Model Solution with Fixed Prices

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

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.

$$\underbrace{\frac{\chi^{\varepsilon}}{[1+\tau(x)]^{\varepsilon-1}} \cdot \frac{\mu}{p}}_{\text{AD curve}} = \underbrace{f(x) \cdot k}_{\text{AS curve}}$$

utility parameters

aggregate wealth

both in RA & HA model

matching wedge

fixed price

selling proba.

aggregate capacity

AD curve

(pure aggregate demand)

AS curve.

Rewrite tightness equation.

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

$\lambda(x) = 0$

- $x = 0$, $\quad f(x) = 0 \quad \tau(x) = p/_{1-p}$

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

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

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

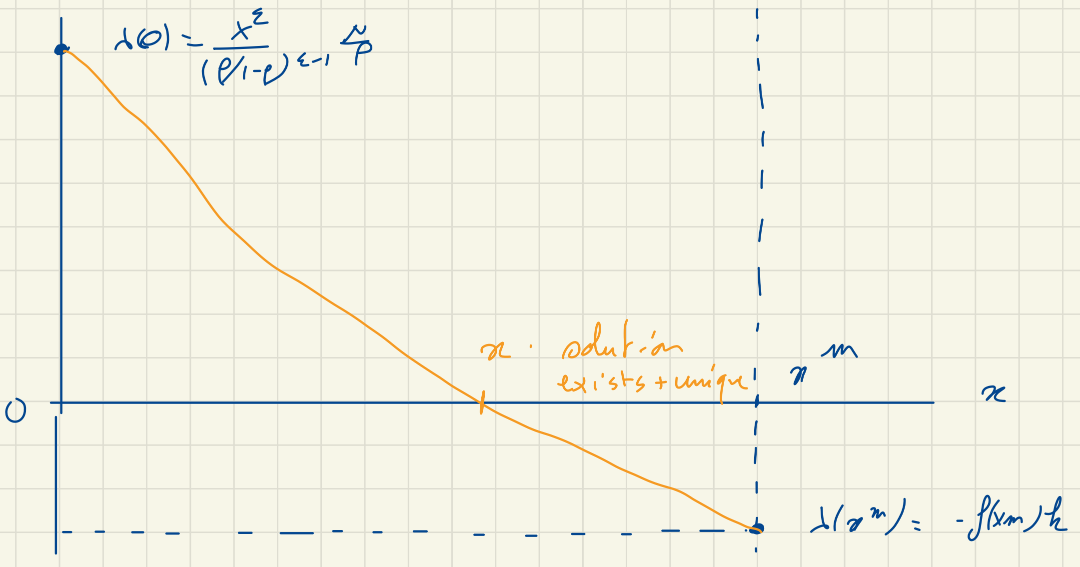
- $\lambda(x)$ is continuous

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

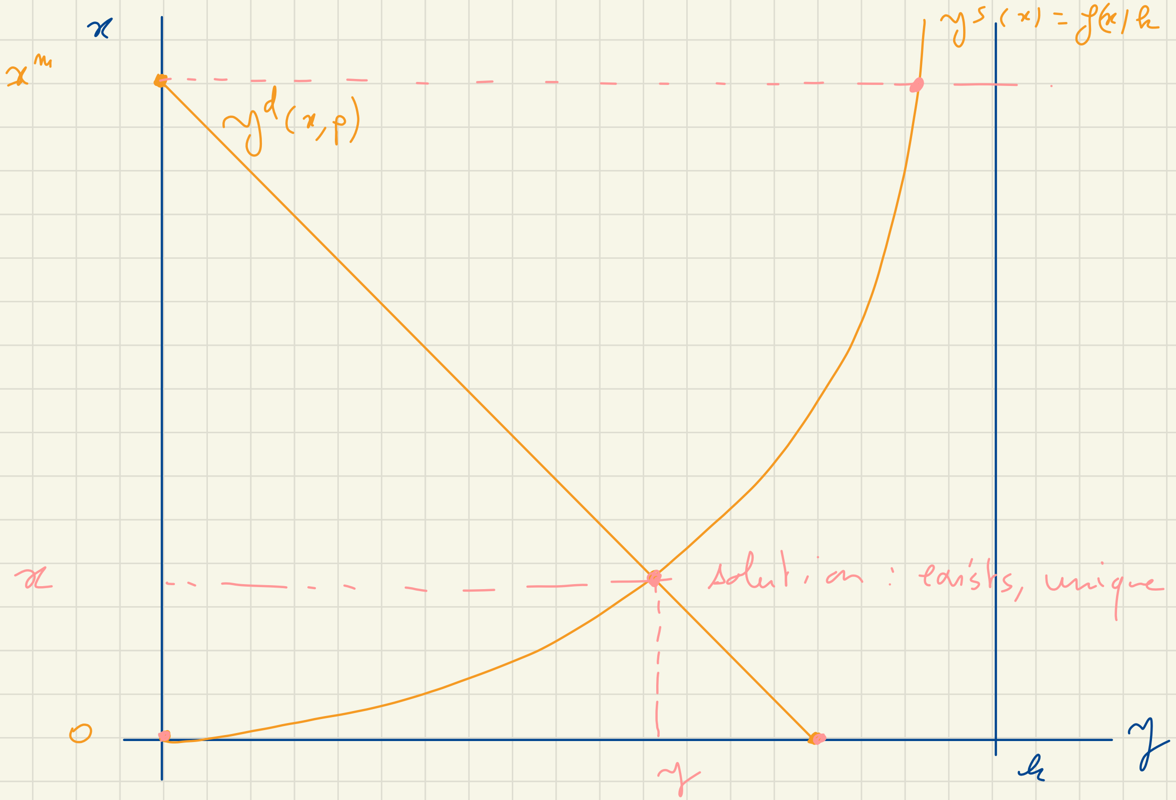
- $\lambda(x)$ is strictly decreasing ($\tau(x)$ is strictly increasing, $\varepsilon > 1$, $f(x)$ is strictly increasing)

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

→ model has always unique solution



Another representation:



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