Labor Demand and Imperfect Competition

Labor Demand is a Derived Demand

$$Y = F(K, L)$$

$$\max_{K,L} PF(K, L) - wL - RK$$

$$P\frac{\partial F}{\partial L} = w$$

$$P\frac{\partial F}{\partial K} = R$$

SR vs LR

- What happens when wage decrease?
- SR: labor will increase
- LR:
  - If $F_{LK} > 0$, compliments, K increases, even more labor
  - If $F_{LK} < 0$, substitutes, K reduces, substitutes even more to labor
- So LR labor increases even more
- LR more elastic!

Industry-Wide

- Assume CRTS (why is this a good assumption for industry but not firm?)

$$F(tL, tK) = tF(L, K)$$

- Implication: constant marginal cost
- Perfectly elastic supply
- It's usually the case
- Price decided by supply side marginal cost
- Quantity decided by demand side

Imperfect Competition

- Imperfect competition: employer or worker or get rents from employment
- Employer gets rents: employer will be worse off if a worker leaves
  - MPL $>$ w, and costly to replace worker
- Worker gets rents: loss of the current job makes the worker worse off
  - Costly to find a new job

Source of Imperfection

- Frictions: Hard to find an employer/employee
- Search costs
- Hard to find a specific match of human captial
- Employer collusion

How to Measure Rent

- Randomly break employment and see payoffs change on each side
- Hiring costs estimate: Very small
- Search costs small from the no job search (on the job search might be larger)
- Mass layoff: large costs for displaced workers

Two types of wage models: Wage Bargaining

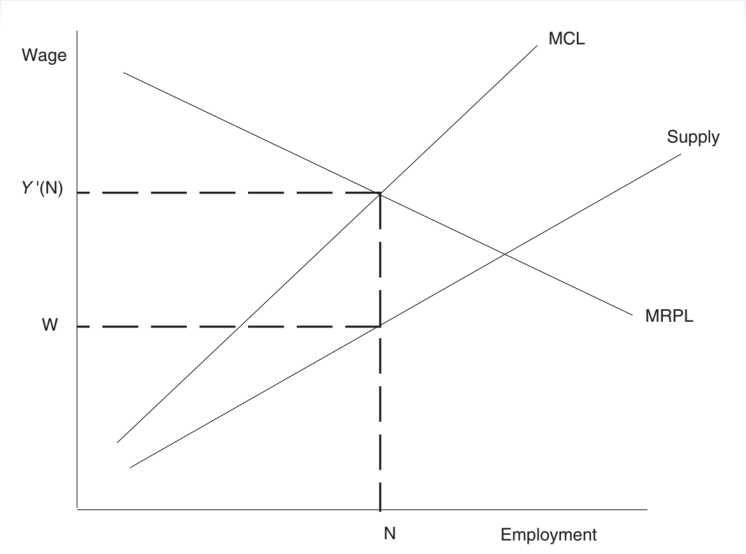
$$(p - w)^{1-\alpha}(w - b)^{\alpha}$$
$$w = \alpha p + (1 - \alpha)b$$

- b leisure value, p productivity
- α worker's bargaining power

Two types of wage models: Wage Posting

$$\pi(w) = (p - w)G(w)$$

- $G(.)$ distribution function of worker's b
- Accept offer if $w > b$
- Firm sets w to max π


Wage
MCL
Supply
Y '(N)
W
MRPL
N
Employment

How to Estimate Rent Sharing? Wage Bargaining

$$(F(N) - wN)^{1-\alpha}(N(w-b))^{\alpha}$$

$$\text{FOC: } w = \alpha\frac{F(N)}{N} + (1-\alpha)b$$

- Bargaining with a union with N workers
- $F(N)$ is the revenue function
- Parameter of interest α
- OLS of wage on revenue per worker doesn't give α (due to b, value of leisure)
- IV that affects only revenue per worker but not others
- Again, theory guides how to do empirics

Table 4 Estimates of rent-sharing.

Study	Sample	Rents variable	How deal with endogeneity problem?	Estimate of rent-sharing parameter
Blanchflower et al. (1996)	US workers in manufacturing, 1964-85	Industry profits per worker	Use lagged profits, energy costs as instruments	0.19[a]
Hildreth and Oswald (1997)	2 panels of UK firms in 1980s	Company profits per worker	Lagged profits	0.02[b] 0.14[c]
Van Reenen (1996)	Panel of UK firms	Company profits per worker	Use innovation as instrument	0.34
Abowd and Lemieux (1993)	Canadian collective bargaining contracts	Quasi-rents per worker	Use exchange rate shocks as instrument	0.20
Arai (2003)	Matched worker-firm Swedish data	Company Profits per worker	OLS but argues weaker endogeneity problem	0.15
Black and Strahan (2001)	US bank employees	Own "back-of-envelope" calculation	Changes in bank entry regulations	0.25
Rose (1987)	US unionized truckers	Own "back-of-envelope" calculation	Deregulation of trucking	0.65-0.76
Guiso et al. (2005)	Matcher worker-firm Italian data	Company value-added per worker		0.06
Christofides and Oswald (1992)	Canadian collective bargaining agreements, 1978-84	Industry profits per worker	Lags as instruments	0.02[a]
Card et al. (2010)	Social security data from	Firm value-added per worker	Industry value-added per	0.07

Summary

- α small, most rent on the employer
- Opposite to the previous evidence.....

How to Estimate Rent Sharing? Wage Posting

- Key is to estimate labor supply elasticity **for an individual firm**
- Ideally: randomly vary the wage paid by a single firm and look at employment
- Results: super low elasticity.....

Table 5 Quasi-experimental estimates of wage elasticity of supply to individual employer.

Study	Sample	"Experiment"	Outcome variable	Estimated elasticity
Staiger et al. (2010)	Veteran affairs hospitals	Permanent rise in wages where recruitment difficulties	Employment rise 1 year later	0.1
Falch (2010a)	Norwegian schools	Wage Premium at schools with recruitment difficulties	Contemporaneous employment	1.0–1.9
Matsudaira (2009)	Californian care homes	Increase in required minimum staffing levels	Change in wages	0

So What?

- Some evidence on rent, but competitive market good approximation for the world
- "A generation of labor economics have grown up who are not accustomed to thinking in terms of economic models at all."