Model Solution with Fixed Prices

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Price norm : $p^n(x) = p > 0$

parameter = fixed price

Model solution w/ fixed price

Need to find tightness x, which is given by.

$$y^d(x,p) = y^s(x)$$ ← AD=AS implicitly defines x.

aggregate wealth

utility parameters

$$\frac{\chi^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \cdot \frac{\mu}{p} = f(x)\, k$$ ← both in RA & HA model

matching wedge

fixed price

selling proba.

aggregate capacity

AD curve

(pure aggregate demand)

AS curve.

Rewrite tightness equation.

$$\lambda(x) = 0$$

$$\frac{\chi^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \cdot \frac{\mu}{p} - f(x)\, k = 0$$

- $x = 0$, $f(x) = 0$ $\tau(x) = p/1-p$

$$\lambda(0) = \frac{\chi^{\varepsilon}}{(p/1-p)^{\varepsilon-1}} \cdot \frac{\mu}{p} > 0$$

- $x = x^m$ $\tau(x) = \infty$ $f(x^m) > 0$

$$\lambda(x^m) = -f(x^m)\, k < 0$$

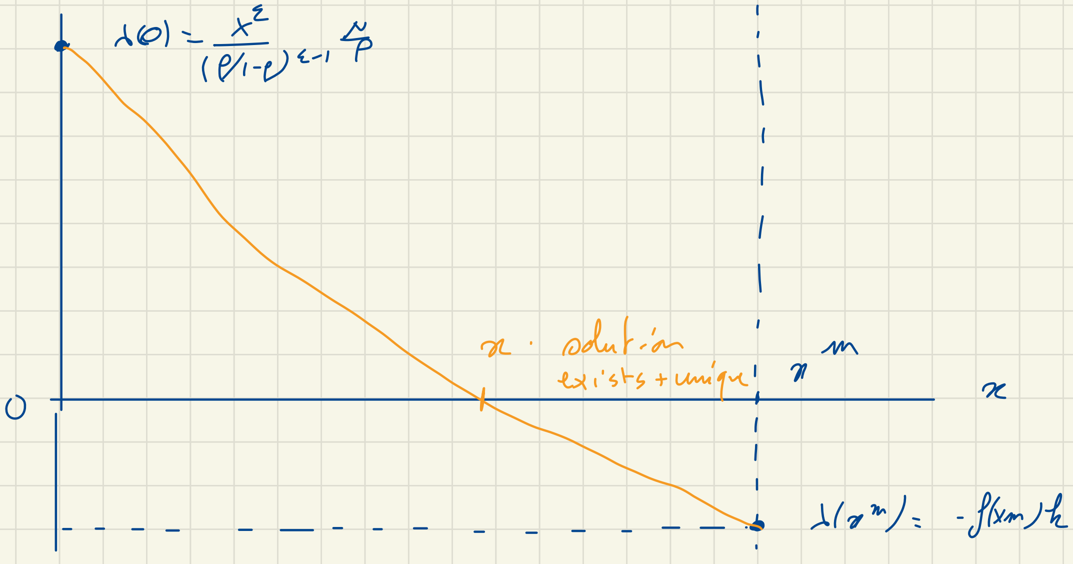
- $\lambda(x)$ is continuous

<u>Intermediate value thm:</u> there is x such that $\lambda(x) = 0$ $\longrightarrow$ our model has (at least) one solution.

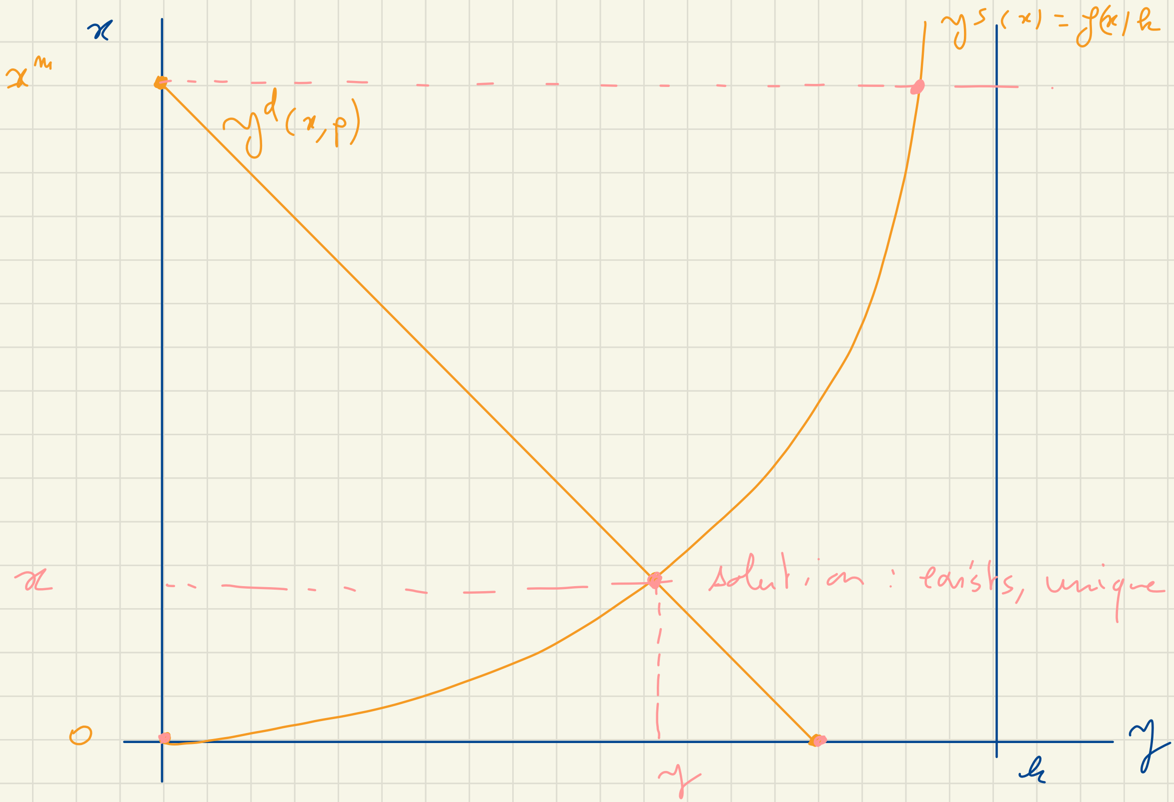
- $\lambda(x)$ is strictly decreasing ($\tau(x)$ is strictly increasing, $\varepsilon > 1$, $f(x)$ is strictly increasing)

$\rightarrow$ x such that $\lambda(x) = 0$ is unique $\rightarrow$ our model solution is unique.

$\rightarrow$ model has <u>always unique solution</u>



<u>Another representation:</u>



x
x^m
$y^d(x,p)$
$y^s(x) = f(x)/k$
x
solution: exists, unique
0
y
k
y