

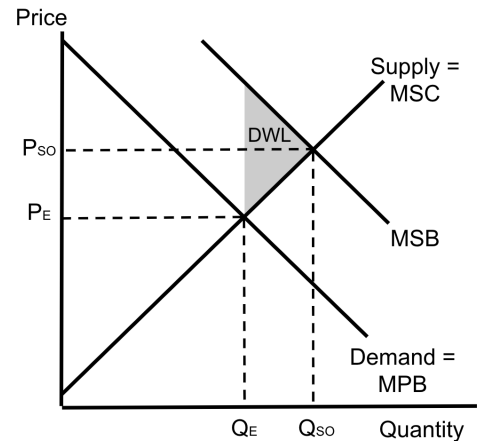


# Microeconomics Unit 6

## Free Response Questions

**FRQ #1-** Assume the market for self-driving cars is perfectly competitive.  
See video in [Ultimate Review Packet](#) for detailed explanations.

- Draw a correctly labeled graph of the self-driving car market and show the equilibrium price and quantity, labeled  $P_E$  and  $Q_E$ . See graph
- Assume that the use of self-driving cars significantly reduces traffic and car accidents. On your graph in part (a), show each of the following.
  - The marginal social benefit curve, labeled MSB See graph
  - The marginal social cost curve, labeled MSC See graph
  - The social optimal price and quantity, labeled  $P_{S0}$  and  $Q_{S0}$  See graph
  - The deadweight loss, shaded completely See graph
- If the government places a price floor at  $P_{S0}$ , will deadweight increase, decrease, or stay the same? Explain. Deadweight loss will increase. The quantity will decrease as a result of the price floor. The price floor is above the equilibrium price so it is binding. At the high price, the quantity demanded will decrease and the quantity of self-driving cars purchased will be less than  $Q_E$ .
- Identify a specific government policy that would eliminate deadweight loss. A per-unit subsidy to producers will increase supply a result in an equilibrium quantity at  $Q_{S0}$



**FRQ #2-** Assume that ten-cylinder cars are produced in a perfectly competitive market with a downward sloping demand curve and that ten-cylinder engines emit large amounts of air pollution. See video in [Ultimate Review Packet](#) for detailed explanations.

- Draw a correctly labeled graph of the ten-cylinder car market and show each of the following:
  - The equilibrium price and quantity, labeled  $P_1$  and  $Q_1$  See graph
  - The marginal social cost curve, labeled MSC See graph
  - The social optimal price and quantity, labeled  $P_2$  and  $Q_2$  See graph
  - The deadweight loss, shaded completely See graph
- Is the marginal social benefit at  $Q_1$  greater than, less than, or equal to the marginal social cost? The MSB is less than the MSC
- Based on your graph, would a government ban on the production of ten-cylinder cars eliminate deadweight loss? Explain. No. A government ban would not eliminate the deadweight loss since  $Q_2$  is greater than zero. A ban would result in a quantity of zero, but the socially optimal quantity (where  $MSB = MSC$ ) is greater than zero. A ban would result in deadweight loss since ten-cylinder cars would be underproduced.
- Assume instead that the government imposes a per-unit tax of  $(P_2 - P_1)$  on ten-cylinder cars. Would this policy eliminate deadweight loss? Explain. No, there would still be deadweight loss. The amount of the negative externality (the vertical distance between the MPC and MSC) is greater than  $P_2 - P_1$ . A tax of  $P_2 - P_1$  would decrease deadweight loss, but the amount of the tax must be greater than  $P_2 - P_1$  to eliminate deadweight loss.

