Example Tax Policy

Market details:

Demand side:

$$WTP_M = 2000 - 5Q_M^D$$

Supply side:

10 sellers

Each with $WTA_i = 150Q_i^S$

Cases:

1	BAU, no tax	$T = 0$
2	New unit sales tax	$T = \$200$

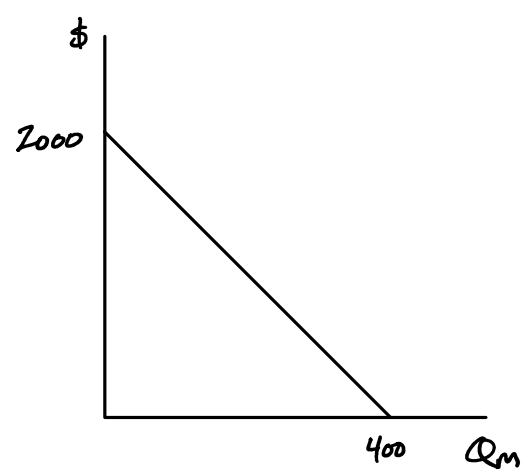
Start analysis by deriving market demand and supply

Demand

$$WTP_M = 2000 - 5Q_M^D$$
$$WTP_M = P^d$$

$$P^d = 2000 - 5Q_M^D$$

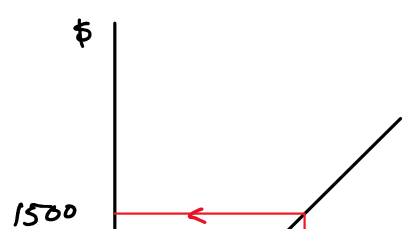
$$Q_M^D = \frac{2000 - P^d}{5}$$



Supply

Individual supply:

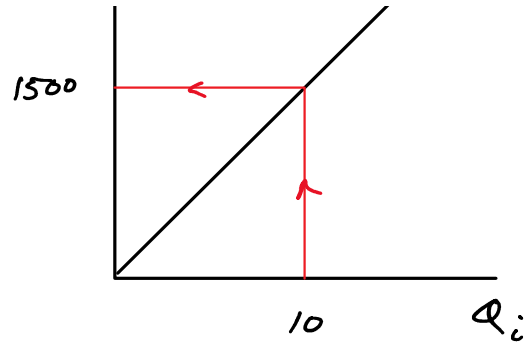
$$WTA_i = 150Q_i^S$$
$$WTA_i = P^S$$



$$WTA_i = 150Q_i^S$$
$$WTA_i = P^s$$

$$P^s = 150Q_i^S$$

$$Q_i^S = \frac{P^s}{150}$$



Practice deriving supply from WTA:

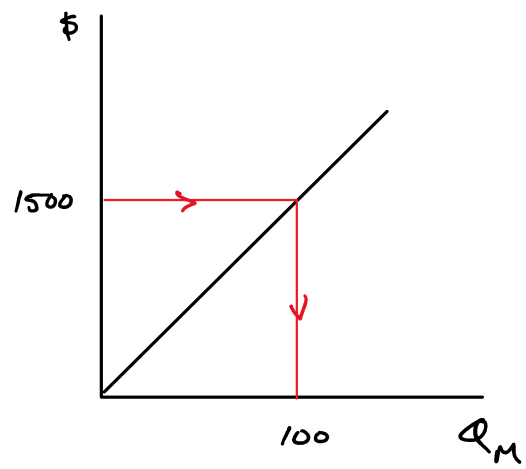
Economic Skills Project exercise MS-101
https://wilcoxen.maxwell.insightworks.com/esp/ms101/

Market supply:

$$Q_M^S = \sum_{i=1}^{10} Q_i^S$$

$$Q_M^S = 10Q_i^S$$

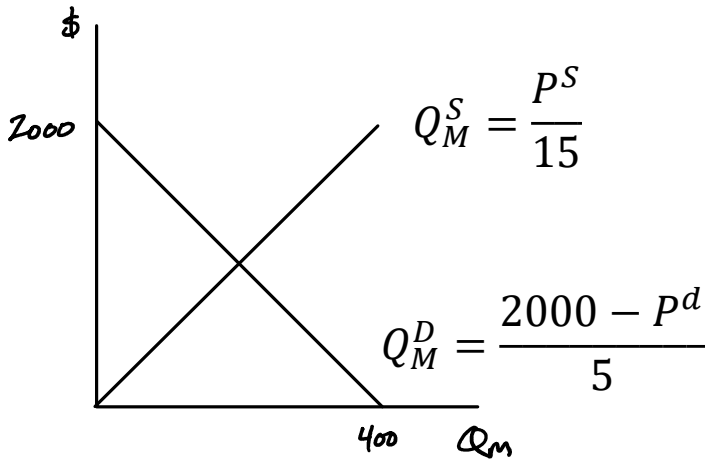
$$Q_M^S = 10\left(\frac{P^s}{150}\right) = \frac{P^s}{15}$$



Practice deriving market supply from WTA:

Economic Skills Project exercise MS-101
https://wilcoxen.maxwell.insightworks.com/esp/ms151/

Combining into the market diagram:



Have four equations describing the equilibrium:

$$P^d = P^s + T$$

$$Q_M^D = \frac{2000 - P^d}{5}$$

$$Q_M^S = \frac{P^s}{15}$$

$$Q_M^D = Q_M^S$$

Very versatile: equations apply for *any* T