

Aggregate Demand in the Heterogeneous-Agent Model

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Aggregate demand.

Household i purchases

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

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

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

Total amount of services purchased:

$$\begin{aligned} y &= \sum_i y_i \\ &= \sigma(x) \times \left[f(x) \sum_i k_i + \sum_i \frac{p_i}{p} \right] \\ &= \sigma(x) \times \left[\underbrace{f(x) k}_{y^S(x)} + \frac{N}{p} \right] \end{aligned}$$

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

↑
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)

→ only a fraction $\sigma < 1$ of supply becomes demand

MPS

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

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

From aggregate demand analysis:

$$y = \sigma(x) [y^s(x) + \mu/p]$$

$\sigma(x)$: Marginal propensity to spend (MPS)
decreasing w/ x

$y_f^s(x)$: aggregate supply = real income
increasing w/ x

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