Econ MIDTERM; Fall 2019; ANSWERS

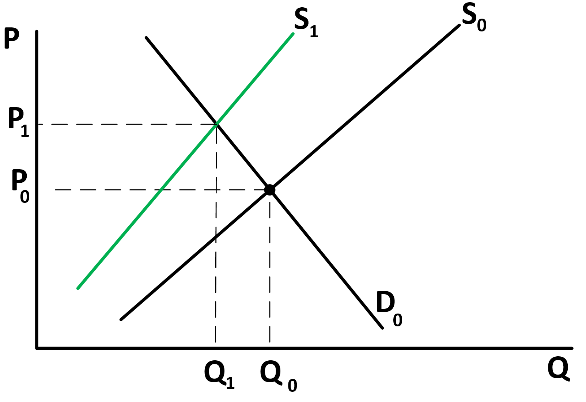
1. The Aug 30, 2019 issue of the *Wall Street Journal* had a story “Ravenous China Could Spice Up U.S. Meat Stocks” about the devastating effects of the outbreak of African swine fever. You do not need to read the story; this paragraph from the article tells you all you need to know:

“By July, the number of hogs in China—by far the world’s largest pork consumer—was close to a third lower than a year earlier, according to official statistics. And the situation may be even worse than headline figures imply: A June report from Reuters suggested that as many as half of China’s breeding pigs may have died or been slaughtered.”

Graphically depict the market for hogs in China, assuming that the demand curve slopes down and the supply curve slopes up. This is purely an analysis of the impact of African swine fever. It is true that trade wars between the U.S. and China are significant, but for this analysis, we are just looking for the impact of the deadly swine fever independent of any other external shocks to the Chinese pork production industry.

Upload a graph showing supply, demand, and the equilibrium price and quantity in the market for pork *before* the swine fever outbreak and any changes to the supply and/or demand as well as the equilibrium price and quantity *after* the swine fever. Please provide a narrative explaining what happens in the market for pork and the impact of African swine fever on the market.

(Both a graph and a narrative are needed for this question)



**The swine fever reduces the Supply, a shift in S to the northwest on the graph. Price goes up, Q down.**

[35 points]

1. The *Orlando Sentinel* newspaper had an August 30, 2019 story titled “Hurricane Dorian: Florida activates price-gouging hotline.” Florida has a “Price Gouging Statute” which makes it illegal to raise prices on essential commodities when an official State of Emergency has been declared. This is, essentially, a **price ceiling** at the pre-emergency levels. While no one can argue with a law that tries to limit exploitation of people in times of emergency, we can as economists analyze the impact of this government intervention.

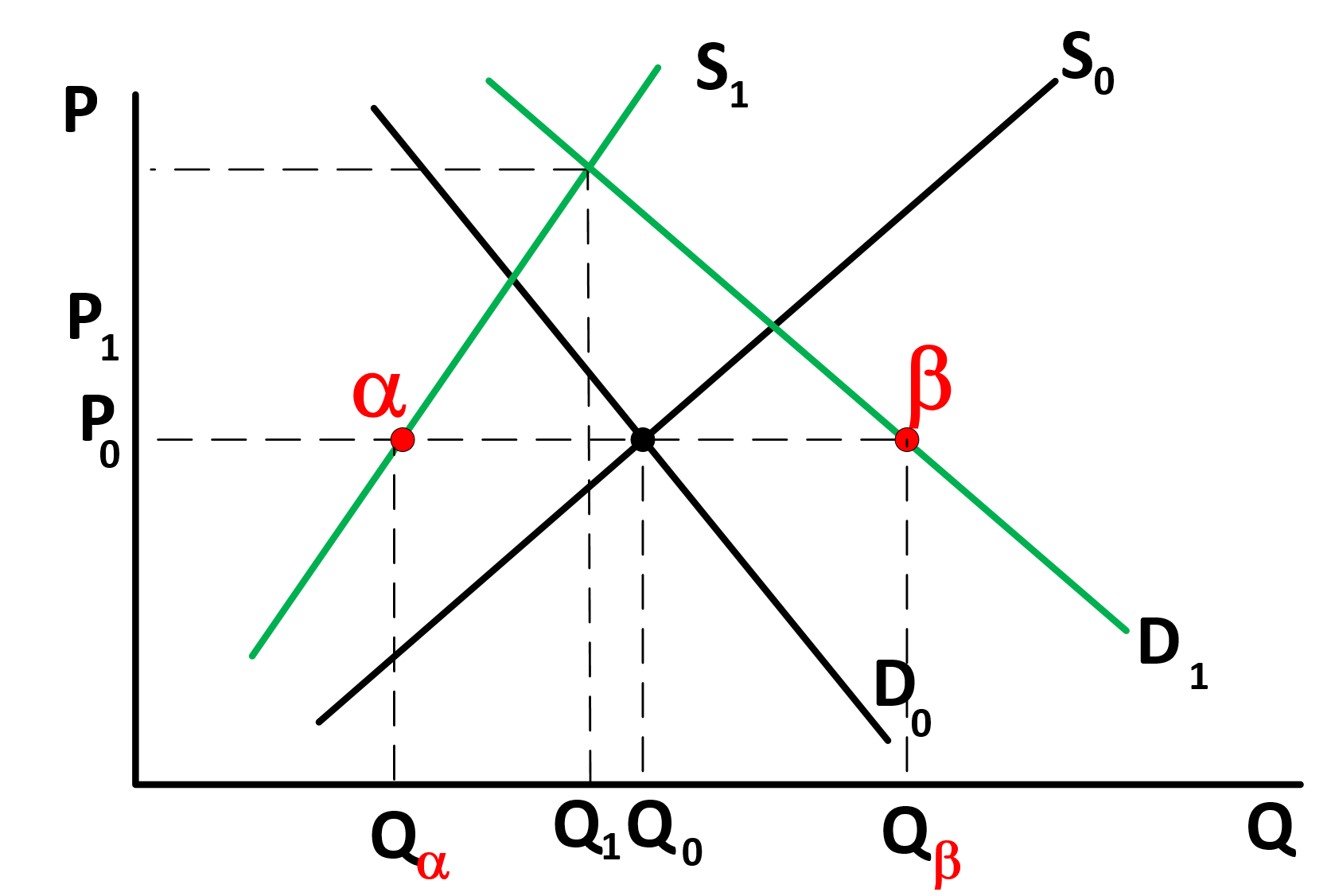
Consider the market for some essential commodity, such as ice. Assume the demand curve slopes down and the supply curve slopes up. Depict the equilibrium before the emergency. On the same graph show the impact of the emergency, clearly identifying any shifts in the curves and any changes in the market equilibrium in the market for ice, keeping in mind the following two outcomes of the hurricane:

* Electricity is not operating, refrigerators are useless, and people need to stock coolers to save essential foodstuffs.
* The local ice plants have lost much capacity due to the hurricane’s disruption of their business.

If the Florida Price Gouging Statute is in effect, depict this price ceiling on the graph, identify its impact on the market for ice, and discuss the efficiency of this statute in the eyes of economists.

(Both a graph and a narrative are needed for this question)

[60 points]



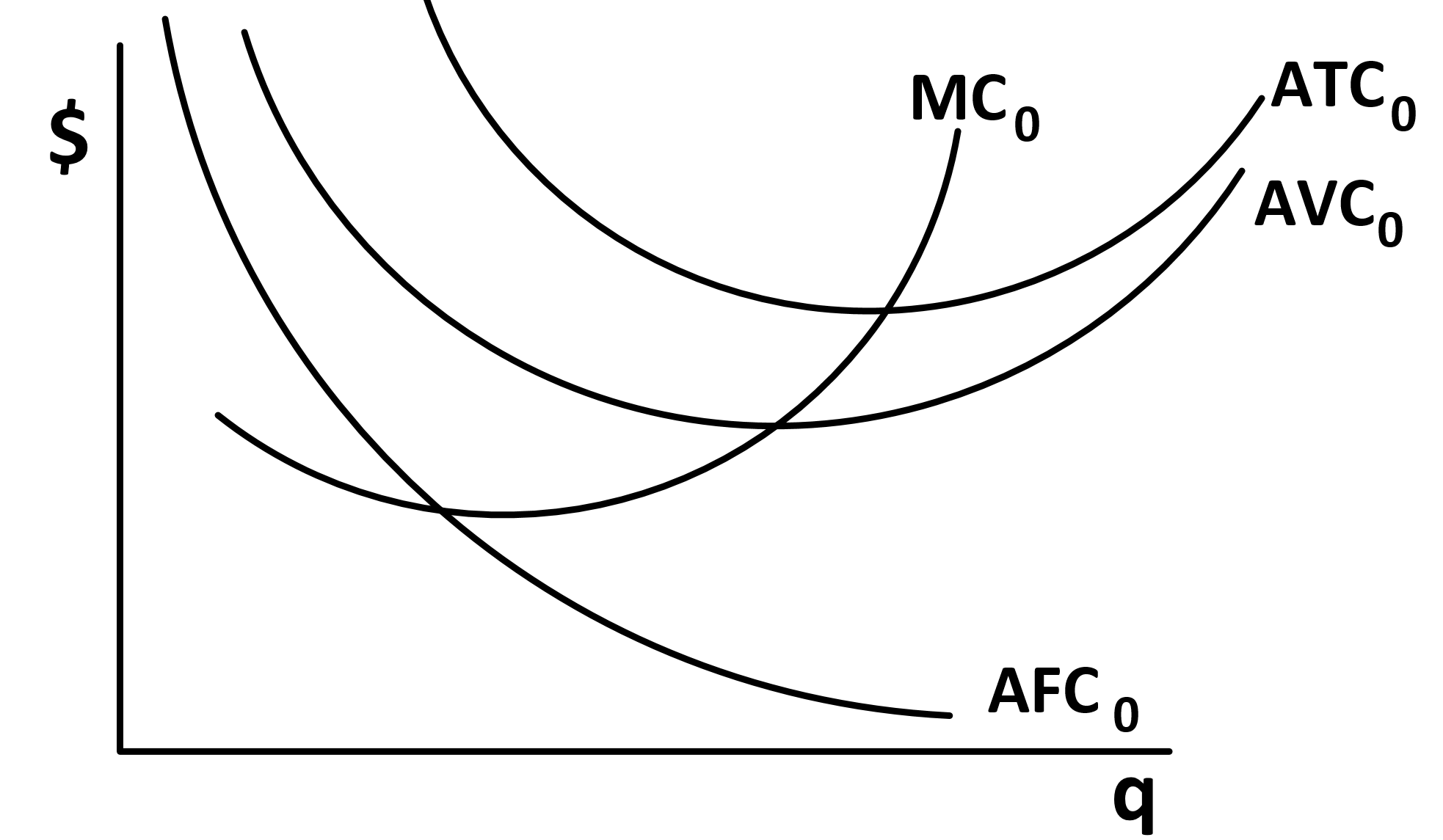
**The hurricane has increased the Demand for ice due to the loss of refrigerators and the need for coolers. It has also reduced the Supply of ice. The new equilibrium would be at P1 and Q1 above without the Price Gouging Statute. No matter how you drew your “new” curves, the price is unambiguously higher. However, we cannot be sure if Q1 is more or less than Q0. It depends on how much you shift S and D.**

**The Price gouging statute means that consumers want to be at Q but only Q is supplied. This is an inefficient outcome.**

Questions 3, 4, 5, 6, 7, and 8 deal with the same subject: Illinois gasoline taxes. Two months ago, on July 1, 2019, the State of Illinois raised gasoline taxes by $.19 (19 cents) per gallon of gas.

1. For this question, please model the short -run impact of this tax on a typical Illinois gas station. The horizontal axis will be **qgas** (the output of this particular producer) and the vertical axis will measure **price** in dollars, **$**. This firm is subject to the same Law of Diminishing Marginal Product we discussed in class. Begin by graphically depicting the “Family of Short Run Cost Curves” (AFC, AVC, ATC, MC) for this producer in late June, ***prior to*** the implementation of the new gasoline tax (you must submit a graph).

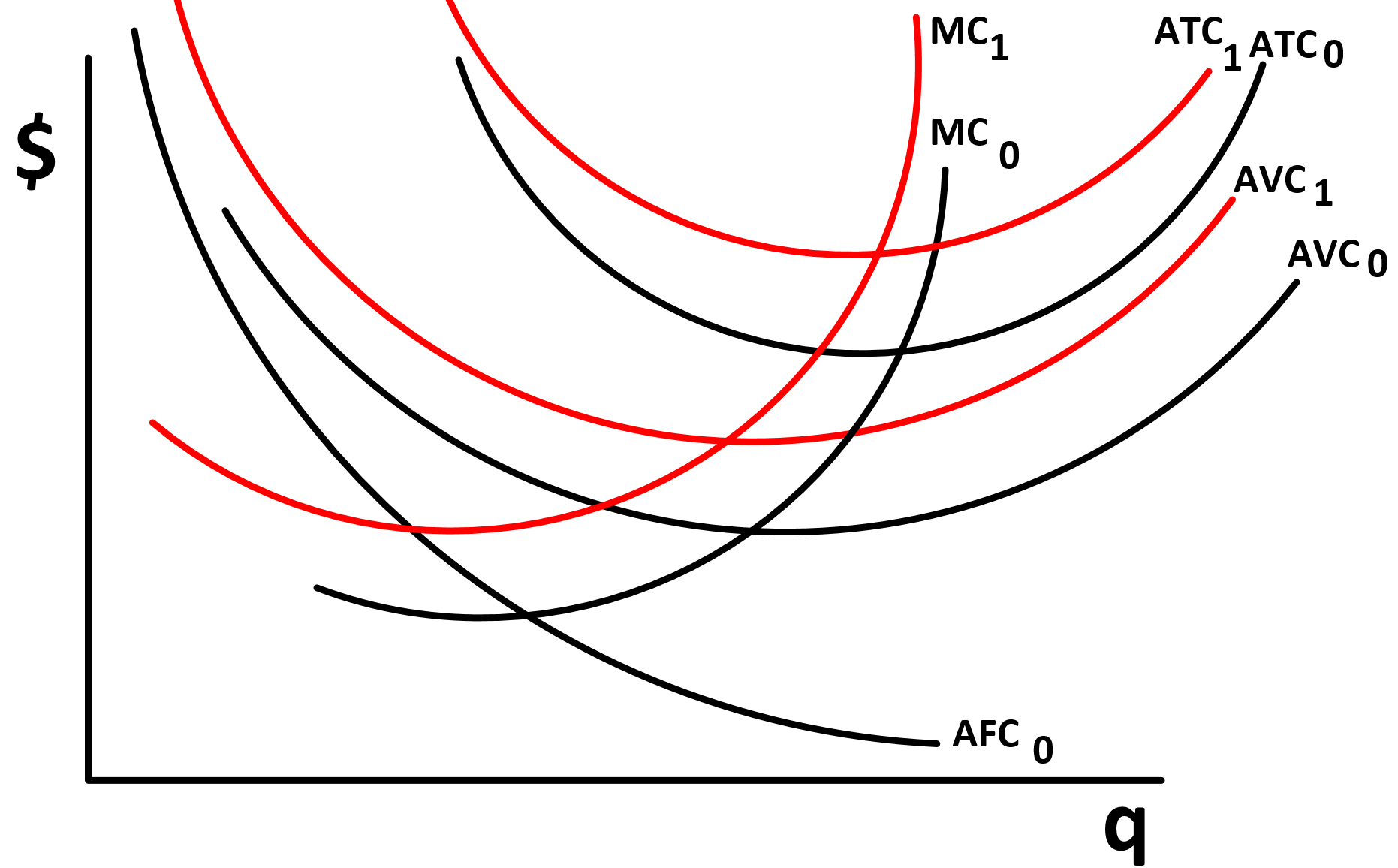
(Only a graph is needed for this question)

[20 points]  


1. Now, suppose the new tax is imposed on Illinois gasoline stations. Draw a second graph, showing **both** the set of original curves you showed in Question 3 as well as the new cost curves reflecting the additional 19 cents per gallon tax in place. Be sure to indicate which curves depict the pre-tax scenario and which depict the post-tax scenario (for example, by drawing them pre-tax and post-tax curves in different color and using clear labels).

(Both a graph and a narrative are needed for this question)

[30 points]



**The increased tax is a per unit tax so it increases MC, VC and TC but not FC.**

1. Explain why each of the four cost curves was or was not affected by this change, as applicable, between your graphs in Question (3) and Question (4) (pre- and post-tax). Did this tax increase impact fixed costs or variable costs? Explain.

(Only a narrative explanation is needed for this question)

[20 points]

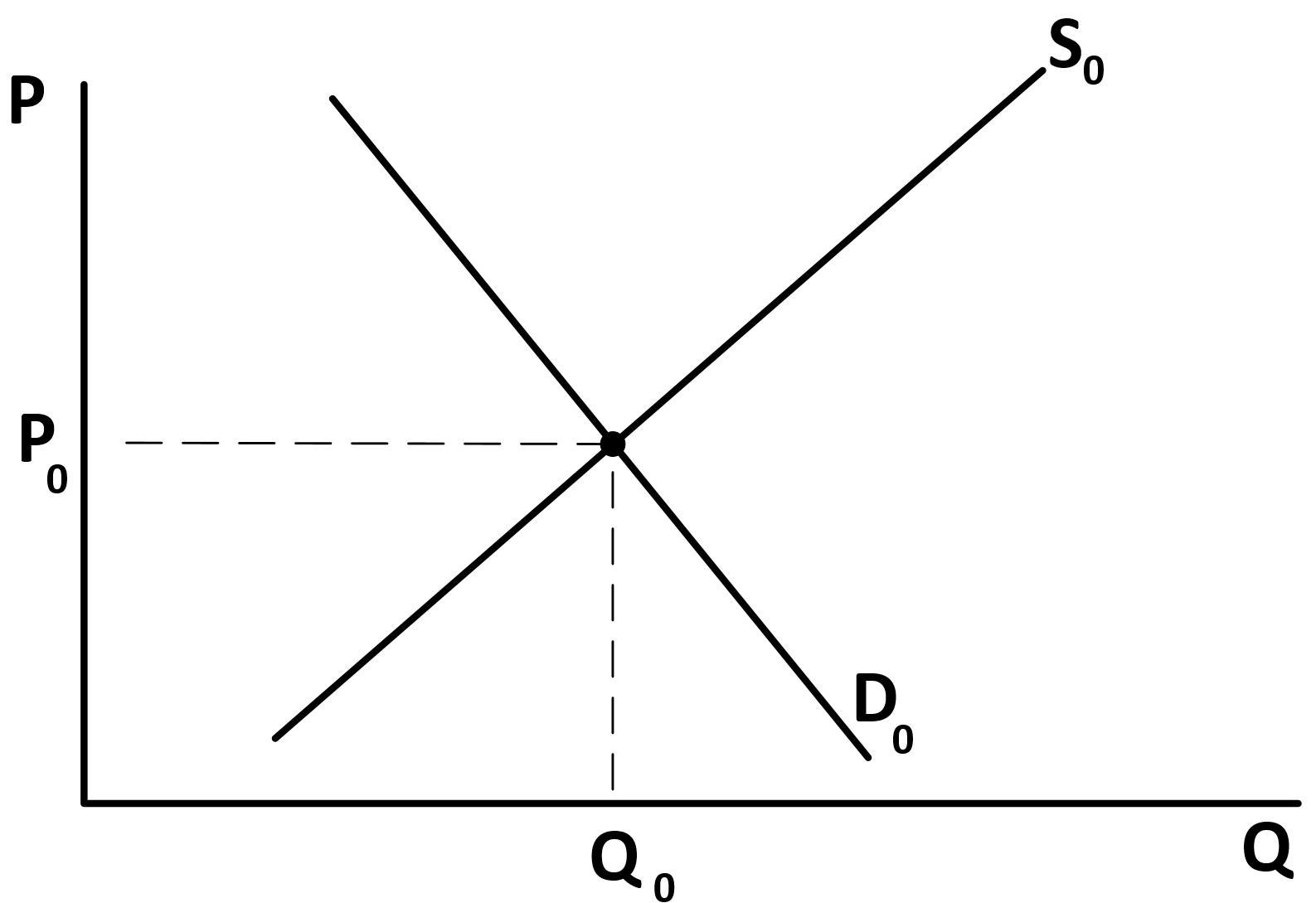
**There is no change in FC so the AFC stays the same. However, MC is higher. And, the increase in VC will cause both AVC and ATC to increase.**

Questions 6, 7, and 8 continue analyzing the impact of the July 1, 2019 increase in the gasoline tax in Illinois. For this analysis, we turn our attention away from the individual firm (such as questions 3, 4, and 5) and focus on the market faced by Illinois gasoline stations. On the horizontal axis, show Qgas and P on the vertical axis, and show a downward-sloping demand curve and upward-sloping supply curve.

1. Graphically depict the market for Illinois gasoline *prior* to the July 2019 increase in gasoline tax. Clearly indicate equilibrium Q and P on the graph.

(Only a graph is needed for this question)

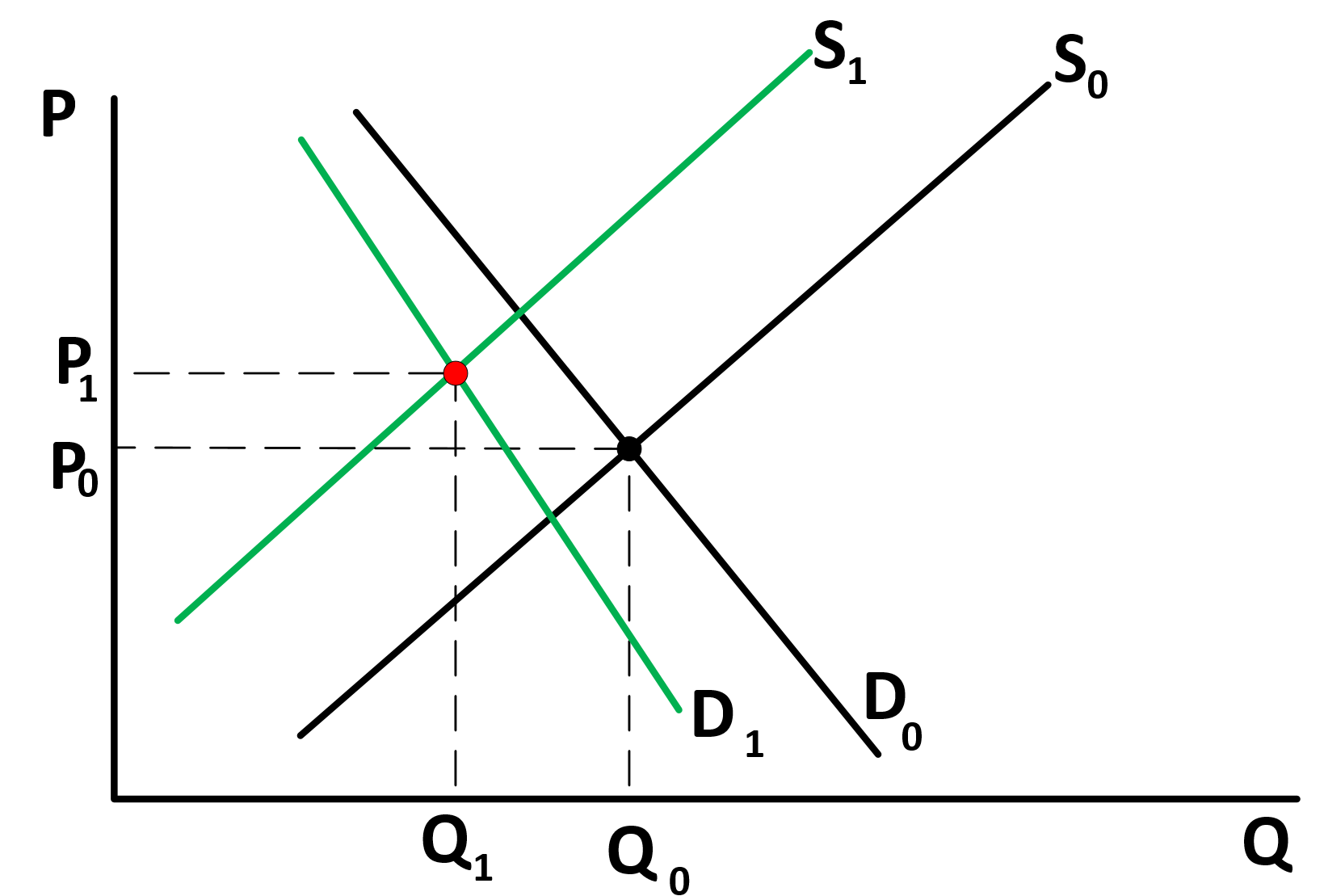
[10 points]



1. Continue the analysis of the Illinois gasoline market. Now it is past July 2019 and the market has changed. The gasoline tax is in place for all Illinois gasoline stations. In addition to the gasoline tax increase, Illinois dealers on average are noticing that many of their customers are going across the border to buy gasoline in Wisconsin, Iowa, Missouri and Indiana. Not all customers can do this, as they live far from a border. But there is a clear impact on the market for Illinois gasoline producers. Using the graph you constructed for Question (6), build a new graph showing the impact of the Illinois gas tax increase ***and*** the shift of some Illinois consumers to border state gas stations, clearly indicating any shifts in the demand and/or supply curves and the resulting equilibrium Price and Quantity. Provide a narrative explaining the shifts.

(Both a graph and a narrative are needed for this question)

[40 points]



**The increase in the gasoline (excise) tax shifts the S curve back to S1 (shift to the northwest). The decrease in the number of customers due to border crossing will dampen Demand, shifting the D curve down (or “back” or to the southwest). P1  and Q1 is the result.**

1. Regarding your analysis of question 7, what can you *unambiguously* say about the effect of the two events in question 7 (increase in Illinois gas tax and some Illinois customers going out of state) on equilibrium quantity and the equilibrium price of gasoline purchased in Illinois? Explain.

(Only a narrative explanation is needed for this question)

[35 points]

**The excise tax shifts the Supply curve back (or “up”…to the northwest on the graph). The shrinking customer base diminishes Demand (the curve shifts “down” or “back” or to the southwest on the graph). Both of these lead to an unambiguous drop in equilibrium Q. However, we cannot be sure about price. The graph I drew for question #7 had P increasing from P0. However, if I had drawn the Demand curve with a larger shift, is quite possible that P1 would be lower than P0. The effect on P from these two events (excise tax and customer shrinkage) is clearly ambiguous.**