 34 + 16 = 50$$

$$M_T = 44 - P_T^* = 42 - 34 = 8$$

Derive US quantity demanded and quantity supplied with the tariff.

$$P^T = 88 - 2Q_D^T, 50 = 88 - 2Q_D^T, D^2 \equiv Q_D^T = 19$$

$$P^T = 28 + 2Q_S^T, 50 = 28 + 2Q_S^T, S^2 \equiv Q_S^T = 11$$

How large of a tariff would the United States need to impose to prohibit all imports?

$$t' = P^A - P^{A*} = 58 - 26 = 32$$

4. Derive the change in consumer surplus, producer surplus, and government revenue in the United States due to the tariff.

$$\Delta CS = -abcd = -(P_T - P) \left(\frac{D^1 + D^2}{2} \right) = -(50 - 42) \left(\frac{23 + 19}{2} \right) = -168$$

$$\Delta PS = a = (P_T - P) \left(\frac{S^1 + S^2}{2} \right) = (50 - 42) \left(\frac{7 + 11}{2} \right) = 72$$

$$\Delta GR = ce = tM_T = 16(8) = 128$$

5. Define and derive the US consumption distortion and production distortion.

Consumption distortion is loss due to too little consumption.

$$d = \Delta P \left(\frac{\Delta D}{2} \right) = (50 - 42) \left(\frac{23 - 19}{2} \right) = 16$$

Production distortion is loss due to too much production.

$$b = \Delta P \left(\frac{\Delta S}{2} \right) = (50 - 42) \left(\frac{11 - 7}{2} \right) = 16$$

Define and derive the US efficiency loss and terms of trade gain.

Efficiency loss is size of total distortion, consumption plus production.

$$b + d = 16 + 16 = 32$$

Terms of trade gain is degree that buy imports cheaper.

$$e = (P - P^{T*}) M_T = (42 - 34) (8) = 64$$

6. Derive the change in welfare in the United States due to the tariff. Confirm that the net welfare calculation yields the same answer.

$$\Delta W = \Delta CS + \Delta PS + \Delta GR = -168 + 72 + 128 = 32$$

$$e - (b + d) = 64 - 32 = 32$$

Is the United States is better or worse off due to the tariff and why?

Better. The terms of trade gain outweighs the efficiency loss for large country adopting a small tariff starting from free trade.

WORLD MARKET GRAPH: US IMPORT DEMAND, ROW EXPORT SUPPLY, US TARIFF-RIDDEN IMPORT DEMAND; US and ROW autarky prices 58 and 26, free trade price 42, US imports under free trade 16, US tariff-ridden price 50, ROW tariff-ridden price 34, US tariff-ridden imports 8.



US MARKET GRAPH: US DEMAND, US SUPPLY
 Free trade price 42, US quantity demanded 23 and quantity supplied 7 under free trade, US tariff-ridden price 50, US quantity demanded 19 and quantity supplied 11 with the tariff, and ROW tariff-ridden price 34.

