Aggregate Demand in the Heterogeneous-Agent Model

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Aggregate demand:

Household i purchases

$$y_i = \sigma(x)\left[f(x)\, k_i + \frac{\mu_i}{p} \right]$$

$$\sigma(x) = \frac{X^{\varepsilon}\,[1+\tau(x)]^{1-\varepsilon}}{1 + X^{\varepsilon}\,[1+\tau(x)]^{1-\varepsilon}}$$

$\sigma(x)$ is the MPS $\in (0,1)$

Total amount of services purchased:

$$\begin{aligned} y &= \sum_i y_i \\ &= \sigma(x) \times \left[f(x) \sum_i k_i + \sum_i \frac{\mu_i}{p} \right] \\ &= \underset{\sigma < 1}{\sigma(x)} \times \left[\underbrace{f(x)\, k}_{y^S(x)} + \frac{\mu}{p} \right] \end{aligned}$$

$$\boxed{y = \sigma(x) \times \left[y^S(x) + \mu/p \right]}$$

aggregate quantity of services demanded — aggregate supply

- Say's Law: supply creates its own demand
- When Say's Law holds, no proper concept of aggregate demand.

Because $\sigma < 1$: Say's Law is broken
(supply does not create its own demand entirely)
$\rightarrow$ only a fraction $\sigma < 1$ of supply becomes demand

MPS

$\rightarrow$ we have a proper concept of aggregate demand.

Why is Say's Law broken? Because $\sigma < 1$, which is because $X < \infty$ (finite), which is because real wealth enters the utility function

[recall $u(c, m) = \underbrace{\frac{X}{1+X}}_{=1 \text{ if } X=\infty} c^{\frac{\varepsilon-1}{\varepsilon}} + \underbrace{\frac{1}{1+X}}_{=0 \text{ if } X=\infty} \left(\frac{m}{p}\right)^{\frac{\varepsilon-1}{\varepsilon}}$]

To break Say's Law: household must value something else than consumption $\rightarrow$ here it's real wealth.

From aggregate demand analysis:

$$y = \sigma(x)\left[y^S(x) + \mu/p\right]$$

$\sigma(x)$: marginal propensity to spend (MPS)

- decreasing w/ x

$y^s(x)$: - aggregate supply = real income

- increasing w/ x

→ Two counteracting forces, hard to know whether output y increases or decreases w/ tightness