Aggregate Demand and Aggregate Supply Curves

Pascal Michaillat
https://pascalmichaillat.org/c2/

Aggregate supply: # services sold given capacity of firms & matching process

$$y^s(x, k) = f(x) \cdot k$$

$f(x)$: selling proba. k: firms' capacity

Use production function: $k = a\, n^{\alpha}$

$$y^s(x, n) = a \cdot f(x) \cdot n^{\alpha}$$

a: technology n: # producers

Given matching cost & matching function: $n = \ell / [1 + \hat{\tau}(\theta)]$

$$\boxed{y^s(x, \theta, \ell) = a\, f(x) \left[\frac{\ell}{1 + \hat{\tau}(\theta)}\right]^{\alpha}}$$

- $y^s(x = 0) = 0$ b/c $f(x = 0) = 0$
- $y^s(\theta = \theta^m) = 0$ b/c $\hat{\tau}(\theta = \theta^m) = +\infty$
- y^s is ↑ in x b/c f is ↑ in x
- y^s is ↓ in θ b/c $\hat{\tau}$ is ↑ in θ
- y^s is ↑ in ℓ

Aggregate demand: # units that households would like to purchase, given tightness & price (to maximize utility)

$$y^d = \sigma(x) \times \left[\text{income} + \frac{\nu}{P} \right]$$

(real income; ν: endowment of real wealth)

$$\text{MPS} = \frac{X^{\varepsilon} \left[1 + \tau(x)\right]^{1-\varepsilon}}{1 + X^{\varepsilon} \left[1 + \tau(x)\right]^{1-\varepsilon}}$$

What is household's income? (firms owned by households)

$$\text{Income} = \text{labor income} + \text{firms' profits}$$

$$\text{Real income} = \frac{w}{P} \times \ell + \left[\frac{py - w\ell}{P} \right]$$

$$= \frac{w}{P} \times \ell + y - \frac{w}{P} \ell$$

$$= y$$

$$= f(x) \times k$$

(Say's Law: income = y^S)

Use expression for income: (AS = income; same expression as basic model)

$$y^d = \sigma(x) \times \left[f(x) \times k + \frac{\nu}{P} \right]$$

$\sigma \in (0,1)$

Behavioral AD gives households' desired purchases

Pure AD: substitute out the AS element.