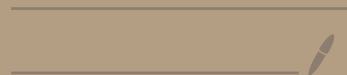


# Computing the Aggregate Demand Curve

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Pascal Michaillat

<https://www.pascalmichaillat.org/t5.html>



Aggregate demand: Amount of service that households purchase so as to maximize their utility, given price of service  $p$  and market tightness  $x$ .

Notation  $y^d(x, p)$

To max. utility, household consumes

$$c = \left( \frac{x}{1 + \tau(x)} \right)^{\frac{\varepsilon}{\varepsilon - 1}} \cdot \frac{m}{p}$$

To max utility, household purchases  $c \cdot [1 + \tau(x)]$ .

$$y = \frac{x^{\varepsilon}}{[1 + \tau(x)]^{\varepsilon - 1}} \cdot \frac{m}{p}$$

Budget constraints of all households:

$$m + p \cdot [1 + \tau(x)] c = \nu + p \cdot f(x) \cdot k$$

Through matching. # services sold = # services purchased  
# trades given by matching function

$$\# \text{ service sold} = f(x) \cdot k = m(k, v)$$

$$\begin{aligned} \# \text{ service purchased} &= q(x) \cdot v = m(k, v) \\ &= c \cdot [1 + \tau(x)] \quad \left( \begin{array}{l} \text{by definition} \\ \text{of } \tau(x) \end{array} \right) \\ &= y \end{aligned}$$

$$\rightarrow f(x) \cdot k = [1 + \tau(x)] \cdot c$$

Plug into budget constraint.

$$m = \mu$$

Combining FOC from household problem w/  
aggregate budget constraint.

$$y = \frac{x^{\frac{\varepsilon}{\varepsilon-1}}}{[1 + \tau(x)]^{\frac{\varepsilon}{\varepsilon-1}}} \cdot \frac{\mu}{p} = y^d(x, p)$$

# service purchased/demanded by households

$y^d(x, p)$  is the AD curve