Price Theory I: Problem Set 7 Question 2

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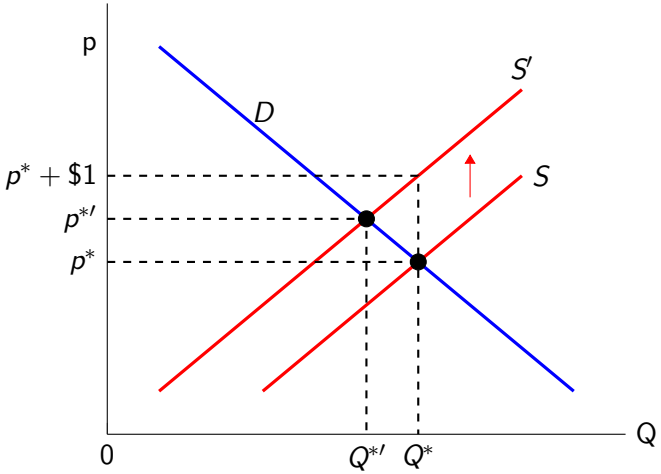
Problem Set 7 Question 2

"*True, False, or Uncertain*: In a competitive cigarette market, a $1-per-pack excise tax levied on manufacturers would not increase market-average retail cigarette prices by more than $1 per pack."

Possible Answer #1



Possible Answer #1

- Suppose cigarettes are an **undifferentiated** product produced by many firms in a competitive market (as the question considers).
- By definition, an excise tax increases the marginal cost of producing a pack of cigarettes by the tax amount for all firms at any level of production.
- In aggregate, this also shifts the cigarette supply curve up by the tax amount.
- In a competitive market, the intersection of supply (industry marginal cost) and demand determines price.
- Since the supply curve shifts up by a \$1, the supply curve is (weakly) upward sloping, and the demand curve is (weakly) downward sloping, the price of cigarettes increases by no more than \$1.
  - Note that perfectly inelastic demand and perfectly elastic supply is the "best case" for increasing prices, and results in a \$1 price increase.
- **(An) Answer:** True

Possible Answer #1

- If you found the old answers on the Dropbox, this is what everyone put.
- However, it's not a great answer, it's missing some important parts:
  - "Market-average retail cigarette prices" suggests thinking about **differentiated** products along with total industry revenues and quantities.
  - A "$1-per-pack excise tax" suggests thinking about how the tax might affect differently priced products.

Possible Answer #2

- Suppose cigarettes are a **differentiated** product produced by many firms in a competitive market.
- Specifically, suppose there are different qualities of cigarettes, where pre-tax market prices are increasing in quality and different qualities are substitutes.
- Since the excise tax is a dollar amount, not a percentage, the tax is a lower percentage of high-quality cigarette prices than low-quality prices.
- This can change the relative prices between high- and low-quality cigarettes and, depending on parameters, could shift consumer demand enough towards high quality cigarettes to increase the market-average price by more than \$1.

Possible Answer #2

- A simple concrete example:
  - Suppose there are two types of cigarettes, "high" quality and "low" quality. Consumers inelastically demand a composite cigarette good which gives higher weight to high-quality cigarettes. Let 1.2 packs of low-quality cigarettes be equivalent to 1 pack of high-quality cigarettes.
  - Supply of both types of cigarette is perfectly elastic at marginal cost (and so initial price) \$1 for low-quality and \$1.3 for high-quality.
  - Without the tax, consumers buy only the low-quality cigarette ($\$1 < \frac{\$1.3}{1.2}$), at a price of \$1.
  - With the tax, consumers buy only the high-quality cigarette ($(\$1 + \$1) > \frac{\$1.3+\$1}{1.2}$), at a price of \$2.3.
  - A \$1 excise tax has increased the market-average price of cigarettes by more than \$1.
- **(An) Answer:** False

Possible Answer Comparison

- Both of these answers, given the necessary assumptions, are "correct" in some sense (though that doesn't mean they'll get full points).
- The first answer depends on cigarettes being undifferentiated, an easy assumption to forget. Additionally, it's missing some important parts from the question.
- The second answer is more general, since it also allows for undifferentiated products (though the price would not rise by more than \$1 in that case). It's also more likely to apply in the real world, since cigarettes are differentiated.
- Second Answer $\gg$ First Answer (with explicit undifferentiation assumption) $>$ First Answer (without explicit undifferentiation assumption).

TFUs

- Goal in TFUs isn't to look for edge cases or particular counterexamples so you can say false (or uncertain) and move on, but rather general mechanisms which lead to some result (potentially depending on parameters).
- You should also think about what is likely to occur in the real world.