

**Problem Set 1: Tariffs and Quotas**  
**Universidad Carlos III de Madrid**  
**Economics of European Integration**

**Problem 1.** Suppose there are only two countries in the world (Home and Rest of the World) which produce and consume wheat. The price of wheat in Rest of the World is equal to 1 ( $P_{RW} = 1$ ) and Home is a small country with the following demand and supply functions for wheat:

$$D_H = 100 - 20P$$
$$S_H = 20 + 20P$$

It is helpful to compute and graph the equilibrium in absence of trade.

1. What is the equilibrium price of wheat at Home?
  - (a) 2
  - (b) 3
  - (c) 1
  - (d) 5
2. What are the equilibrium quantities demanded and supplied at Home?
  - (a) 50
  - (b) 30
  - (c) 60
  - (d) 70
3. What is the consumer surplus?
  - (a) 90
  - (b) 120
  - (c) 10
  - (d) 70
4. What is the producer surplus?
  - (a) 120
  - (b) 90
  - (c) 80
  - (d) 20

Now allow Home and Rest of the World to trade assuming zero transportation costs. It is helpful to find and graph the equilibrium under free trade.

5. What is the equilibrium price of wheat at Home?
  - (a) 2
  - (b) 1
  - (c) 5
  - (d) 0.5
6. What is the imported quantity of wheat to Home?
  - (a) 10
  - (b) 20
  - (c) 40
  - (d) 50
7. What is the demanded quantity of wheat at Home?
  - (a) 30
  - (b) 50
  - (c) 60
  - (d) 80
8. What is the locally supplied quantity of wheat at Home?
  - (a) 40
  - (b) 50
  - (c) 55
  - (d) 70
9. What are the changes to the consumer surplus compared to the absence of trade case?
  - (a) 90
  - (b) 70
  - (c) 30
  - (d) -20
10. What are the changes to the producer surplus compared to the absence of trade case?
  - (a) 10
  - (b) 15
  - (c) -30
  - (d) -50

Home country imposes a tariff of 0.5 on wheat imports. It is helpful to find and graph the equilibrium with the tariff.

11. What is the equilibrium price of wheat at Home?
- (a) 0.5
  - (b) 1
  - (c) 1.5
  - (d) 2
12. What is the imported quantity of wheat to Home?
- (a) 10
  - (b) 20
  - (c) 40
  - (d) 50
13. What is the demanded quantity of wheat at Home?
- (a) 40
  - (b) 50
  - (c) 60
  - (d) 70
14. What is the locally supplied quantity of wheat at Home?
- (a) 40
  - (b) 50
  - (c) 55
  - (d) 65
15. What are the changes to the consumer surplus compared to the free trade without tariff case?
- (a) 10.4
  - (b) 28.5
  - (c) -37.5
  - (d) -50.5
16. What are the changes to the producer surplus compared to the free trade without tariff case?
- (a) 22.5
  - (b) 33.5
  - (c) 35.6
  - (d) -40

17. What is the government revenue due to the tariff?

- (a) 10
- (b) 20
- (c) 22
- (d) 25.5

Home introduces an import quota of 20 units of wheat. It is helpful to find and graph the equilibrium with the quota.

18. What is the equilibrium price of wheat at Home?

- (a) 1
- (b) 1.5
- (c) 2
- (d) 2.5

19. What is the imported quantity of wheat to Home?

- (a) 15
- (b) 20
- (c) 30
- (d) 40

20. What is the demanded quantity of wheat at Home?

- (a) 40
- (b) 60
- (c) 70
- (d) 80

21. What is the locally supplied quantity of wheat at Home?

- (a) 50
- (b) 55
- (c) 60
- (d) 65

22. What are the changes to the consumer surplus compared to the free trade without quota case?

- (a) 5.6
- (b) 5.5
- (c) -32.5
- (d) -37.5

23. What are the changes to the producer surplus compared to the free trade without quota case?
- (a) 22.5
  - (b) 30.5
  - (c) 33.2
  - (d) -5
24. What is the government revenue due to the tariff?
- (a) -5
  - (b) 0
  - (c) 10
  - (d) 12.5

**Problem 2.** Suppose Home is not anymore a small country and the Rest of the World (which is also a large country) exhibits the following demand and supply curves for wheat:

$$D_{RW} = 80 - 20P$$

$$S_{RW} = 40 + 20P$$

It is helpful to derive and graph Home import demand curve and the Rest of the World export supply curve.

25. What is the equilibrium price of wheat in each country in absence of trade?
- (a) Home: 1, Rest of the World: 2
  - (b) Home: 2, Rest of the World: 1
  - (c) Home: 2, Rest of the World: 2.5
  - (d) Home: 2.5, Rest of the World: 1
26. What is the equilibrium quantity of wheat in each country in absence of trade?
- (a) Home: 60, Rest of the World: 60
  - (b) Home: 50, Rest of the World: 50
  - (c) Home: 50, Rest of the World: 60
  - (d) Home: 60, Rest of the World: 50

Now allow Foreign and Home to trade with each other, assuming zero transportation cost. It is helpful to find and graph the equilibrium under free trade.

27. What is the equilibrium price of wheat in each country under free trade?
- (a) Home: 1.5, Rest of the World: 1.5
  - (b) Home: 2, Rest of the World: 1
  - (c) Home: 1, Rest of the World: 1
  - (d) Home: 2.5, Rest of the World: 1

28. What is the equilibrium quantity of wheat imported/exported in each country under free trade?
- (a) Home: 20 units imported, Rest of the World: 20 units exported
  - (b) Home: 20 units exported, Rest of the World: 20 units imported
  - (c) Home: 30 units exported, Rest of the World: 30 units imported
  - (d) Home: 20 units imported, Rest of the World: 30 units exported
29. What are the demanded quantities of wheat in each country under free trade?
- (a) Home: 50, Rest of the World: 70
  - (b) Home: 50, Rest of the World: 50
  - (c) Home: 70, Rest of the World: 50
  - (d) Home: 70, Rest of the World: 70
30. What are the locally supplied quantities of wheat in each country under free trade?
- (a) Home: 50, Rest of the World: 70
  - (b) Home: 50, Rest of the World: 50
  - (c) Home: 70, Rest of the World: 50
  - (d) Home: 60, Rest of the World: 60

Home imposes a tariff of 0.5 on wheat imports.

31. What is the equilibrium price of wheat in each country with the tariff?
- (a) Home: 1.25, Rest of the World: 1.75
  - (b) Home: 1.75, Rest of the World: 1.25
  - (c) Home: 1.5, Rest of the World: 1.5
  - (d) Home: 2.5, Rest of the World: 1.75
32. What is the equilibrium quantity of wheat imported/exported in each country with the tariff?
- (a) Home: 10 units imported, Rest of the World: 10 units exported
  - (b) Home: 20 units exported, Rest of the World: 20 units imported
  - (c) Home: 10 units exported, Rest of the World: 10 units imported
  - (d) Home: 20 units imported, Rest of the World: 20 units exported
33. What are the demanded quantities of wheat in each country with the tariff?
- (a) Home: 55, Rest of the World: 75
  - (b) Home: 50, Rest of the World: 50
  - (c) Home: 65, Rest of the World: 55
  - (d) Home: 55, Rest of the World: 55

34. What are the locally supplied quantities of wheat in each country with the tariff?
- (a) Home: 50, Rest of the World: 60
  - (b) Home: 55, Rest of the World: 50
  - (c) Home: 70, Rest of the World: 55
  - (d) Home: 55, Rest of the World: 65
35. What are the changes to the consumer surplus at Home compared to the free trade without tariff case?
- (a) 22.5
  - (b) -33.545
  - (c) -15.615
  - (d) -16.875
36. What are the changes to the producer surplus at Home compared to the free trade without tariff case?
- (a) 10.445
  - (b) 13.125
  - (c) -37.512
  - (d) 50.515
37. What is the government revenue at Home due to the tariff?
- (a) 5
  - (b) 10
  - (c) 0
  - (d) 5.5