Dynamic Monopsony with Large Firms and Noncompetes

Axel Gottfries[1] Gregor Jarosch[2]

[1] University of Edinburgh

[2] Duke University

FTC Micro Conference,

twofold contribution

1. develop a generalized job ladder framework with wage posting
   - rich and exible, yet tractable
   - natural laboratory for labor mobility themes
2. application to noncompete agreements
   - theoretical: can sharply for

framework for anti-competitive labor market practices

- frictional labor market with wage posting and turnover due to on-the-job search (Burdett-Mortensen (98))
- several new features:
  1. large employers
     - can speak to concentration, mergers, ...
  2. decreasing returns
     - can endogenize size and market structure
  3. market-level product demand curve (two-sided market power)
     - less restrictive, wider range of cases
  4. hiring cost, rather than vacancy cost
     - more tractable (and relevant)
- natural lab for competition issues related to worker mobility and turnover

lit

- modern/dynamic monopsony (Burdett-Mortensen (98), Manning (03, 11,...), Dube et al (19,20))
- neoclassical monopsony (Robinson (33), Card et al (16), Berger et al (22))
- size and market structure with frictions: Jarosch et al. (23)
- non-competes in a frictional setting w/ bargaining: Shi (22)

model (w/o noncompetes)

model

standard pieces: random search, on-the-job-search, posted wages (BM)

- relative search efficiency of employed s
- firms commit to pay posted wage
- may post mix of wages, cdf $F_j(w)$
- workers become unemployed at rate δ, then receive flow utility b
- choose a reservation wage, otherwise just float up the job ladder
- cont. time, discount rate r
- restrict to stationary equilibria

not-so-standard pieces

- hiring technology: frms pay a cost c per hire
  - always obtain desired size, no vacancy cost
  - but lose workers to unemployment and competitors, so costly turnover
  - workers contact rm i with endogenous frequency $_i$ (s $_i$)
- granular market structure: M large frms
- d.r.s: frm i with employment N produces homogeneous output $x_i N^{\alpha}$
- reverse-engineer downward sloping market-level product demand

rm problem in words

- frm choose
  - intensity at which workers contact their job openings, $_i$
  - distribution of posted wages $F_i(w)$
- to maximize revenue maximize /T1_3 1 TfΩ2.114 0 TdΩT22 0 TdΩ(maximize)Tj

solution

- despite added dimensions remains highly tractable
  - w/ symmetric rms: can solve model by hand
  - w/ heterogeneous rms $(x_i; c_i)$: simple I

concentration and wages

- more concentration can, but need not hurt workers
  - PE: rms do not compete with themselves, fewer competitors lower pay
  - GE: lower turnover drives up labor demand

equilibrium markdowns

- m marginal revenue product of labor
-) optimal hiring + user cost equated across all wages posted:

$$\frac{m \quad w}{r + \delta + \sum_{j \neq i} s_j (1 \quad F_j(w))} = c_i$$

- Mark-down m=w is endogenous and covers turnover cost
- must rise if turnover (competition) rises

quit elasticity

- quit elasticity often

non-competes: theory

some history

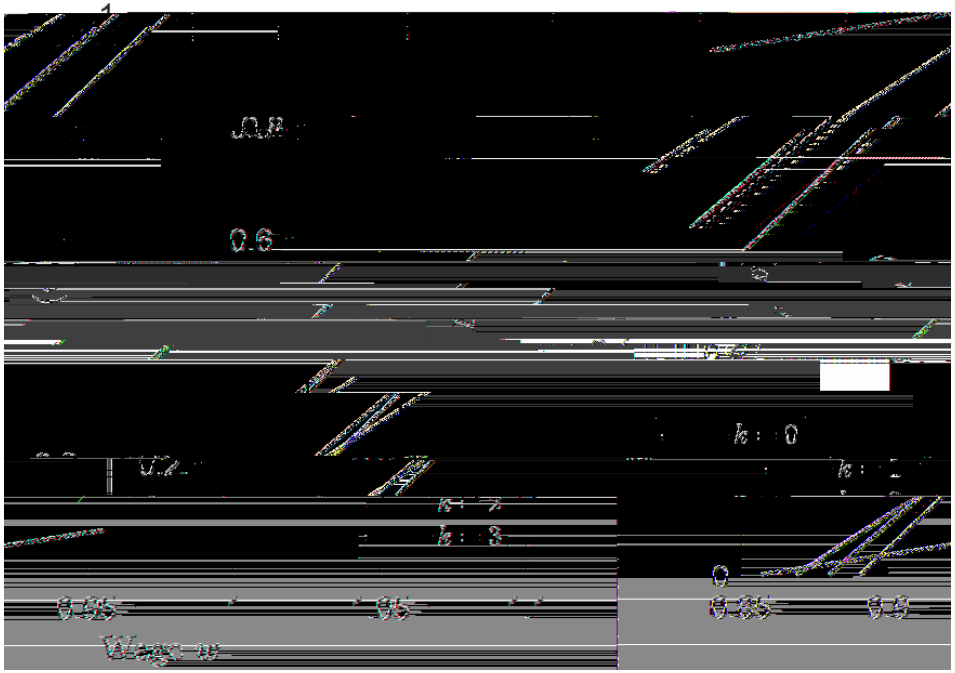
- Stigler (61,62) & McCall (1970): Study repeated sampling with dispersed prices/wages, characterize reservation values
- Diamond (1971): Can't sustain dispersed prices for homogeneous products/workers in equilibrium (\Diamond Paradox")
- Burdett & Mortensen (98): Can't sustain any mass in job ofer distribution in a job ladder model.
  Why? Deviation, slightly above) Competition

adding non-competes to the model

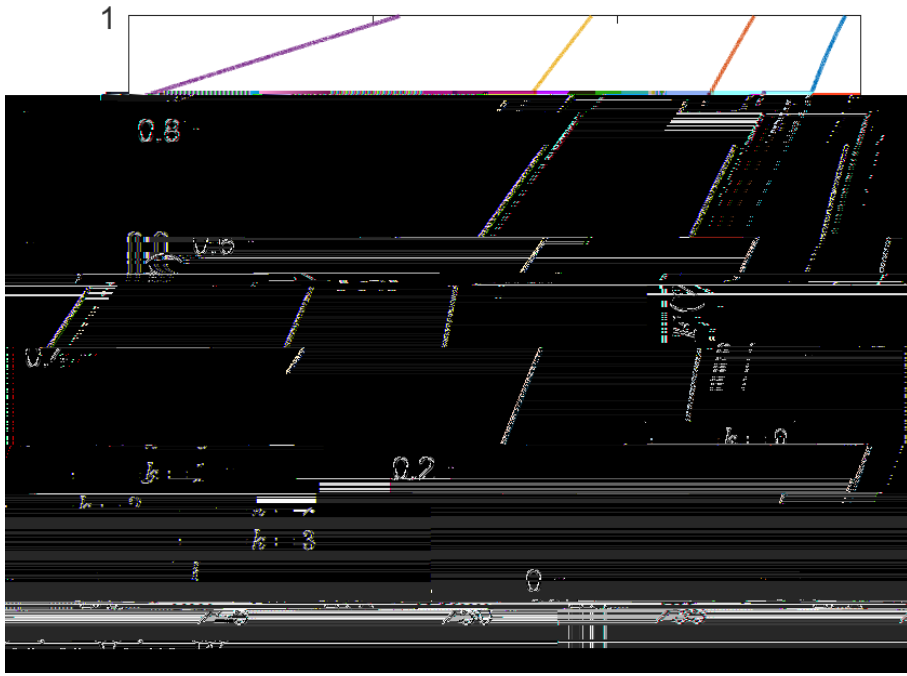
- model non-competes

impact of non-competes

A. Wage offer distribution



B. Value offer distribution



Diamond restored

- when all frms can ofer non-compete: $w_c = w_r = b$

) illustrates that non-competes, when wide-spread, can sharply depress wages by eroding job-ladder competition

non-competes | welfare

- two opposing forces re welfare
  1. show that rms w/ noncompetes have more employment, but same d.r.s. production function) misallocation
  2. however, competition here is wasteful
     - ine cient worker churn yields wage gains but socially costly
- a priori unclear whether a ban yields e f ciency gains
  - numerically, get ban slightly reduces welfare
- caveat
  - misallocation (workers ! rms) if job ladder improves allocation (here: doesn't), then additional costs of shutting it down

quantitative analysis of noncompetes

calibration strategy

- fairly standard job ladder model to calibrate (EU, EE, UE,..)
- set α = :64calibrate64

___

quantitative strategy

- calibrate/validate via empirical studies

1. Prager & Schmitt (21) study hospital mergers
   - pick up response of wages and employment
   - comment: framework can straightforwardly be used for merger analysis

2. Lipsitz & Starr (20) study ban of noncompetes in Oregon
   - pick up response of wages, turnover, spillovers

main application: banning non-competes

- FTC: 20% of US workforce under non-compete, proposed blanket ban
  - many state level restrictions (recently, NY), lots of discussions in Europe
- surprisingly common for low-skilled workers (where posting seems natural and human capital and business stealing issues seem less relevant)
- surprisingly uniform across frm types
- baseline calibration: set $M = 10$ (symmetric) and $k = 2$,

baseline results: banning non-competes

	Baseline
Share non-comp.	0:212
Δ log(E[w])	0:04
Δu	1:198
Δ log(output)	0:008
Δ Utility	0:009
Δ log(jtj)	0:354
Δ log(w_{nc})	0:067
Δ log(w_{rest})	0:032

- large wage and mobility increases
- large spillovers
- employment and output slightly down due to rise in turnover cost (misallocation channel dominated)

training cost

	Baseline	c/E[w]=5
Share non-comp.	0:212	0:226
Δ log(E[w])	0:04	0:05 05

demand elasticity

	Baseline	$\eta = 0.5$	$\eta = 5$
Share non-comp.	0:212	0:224	0:234
$\Delta \log(E[w])$	0:04	0:019	0:001
Δu	1:198	1:592	1:965
$\Delta \log(\text{output})$	0:008	0:011	0:013
Δ Utility	0:009	0:01	0:01
$\Delta \log(jtj)$	0:354	0:345	0:335
$\Delta \log(w_{nc})$	0:067	0:046	0:027
$\Delta \log(w_{rest})$	0:032	0:011	0:007

- banning non-competes turnover cost
- if this cannot be (partially) passed into prices, gains to workers evaporate

coverage

	Baseline	k=5	k=c/E[w]=5
Share non-comp.	0:212	0:513	0:528
Δ log(E[w])	0:04	0:113	0:168
Δu	1:198	3:208	4:602
Δ log(output)	0:008	0:022	0:032
Δ Utility	0:009	0:022	0:039
Δ log(jtj)	0:354	1:066	1:018
Δ log(w_{nc})	0:067	0:126	0:198
Δ log(w_{rest})	0:032	0:1	0:136

- logic: Diamond restored

heterogeneity

- conclude with a more full blown exercise
- frms differ in productivity and hiring cost
- study case where low productivity / high productivity frms use noncompetes

	Baseline	High	Low
Share non-comp.	0:212	0:186	0:207
Δ log(E[w])	0:04	0:069	0:011
Δu	1:198	0:912	0:933
Δ log(output)	0:008	0:007	0:003

banning non-competes: quantitative lessons

1. wage gains of about 4%
2. large wage gains if 1) large frictions, 2) high coverage, 3) low product demand elasticity
3. typically welfare down, but small losses compared with wage gains
) can \protect" workers from this practice at low cost (?)

ongoing work on employer cartels

- use same framework to think about wage-fixing cartels
- main finding: outside competition determines harm and profitability.
- hence, wage losses large / cartels more likely when
  - market is concentrated
  - labor market has slack
  - the span of control is small
  - product demand is elastic
  - cartel also colludes in the product market

conclusion

Large firms in the labor market

Large firms can, in principle, affect

1. workers' actions (reservation)
   - assume that workers do not observe and do not learn