GOVERNMENT INTERVENTION –Problems

Problems

Problem 1

Assuming that production of bananas stopped in the EU, analyze the total changes of consumer surplus, banana exporters' (producers) surplus, EU budget revenues (government revenues), and the deadweight loss in the market for bananas (assuming it's a perfectly competitive market), resulting from the introduction of an import tariff (quantity tax) at the level of 20 euro per each 100kg of bananas sold (treat 100kg as 1Q). Provide this analysis for three cases:

  i.   The inverse demand function for (imported) bananas is $P(Q)=100-Q$, while the inverse supply function of these bananas is $P(Q)=20+Q$ (Q – quantity in 100kgs, P – price in euro). (Why are the changes in consumer and producer surplus equal?)

  ii.   The inverse demand function is $P(Q)=100-Q$; the inverse supply function: $P(Q)=60$.

  iii.   The inverse demand function: $P(Q)=100-Q$; the supply function: $Q=40$.
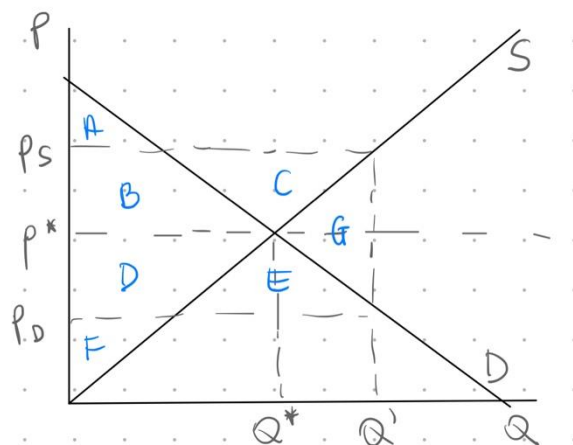
Problem 2

In some country, the market demand function for vaccinations is given by $Q(P) = 500 – 0.6P$, while the market supply is $Q(P) = 0.4P$, where Q – the quantity in thousands, P – the price in PLN.

  a) Describe the equilibrium conditions in this market, i.e., the price and quantity of vaccinations sold.

  b) If the government wants to support consumers (buyers of vaccinations) and introduces subsidies amounting to 200 PLN per vaccination, what will be the equilibrium in this market? How much will the government spend on the subsidies?

  c) How will the situation in this market change if, instead of the subsidies, the government sets a maximum price per vaccination at the level of 420 PLN?

  d) How much will the government spend on providing enough vaccinations to satisfy the excess demand, assuming that the vaccinations need to be bought abroad for the world price of 500 PLN, and then they are re-sold by the government in the domestic market for the maximum price of 420 PLN?

      How much will they spend on subsidies from point b)?

  e) Based on the graph with areas marked with letters, write down what are the areas standing for the change (Δ) in Consumer Surplus, Δ in PS, and Δ in Government expenditures in both cases (i) change from equilibrium to subsidies, and (ii) from equilibrium to setting a maximum price and government supplying the excess demand.

      Which solution (subsidies or setting a maximum price and supplying the excess demand by the government) will be advocated by the consumers and which by the domestic suppliers? Which one is preferred by the government, who wants to reduce governmental expenditures?

Problem 3

The demand function in Country K for bananas from Country M is given by $Q(P) = 5000 – P$, while the supply function of these bananas is $Q(P) = – 500 + P$ (Q – quantity of bananas in tons, P – price in euro).

  a) Describe the equilibrium conditions (the price and the quantity) in this market.

Because of the deterioration of relations between the two countries, the government of Country K decides to limit the import of bananas from Country M. Two instruments are considered.

One is to convince importers of bananas to voluntarily limit their import to 1,500 tons per year. Another involves the introduction of an import tariff at the level of 1,500 euro per ton.

b) How will the equilibrium price and quantity change upon the introduction of each of the two considered instruments?

c) How will each of these proposals influence the social welfare in Country K?

d) Which solutions will be preferred by consumers, suppliers, and the government?

Problem 4

In the market of vodka, a monopolist faces a demand function of $Q(P)=20P^{-3}$. Marginal production cost for the monopolist is constant and equal to 6 PLN per bottle. Due to increasing alcoholism in the country, the government introduces a tax of 4 PLN per bottle.

By how much will the market price of vodka increase? Is this change smaller, larger, or equal to the tax?

Problem 5

The market for tennis rackets is characterized by a linear and upward-sloping supply curve and a linear, downward-sloping demand curve. Currently, the government imposes a quantity tax on this good at the level of t per racket. Assume that in the next year, the government is planning to double the tax level. Will this result in exactly doubling the deadweight loss?