Labor Supply Shocks with Fixed Prices

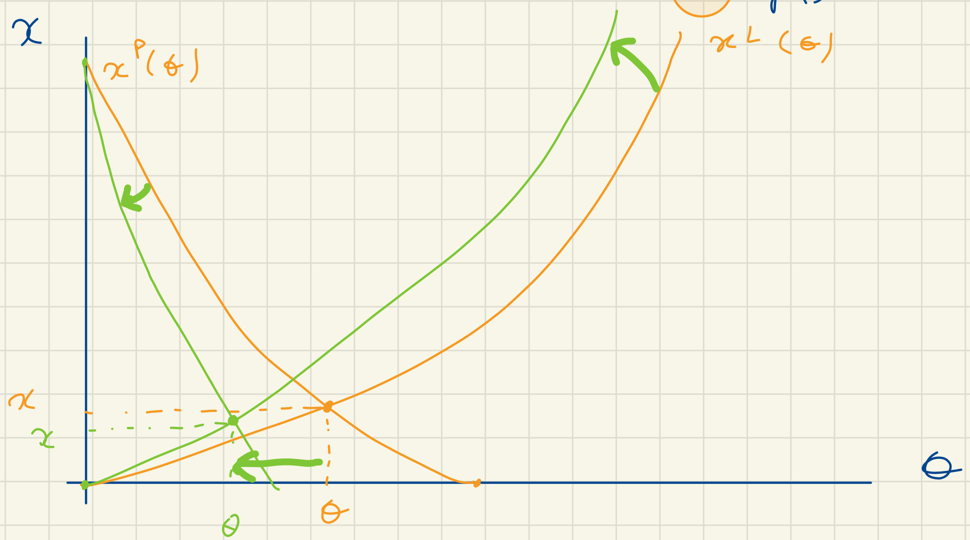
Pascal Michaillat
https://www.pascalmichaillat.org/t5.html

Positive labor supply shock. increase in h, size of labor force.

- $x = x^L(\theta) = f^{-1}\left(\frac{w/p}{a \alpha} h^{1-\alpha} \hat{f}(\theta)^{1-\alpha} [1+\hat{\tau}(\theta)]^{\alpha} \right)$

increasing

- $x = x^P(\theta) = \tau^{-1}\left(\left[\frac{X^{\varepsilon} \mu \alpha}{w \cdot h} \frac{1}{\hat{f}(\theta)} \right]^{1/\varepsilon - 1} - 1 \right)$



After an increase in labor force h:

- $\underline{\theta} \searrow$ $[\hat{f}(\theta) \searrow,\ 1-\hat{f}(\theta) \nearrow,\ \hat{\tau}(\theta) \searrow,\ q(\theta) \nearrow]$

- Assume that $x \uparrow$

. $y \downarrow$ b/c $y = \frac{X^{\varepsilon}}{[1+\tau(x)]^{\varepsilon - 1}} \frac{\mu}{p}$ (AD)

. $\frac{w \cdot e}{p \cdot y} = \alpha$ so $e \searrow$

$$\ell = \underbrace{\left[\frac{f(\vec{x})\, a\, \alpha}{w/p}\right]^{1/1-\alpha}}_{\nearrow} \cdot \underbrace{\left[\frac{1}{1+\hat{\tau}(\theta)}\right]^{\alpha/1-\alpha}}_{\nearrow} \qquad (LD)$$

so $\ell \nearrow$

$\Rightarrow$ contradiction: the model equations cannot all be satisfied if $x \nearrow$

$\Rightarrow$ so $\underline{x \searrow}$ $[f(x) \searrow,\ 1-f(x) \nearrow,\ \tau(x) \searrow]$

$$- \quad y = \frac{x^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \frac{\mu}{p} \qquad (AD) \qquad \text{so } \underline{y \nearrow}$$

$$- \quad \text{labor share: } \frac{w \cdot \ell}{p \cdot y} = \alpha \qquad \text{so } \underline{\ell \nearrow}$$

$$- \quad c = y / 1+\tau(x) \qquad \text{so } c \nearrow$$

$$- \quad n = \ell / 1+\hat{\tau}(\theta) \qquad \text{so } n \nearrow$$

Labor supply shock is the only shock that leads to higher employment ℓ but lower labor market tightness θ.