# HW 3 Cigarette Taxation in Florida

Worked w/ Austin, River, + Alex

Sunday, September 13, 2020 7:03 AM

Suppose the elasticity of supply of cigarettes is 10.

1) Find estimates of the elasticity of demand for cigarettes, the current tax rate on cigarettes, average price, and annual quantity sold in Florida. Provide your sources.

Average price per pack: $5.50
https://www.salestaxhandbook.com/florida/tobacco
Current tax rate: $1.34/pack = 24.36%
https://www.salestaxhandbook.com/florida/tobacco
Elasticity of Demand: -.3
https://opentextbc.ca/principlesofeconomics/chapter/5-3-elasticity-and-pricing/
Quantity smoked: 14.6 cigarettes * .167 smokers/population * 21477737
population = 52,367,018.3534/year
https://www.sun-sentinel.com/health/fl-reg-florida-smokers-20180822-story.html
https://truthinitiative.org/research-resources/smoking-region/tobacco-use-florida-2019
https://www.census.gov/quickfacts/FL

2) How high would the price, including the tax, need to be to cut consumption by half?

$\frac{\%\Delta Q}{\%\Delta P} = -.3 \rightarrow \frac{-.5}{\%\Delta P} = -.3 \rightarrow \frac{-.5}{-.3} = \%\Delta P \rightarrow \%\Delta P = 1.667$

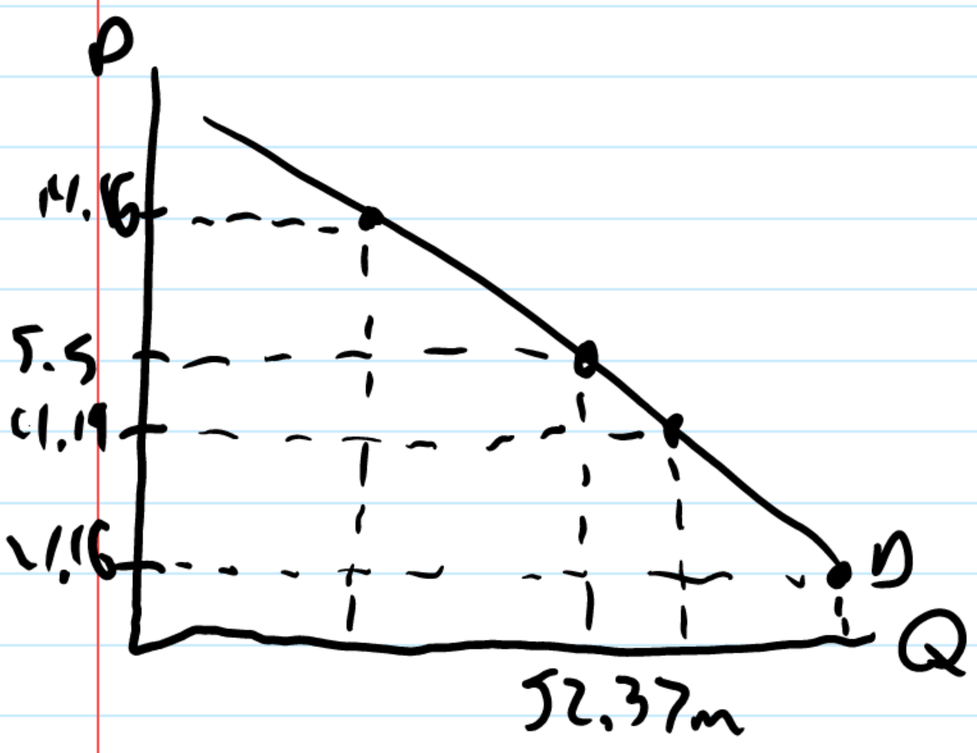
The new price would be $(1.667 \cdot 5.5) + 5.5 = 14.6685$

3) How high would the tax have to be to push the after tax price that high?

$14.1685 - 5.5 = 9.1685$
$9.1685 = (5.5 - 1.34) \cdot X$
$X = 9.1685 / (5.5 - 1.34)$
$X = 9.1685 / 4.16$
$X = 2.2039$

New tax is 220.39% = $9.1685

4) Estimate the consumer and producer burden of the current cigarette tax.




$-.3 = \frac{\Delta Q}{Q}\left(\frac{P}{5.5-P}\right)$ $\quad 1A = \frac{\Delta Q}{Q}\left(\frac{P}{4.16-P}\right)$

$-.03 = \frac{4.16-P}{5.5-P} \rightarrow -.165 + .03P = 4.16 - P$
$1.03P = 4.325$
$P = 4.199$

Tax = 1.34

$CB = (5.5 - 4.199)(52.36m) = \$68.12m$
$PB = (4.199 - 4.16)(52.36m) = \$2.04m$

5) How sensitive are your answers to modest errors in estimates of the elasticities of demand and supply?

The elasticity of demand is relatively small, so it is less sensitive to small changes while the elasticity of supply is a larger number and therefore more sensitive to small changes.

6) Do you think the tax creates a DWL or improves efficiency? Why?

I'm not really sure if it creates a DWL or improves efficiency. I can't imagine that raising the tax is very efficient. Most people who smoke are addicted and will continue to purchase cigarettes no matter the cost.