Labor Supply Shocks with Fixed Prices

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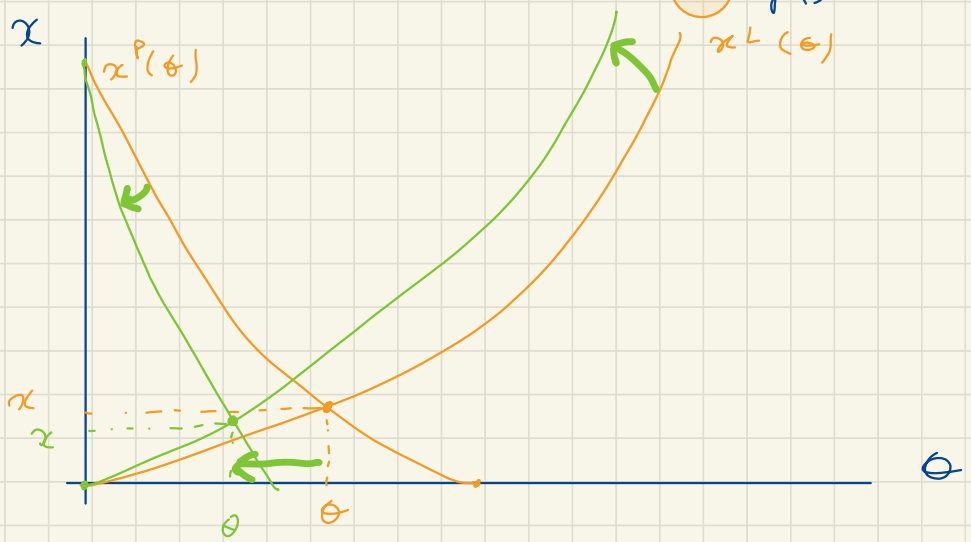
Positive labor supply shock. increase in h, size of labor force.

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

- $x = x^p(\theta) = \vec{\tau}^{-1}\left(\left[\frac{x^{\xi} \mu \alpha}{w \cdot h} \, \frac{1}{\hat{f}(\theta)} \right]^{1/\xi - 1} - 1 \right)$



After an increase in labor force h:

- $\theta \downarrow$ [$\hat{f}(\theta) \downarrow$, $1 - \hat{f}(\theta) \uparrow$, $\vec{\tau}(\theta) \downarrow$, $q(\theta) \uparrow$]

- Assume that $x \uparrow$

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

. $\frac{w \cdot l}{p \cdot y} = \alpha$ so $l \downarrow$

$$l = \left[\frac{f(x)\,a\,\alpha}{w(1-\tau)}\right]^{1/1-\alpha} \cdot \left[\frac{1}{1+\tilde{\tau}(\theta)}\right]^{\alpha/1-\alpha}$$

(LD)

so l ↑

$\Rightarrow$ contradiction: the model equations cannot all be satisfied if α ↑

$\Rightarrow$ so α ↓ [$f(x)$ ↓, $1-f(x)$ ↑, $\tau(x)$ ↓]

- $y = \frac{x^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \frac{\nu}{p}$ (AD) so y ↑

- labor share $\frac{w \cdot l}{p \cdot y}$ ↑ $= \alpha$ so l ↑

- $c = y/(1+\tau(x))$ so c ↑

- $n = l/(1+\tilde{\tau}(\theta))$ so n ↑

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