An Economic Theory Masterclass

Part V: Price or Quantity Constraints

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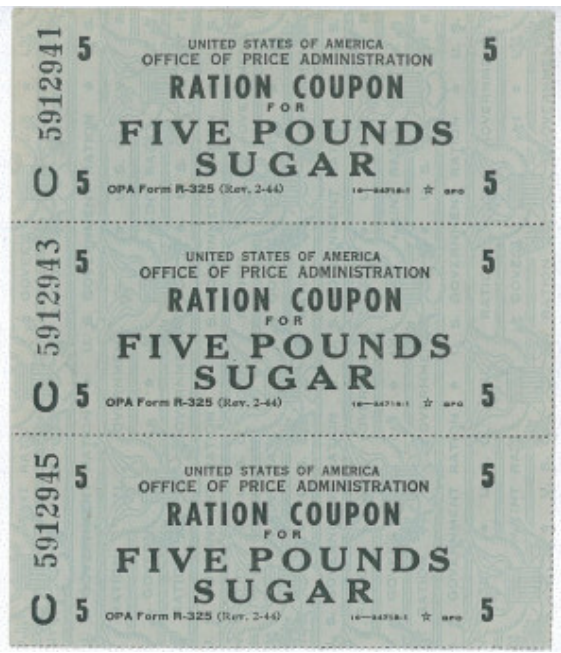
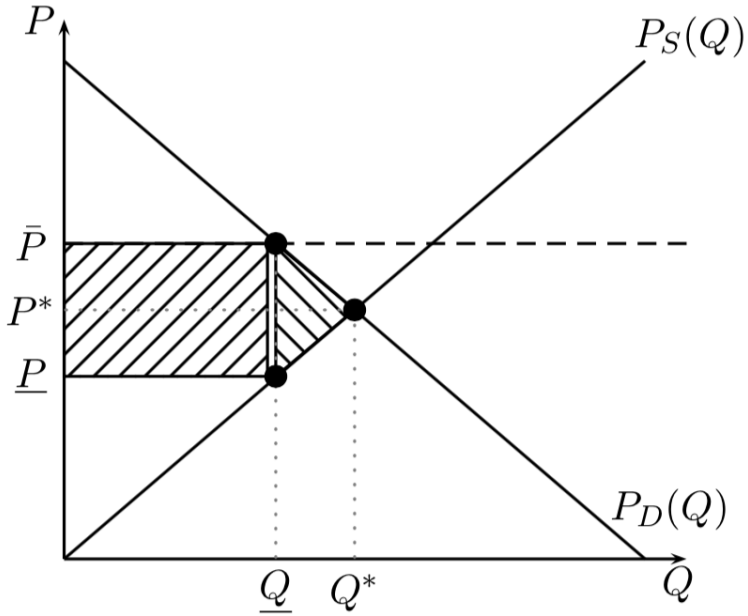
Officially Sanctioned Demand

- Some token or record must be kept of quantity
- Example: ration coupons in WWII for clothing, shoes, coffee, gasoline, fuel oil, etc.
- After Hurricane Sandy, cars with license plates ending in
  - an odd number or a letter can buy gas on odd-numbered days
  - an even number or zero can buy gas on even-numbered days.
- Example: fewer NYC taxi medallions than 1937



Quantity Ceilings with Tokens are Price Floors



- Lesson: Binding price or quantity constraints induce secondary markets that help clear the market.
- Assume a binding quantity ceiling $\underline{Q} < Q^*$.
- This induces a market for the token (medallion or coupon)
- binding price ceiling

$\Rightarrow$ supply is on the **short side of the market**

$\Rightarrow$ token has value $P_D(\underline{Q}) - P_S(\underline{Q}) = \bar{P} - \underline{P} > 0$

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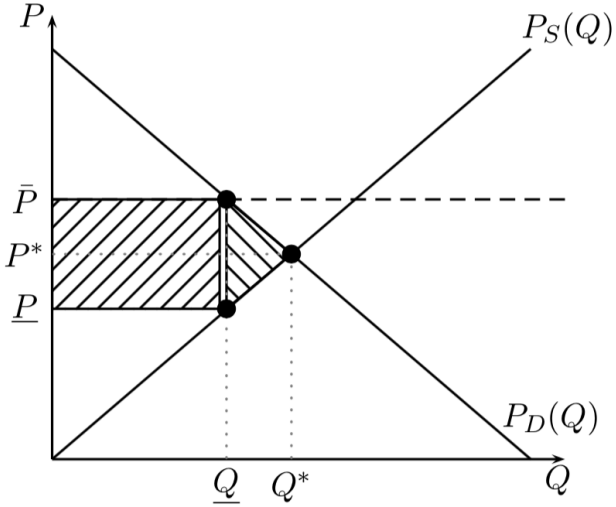
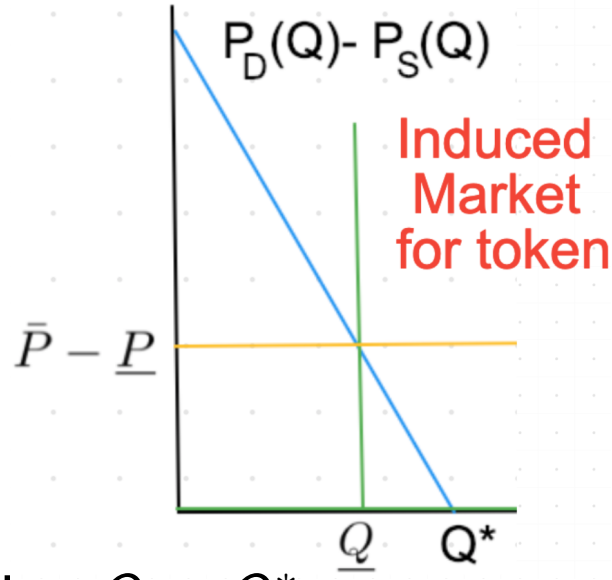




- Assume a binding quantity ceiling $\underline{Q} < Q^*$.
- Demand price exceeds supply price at that quantity
- Marshallian quantity adjustment is blocked
- This induces a market for the token (medallion or coupon)
- binding quantity ceiling

$\Rightarrow$ supply is on the **short side of the market**

$\Rightarrow$ token has value $P_D(\underline{Q}) - P_S(\underline{Q}) = \bar{P} - \underline{P} > 0$

- Efficient trades don't happen $\Rightarrow$ triangular deadweight loss, provided the coupons or medallions are efficiently traded

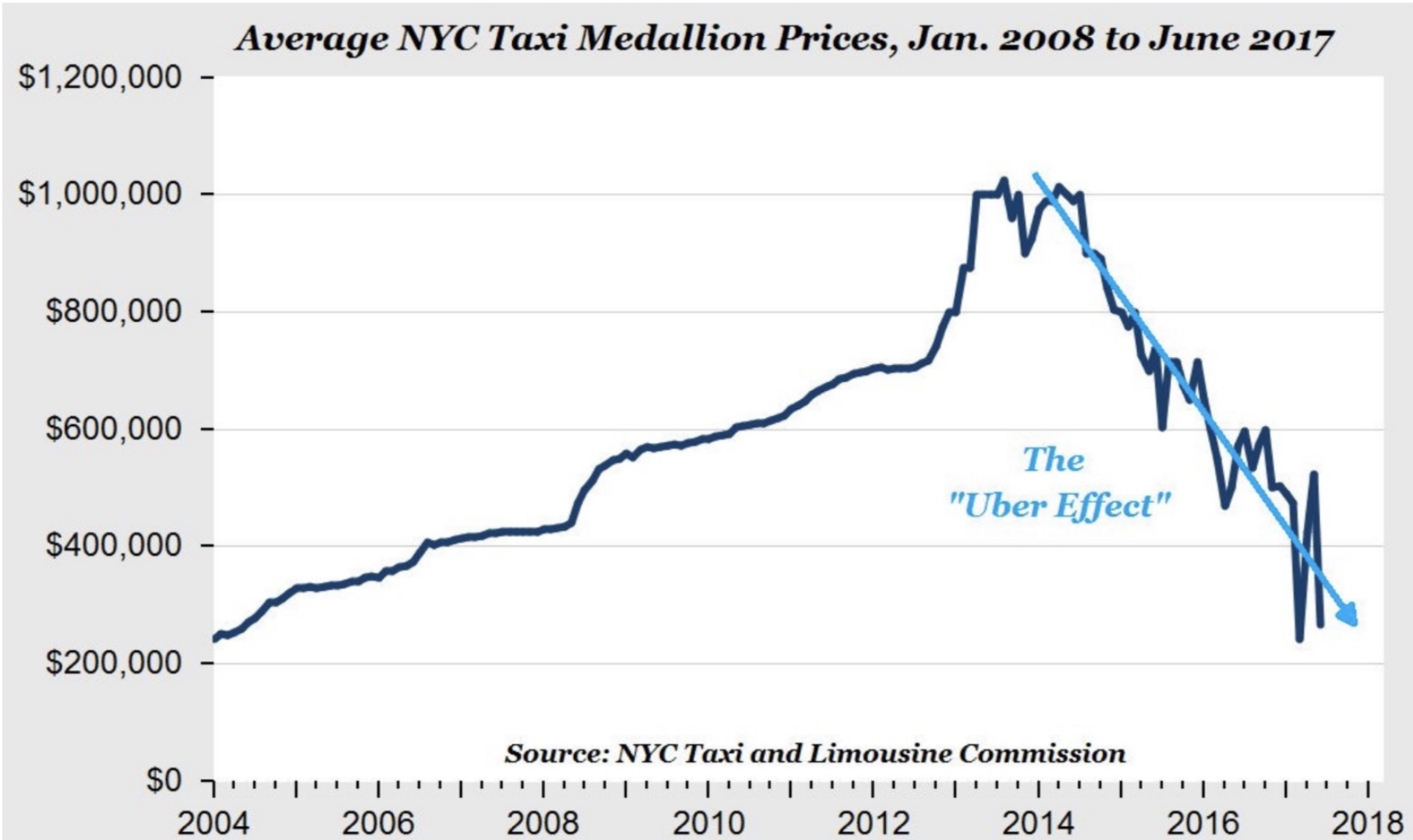
Taxi Medallion Example

- 1937 Demand $P_D(Q) = 28,000 - Q$.
- Supply $P_S(Q) = Q$
- Taxis $Q^* = 14,000$
- Demand in year t is $P_D(Q|t) = 28,000 + 100t - Q$
- Assume taxi medallions cost $M(t)$
- Supply in year t is $P_S(Q) = Q + M(t)$
- $P_D(Q^*|t) = P_S(Q^*)$

$\Rightarrow 28,000 + 100t - Q^* = Q^* + M(t)$

$\Rightarrow M(t) = 100t$

Medallion Value in the Uber Era (2009–)

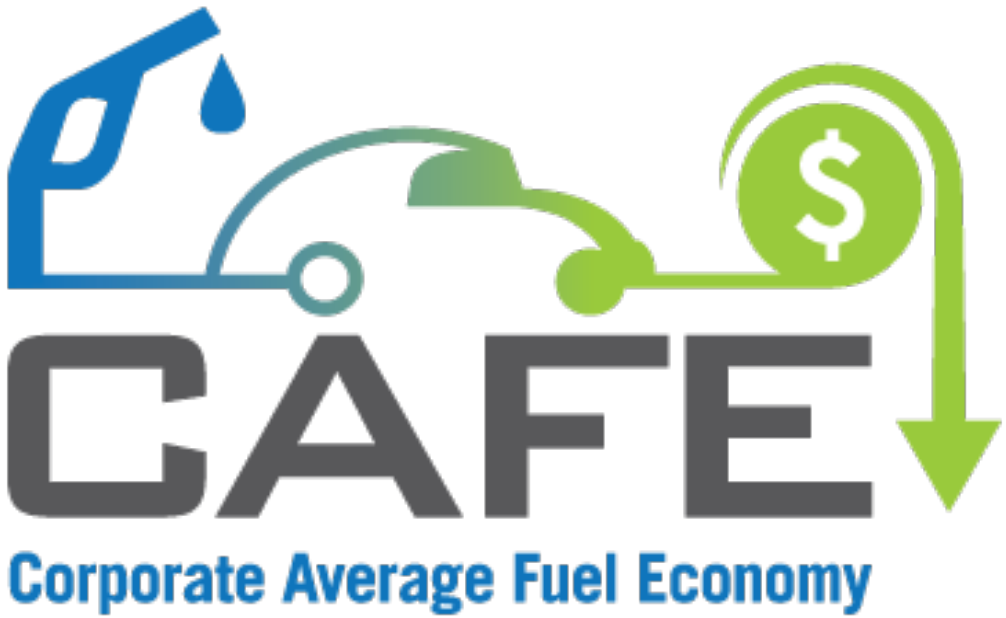


Corporate Average Fuel Economy: A Car/Truck Ratio

- Corporate Average Fuel Economy (CAFE) standards
  - 1985-2011: Car companies must average 27.5MPG for cars
  - Firms discounted fuel efficient sedans, sold trucks at a premium
  - Profit maximization over sedans s and trucks t becomes:

$$\max_{x,y}[sP_S(s,t) - C_S(s)] + [tP_T(t,s) - C_T(t)] \text{ s.t. } s \geq \alpha t$$

  - What is the efficient Pigouvian tax approach?



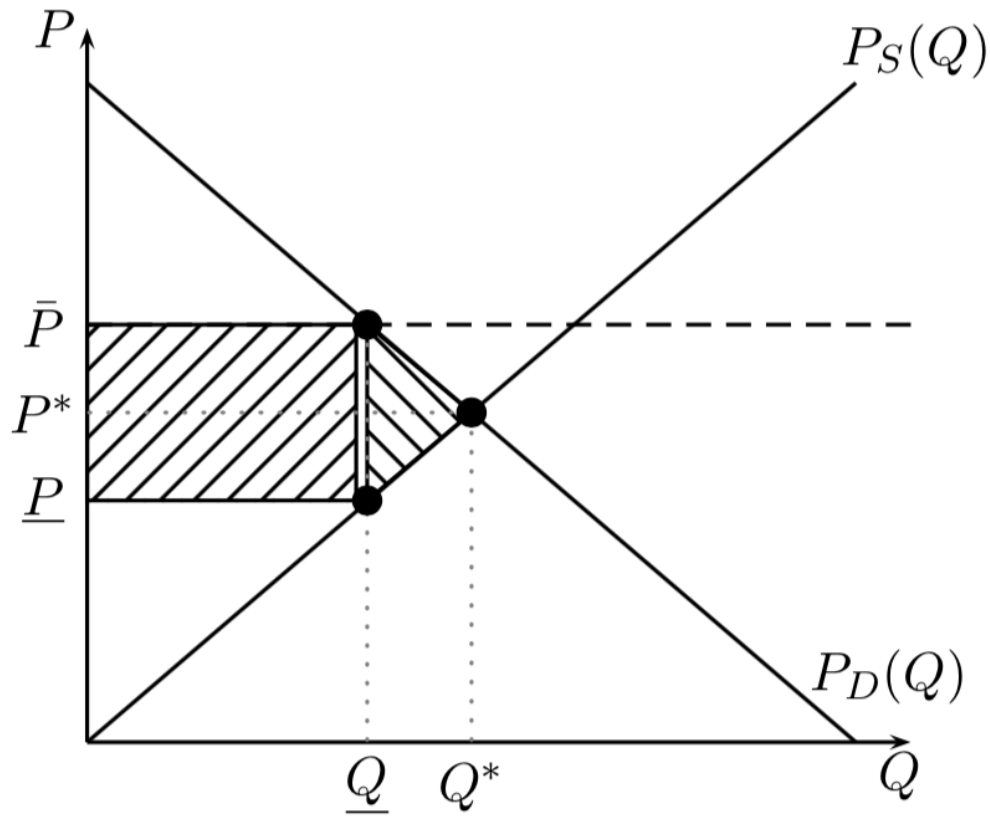
The Minimum Wage: Price Floors with Tokens

- Assume a binding price floor $\bar{P} > P^*$

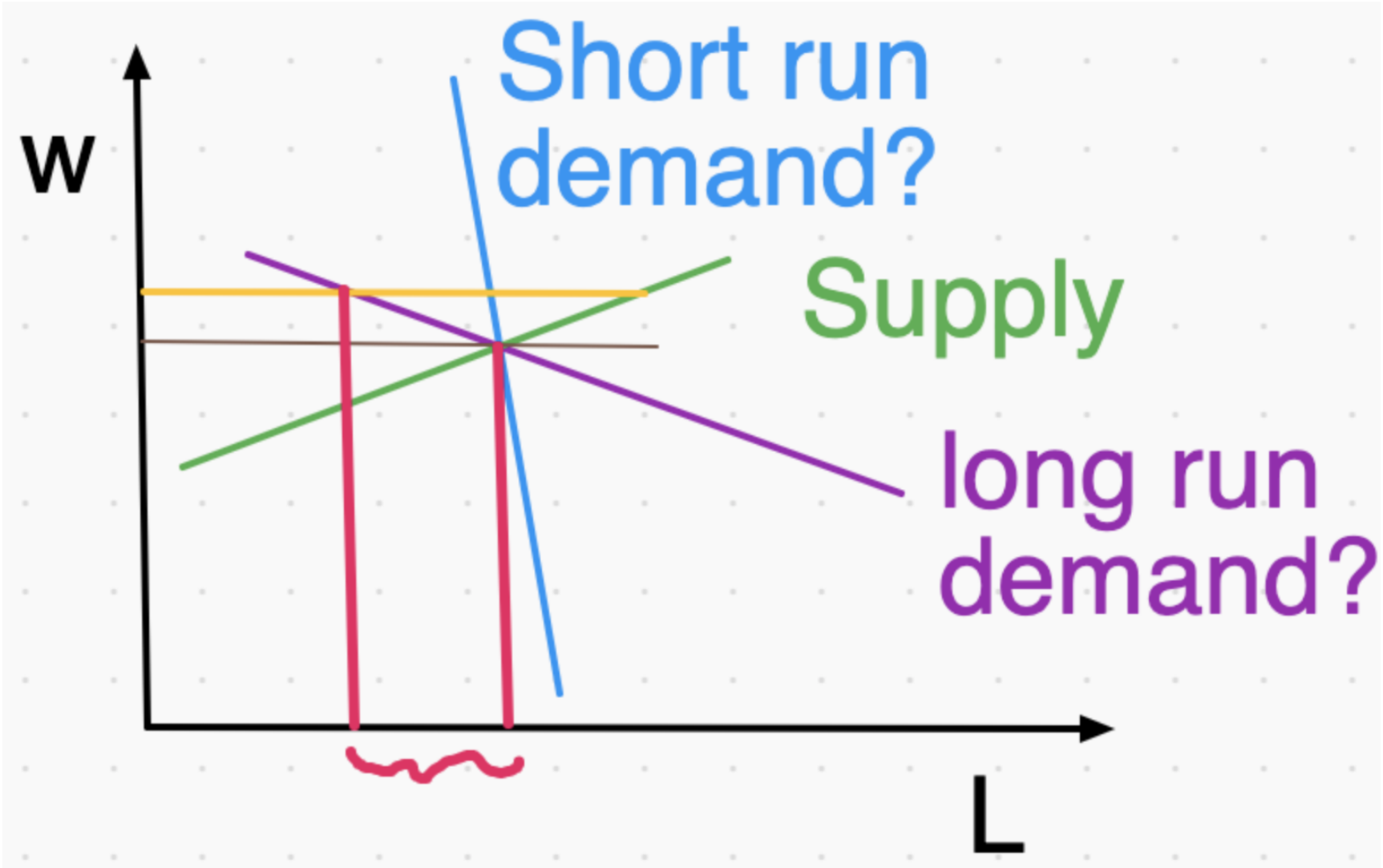
$\Rightarrow$ Quantity supplied exceeds that demanded

$\Rightarrow$ Assume a costly token clears the market

$\Rightarrow$ **Short side of the market** (demand) determines quantity $\underline{Q}$ traded, via $\underline{P} = P_S(\underline{Q})$.



Long run vs Short Run



The Minimum Wage is a Binding Price Floor

- A minimum wage leads to job losses with competitive demand
  - *Job losses are higher the more elastic is labor demand*
  - As depicted, total wage revenue falls *to employed workers*
  - High demand elasticity $\Rightarrow$ total wage revenue $\downarrow$ (2019 prelim)
  - Minimum wage has a bigger impact in the longer run, since demand is more elastic (Le Chetalier)
  - Job losses are unaffected by the supply elasticity

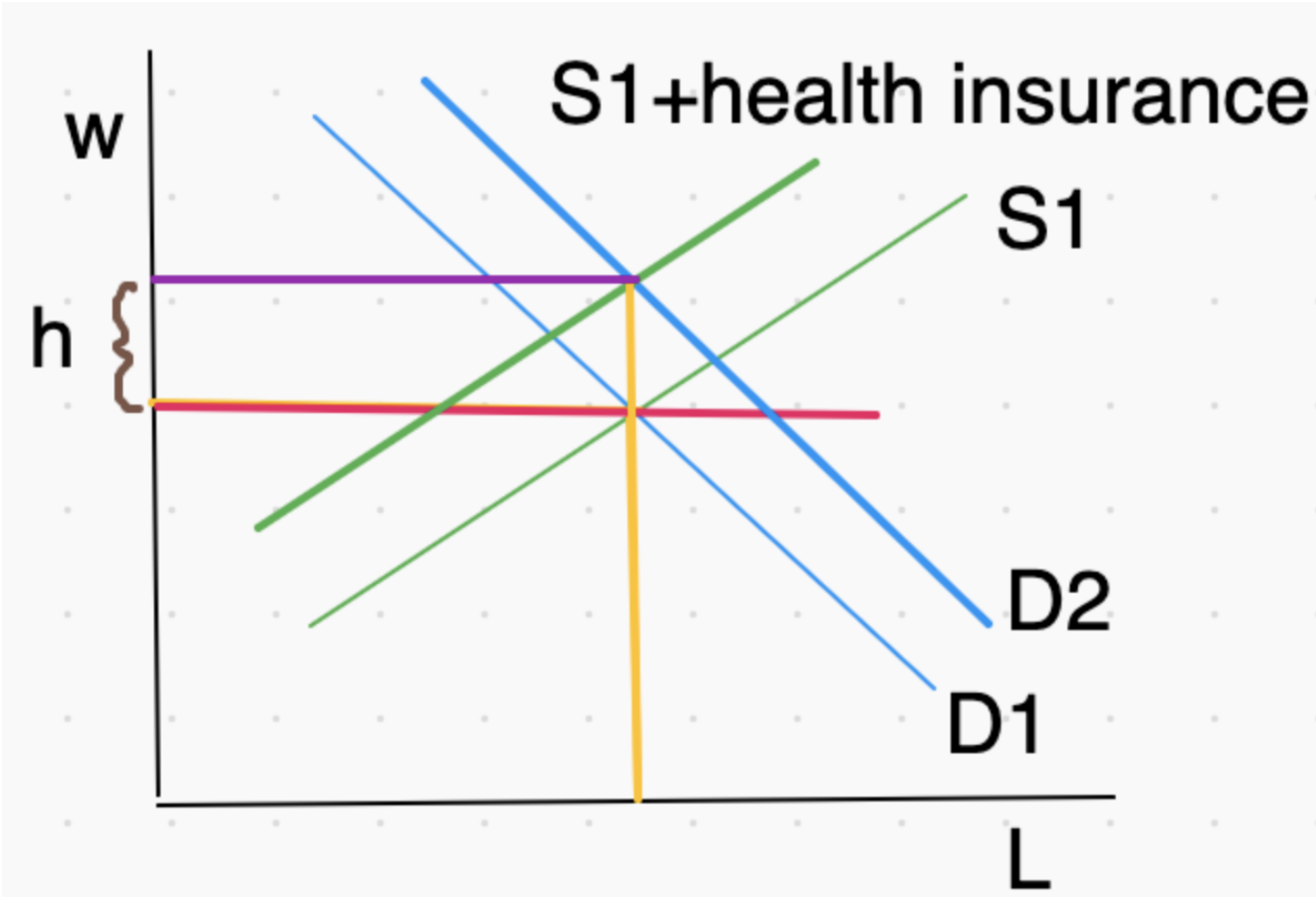
NYC Fast-Food Workers Stunned Some Are Being Fired after $15 Minimum Wage Hike

Serving as ground zero for the $15 minimum wage battle, New York City saw its fast-food workers also serve as the subjects in an experiment that completely ignored the laws of economics.

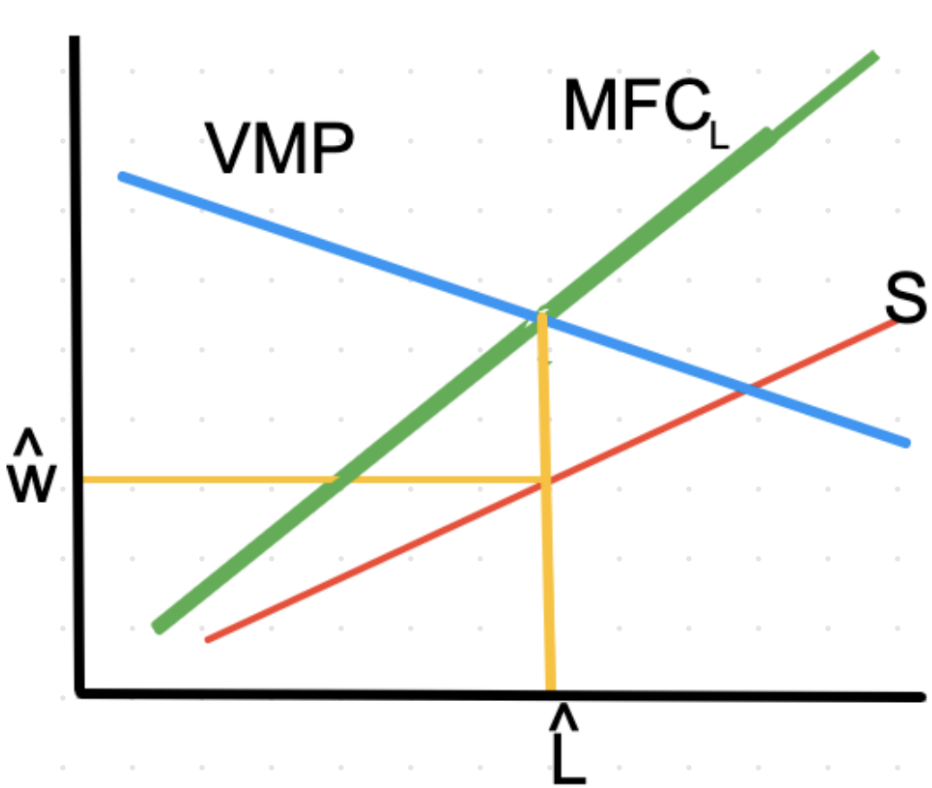
Wednesday, February 20, 2019

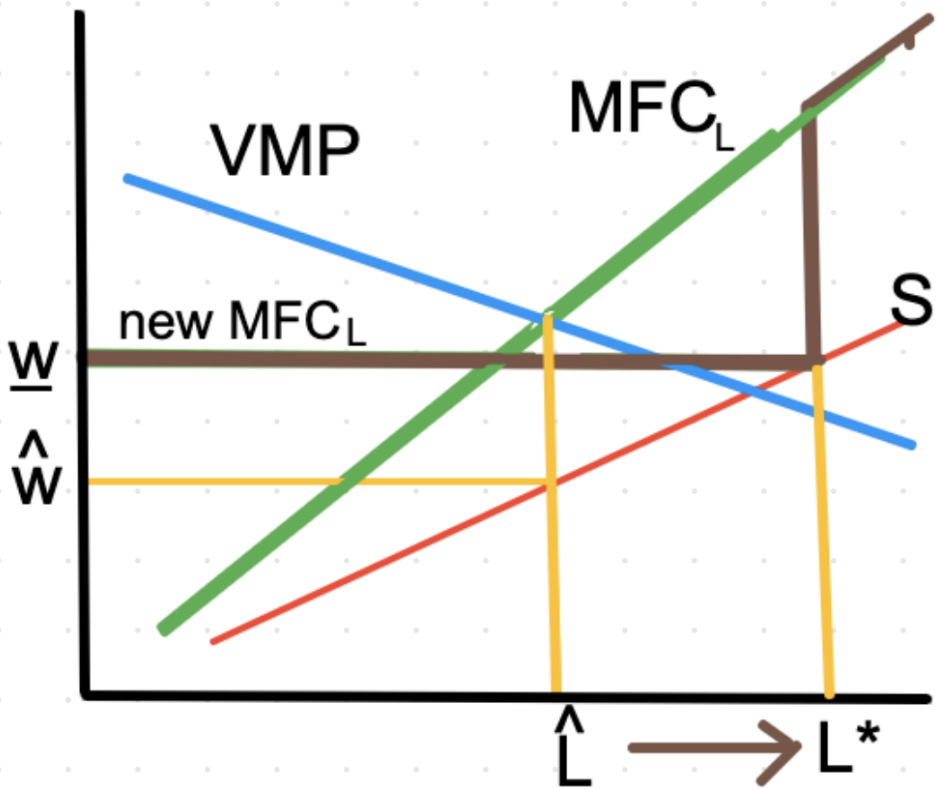
Employer-Provided Health Insurance in WWII

- In WW2, supply of workers fell and demand rose.
- Assume just the latter: demand rises from D_1 to D_2.
- The War Labor Board established wage controls
- Solution: Employer provided health insurance, valued at h to clear the market.



Minimum Wage with Monopsony





- Governments could at cost institute either a specific or percentage a wage subsidy.
- This entails a deadweight loss too, but by encouraging too much work (find it in the picture below).
- Maybe that's a good loss for us to bear!