Matching on the Labor and Product Markets

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Product market

- Households carry v visits
- Firms provide k services (capacity)
- Matching function determines # trades.

$$y = m(k, v)$$

Use CES matching function.

$$y = \left[k^{-\gamma} + v^{-\gamma} \right]^{-\frac{1}{\gamma}} \qquad \gamma > 0$$

- Each visit can $\rho > 0$ services

Labor market

- Firms post $\hat{v}$ vacancies
- There are h workers in labor force → all initially unemployed.
- Matching function determine # of hires:

$$\ell = \hat{m}(h, \hat{v})$$

Use CES matching function:

$$\ell = \left[h^{-\hat{\gamma}} + \hat{v}^{-\hat{\gamma}} \right]^{-1/\hat{\gamma}} \qquad \hat{\gamma} > 0$$

- Each vacancy requires $\hat{\rho}$ recruiters

Market tightnesses:

- Product market tightness.

$$x = v / k$$

- Labor market tightness:

$$\theta = \hat{v} / h$$

Trading probabilities

- Buying probability $q(x)$
- Selling probability $f(x)$
- Recruiting probability $\hat{q}(\theta)$
- Job finding probability $\hat{f}(\theta)$

Expression of probabilities.

$$\hat{f}(\theta) = \frac{\ell}{h} = \frac{\left[h^{-\hat{r}} + \hat{v}^{-\hat{r}} \right]^{-1/\hat{r}}}{h} = \left[1 + \theta^{-\hat{r}} \right]^{-1/\hat{r}}$$

$$\hat{q}(\theta) = \frac{\ell}{\hat{v}} = \frac{\left[h^{-\hat{r}} + \hat{v}^{-\hat{r}} \right]^{-1/\hat{r}}}{\hat{v}} = \left[\theta^{\hat{r}} + 1 \right]^{-1/\hat{r}}$$