

# The Importance of Firms in Labor Market Outcomes

David Card  
UC Berkeley

Most labor economics research is focused on the supply side:

- human capital (education, training...)
- supply-side responses to programs and taxes
- family economics

But, to a “person on the street” the key to economic success is getting a ***good job***

Recent recession has underscored the costs of losing a good job: many job losers will never recover their pre-recession standard of living

## *What about the demand side?*

- traditional view: demand for different skill groups determined by “big forces” – technology, trade, business cycle conditions.
- we can study the impacts of these big forces, but the main job of labor economists is to categorize workers into skill groups
  - race/gender/education/age groups
  - CES, nested CES, etc
  - “task-based” occupation groups
  - local labor markets (small open economy/mobile factors)

*In this talk I will argue that:*

a) firms matter a lot for labor market outcomes

b) a useful working model asserts that each firm offers a firm-specific wage premium/discount

c) firm-specific wage premiums are big (and appear to be rising)

d) firm wage premiums help explain many aspects of labor market behavior (micro and macro facts)

## I. Background

**a) *Benchmark model*** (widely used in trade/IO):

- homogeneous skill groups; workers perfectly mobile
- heterogeneous firms (entrepreneurial skill, management practices, ...)  $\Rightarrow$  wide variation in firm size, innovation, exporting, product quality, etc.

**But** each worker is paid his/her market wage.

- no special link to current (or past) employer
- “good firms” benefit all workers (not just their own employees)

***b) Earlier work:*** many strands of earlier work introduce firm and/or job component of wages:

- studies of wages/empl. at unionized firms
- panel data studies with job identifiers (PSID, NLSY)
- displaced worker studies
- LRD/Census of mfg (variation in productivity)
  
- definite evidence of a firm component
- 3 leading interpretations
  - sorting (job or firm effect = unobs. hetero.)
  - matching - idiosyncratic worker/firm effect
  - firm-wide effect

## Observation:

- sorting and matching stories are widely accepted
- “firm-effect” story less successful (so far)
- main criticisms:
  - sorting and matching both easily fit in the standard paradigm
  - matching is the “go to” friction model
  - firm effect is harder to rationalize  
(Burdett Mortensen)

Today: try to make the case for the importance of the **firm-wide component**

***c) Sociological aside (reality check)***

1. 1940s-1960s institutional literature (e.g. Rees and Schultz): systematic pay differences across firms
2. How do firms hire? Hall&Krueger survey of pay determination at hiring:
  - 26% pay known/no bargaining
  - 37% pay uncertain/no bargaining
  - 25% pay uncertain/bargaining
3. How do firms hire? van Ours and Ridder; job fairs
4. How do firms set pay? Surveys/benchmarks/pay line

## **News Woodstock & Region**

### **Mega job fair being held today**

Ashley House, SUN MEDIA

Tuesday, September 1, 2009 12:00:00 EDT AM

The local automotive industry is showing some signs of change as two local automotive manufacturing plants gear up for a job fair this week.

The manufacturing industry has been hit hardest during the recession with thousands of people losing their jobs across the country.

In a change of pace, Toyotetsu Canada in Simcoe and Marwood Metal Fabrication in Tillsonburg are looking to hire.

The two companies, which manufacture car parts, are looking for robotic welder and machine operators, production control specialist and press operators.

The job fair for positions available at Toyotetsu and Marwood will be held Sept. 1 from 3 p.m. to 7 p.m. and Sept. 2 from 12 p.m. to 4 p.m. at 90 Samnah Cres. in Ingersoll.

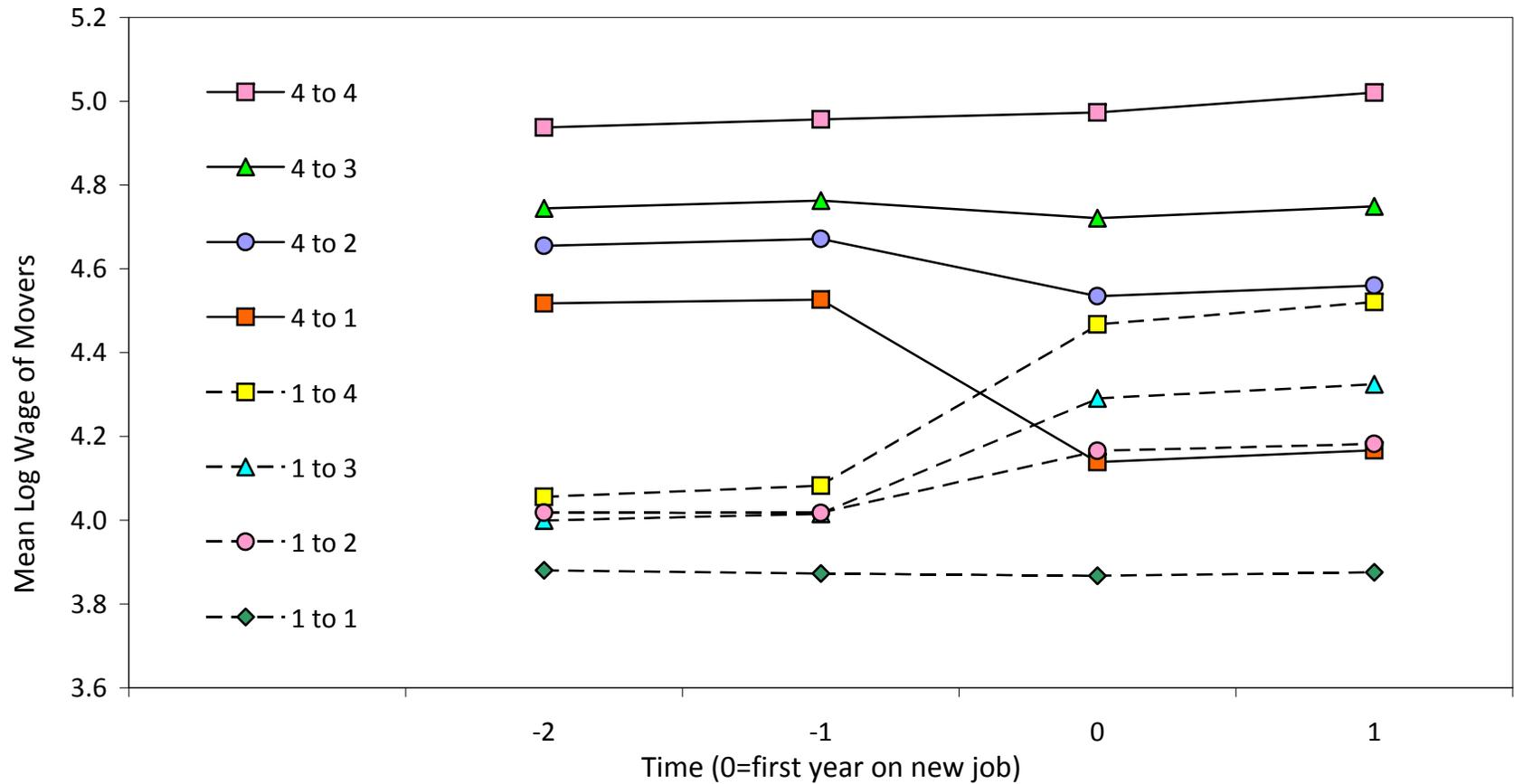
Applicants should bring their resume and three work references.

## II. How much do firms matter in wage setting?

An event study (from CHK):

- classify jobs in a year by average coworker wage (into 4 quartiles)
- select workers who change establishments; classify changes by quartile of co-worker wages in last year of old job/first year of new job

Figure Vb: Mean Wages of Job Changers, Classified by Quartile of Mean Wage of Co-Workers at Origin and Destination Establishment, 2002-09



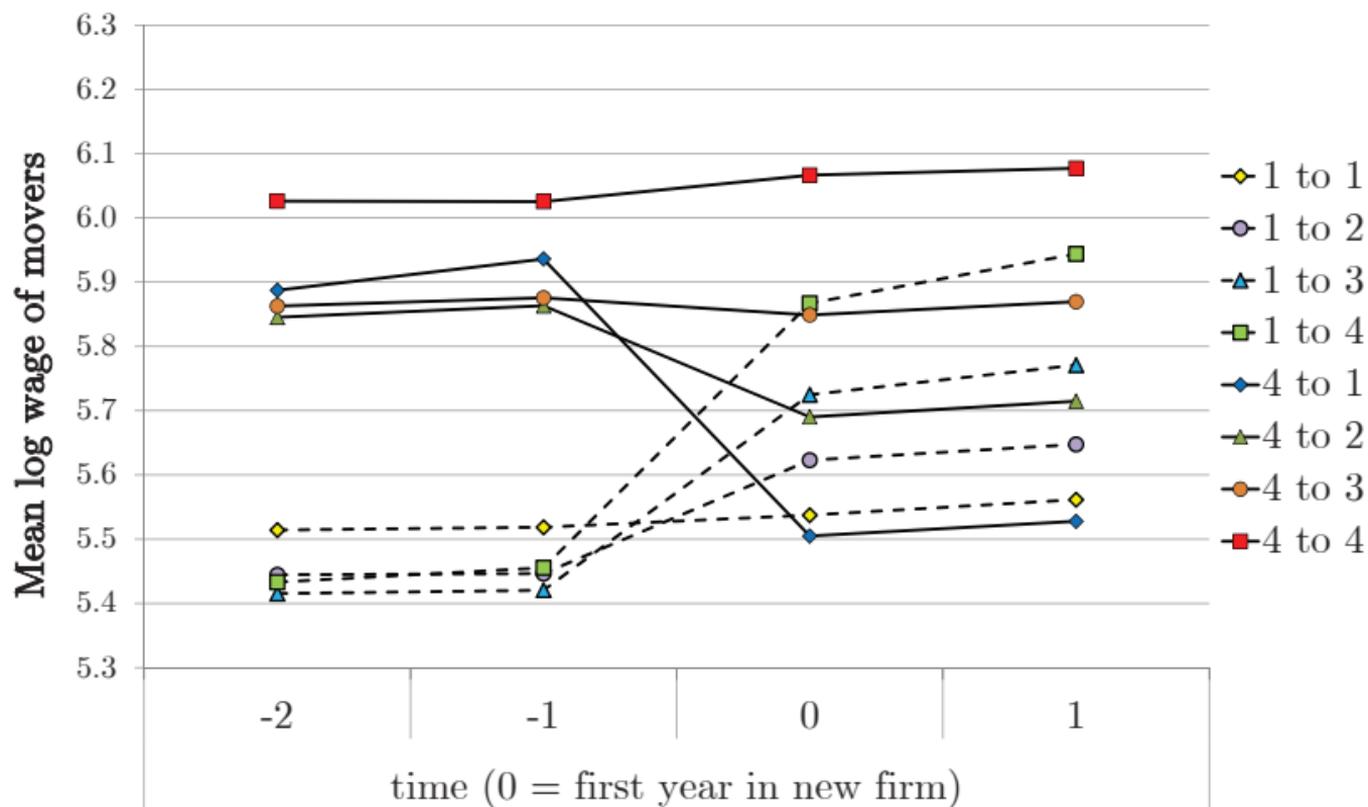
Notes: figure shows mean wages of male workers observed in 2002-2009 who change jobs in 2004-2007 and held the preceding job for 2 or more years, and the new job for 2 or more years. "Job" refers to establishment with most earnings in year, excluding part time work. Each job is classified into quartiles based on mean wage of co-workers (quartiles are based on all full time workers in the same year).

## Take-aways:

- 1) wage gains/losses to mobility depend on average coworker pay at origin/destination
- 2) approximately symmetric gains/losses  
(mobility is not driven by the match component)
- 3) small average mobility premium
- 4) no clear trends in pre/post-transition wages
- 5) upwardly mobile workers have higher wages  
(conditional on origin quartile), reverse for d-m.

Confirmation: Macis-Shivardi (2013), Italian data

(a) Movers from the 1<sup>st</sup> and 4<sup>th</sup> quartile



Wage for worker  $i$ , job at firm  $j$ , period  $t$ :

$$\log w_{ijt} = \underbrace{\alpha_i + \psi_j + m_{ij}} + x_{it}\beta + \varepsilon_{ijt}$$

“job component” = worker + firm + match

note  $j=J(i,t)$ , the observed assignment function

what's in  $\varepsilon_{ijt}$  : worker-specific dynamic components  
(market learning, etc)

firm-specific dynamic components  
(transitory profit shocks)

match  $m_{ij}$  = hetero. “treatment effect” (Roy model)

What's not to like?

- additive-in-logs model. What about

$$\log w_{ijt} = f(\alpha_i, \psi_j) + m_{ij} + x_{it}\beta + \varepsilon_{ijt}$$

specification test: LM-style test for interactions

- privileging firm vs. match? Add job effects and see!

- OLS estimation: firm assignment has to be strictly exogenous w.r.t. the residual  $r_{it} = m_{ij(i,t)} + \varepsilon_{it}$  (event study)

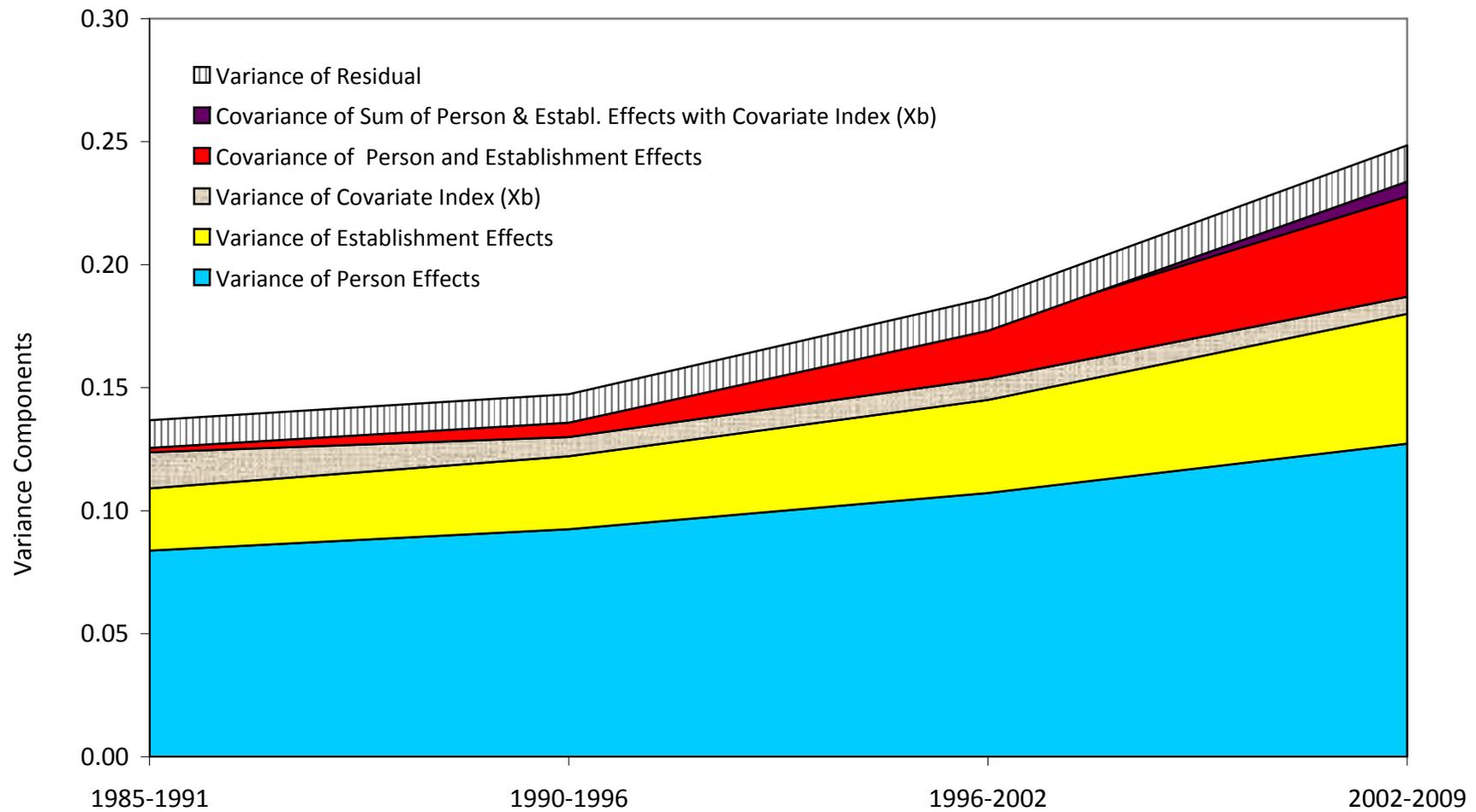
- how can AKM be a “model”, or even approximate a “real” model?

## Applying AKM framework to rise in German wage inequality

- FT male workers (main job each year) 1985-2009
- big rise in inequality starting circa 1996
- compare model in 4 periods:
  - 1985-1991 - before reunification
  - 1990-1996 - reunification, E-W migration
  - 1996-2002 - the “sick man of Europe”
  - 2002-2009 - the German economic miracle

$$V(\log w_{ijt}) = V(\alpha_i) + V(\psi_j) + 2\text{cov}(\alpha_i, \psi_j) \\ + V(x_{it}\beta) + 2\text{cov}(\alpha_i + \psi_j, x_{it}\beta) + V(r_{it})$$

## Decomposition of Variance of Log Wages -- FT Male Workers



### III. Interpretation

- high- $\psi$  firms survive longer
- jobs at high- $\psi$  firms survive longer
- $\psi$ 's relatively stable over time (modest widening)  
BUT: new firms (post-1996) have big lower tail
- $\psi$  correlated with profits (Portugal, Sweden)

a. Is  $\psi$  simply rent-sharing?

- Syverson:  $\sigma(\log \text{TFP})=0.25$  within industry
- best estimates of rent-sharing elasticities:

$$\Delta \log w = \rho \Delta \log V \quad V=VA/L, \text{TFP, QR, ....}$$

## Studies of rent-sharing elasticity

|  | $\rho$ |
|--|--------|
| Guiso et al (Italy, “permanent” shocks):     | 0.04   |
| Arai-Heyamn (Sweden, IV for VA)              | 0.04   |
| Guertzen (Germany)                           | 0.03   |
| Card et al (Italy, IV)                       | 0.04   |
| <i>other estimates:</i>                      |        |
| Van Reenen (UK, patents and other IV’s)      | 0.25   |
| Freeman et al (US, LRD, IV as in Card et al) | 0.11   |

These  $\rho$ 's do not seem big enough to explain firm effects in wages

Other evidence: Card, Cardoso, Kline

- fit AKM model (by gender) to Portuguese wage data
- point-in-time hourly wage measure (October)
- firms matched to Bureau van Dijk balance sheet data

$$\psi_j = a + b(VA/L)_f + \text{industry, firm size, ....}$$

(50,000 firms, 3 million male workers)

For male workers:  $b = 0.13 - 0.15$  ( $R^2 = 0.15 - 0.23$ )  
(smaller effect for females – discussed below)

b. Efficiency wages (endogenous productivity)

-e.g. incentive pay

Lazear (Safelite) case study, switch to piece rates

22% rise in prod. of stayers

44% rise in TFP  $\Rightarrow \approx 22\%$  sorting effect

Pekkarin-Riddell (Finnish matched data)

across workers: 15% premium for piece rates

within jobs: 9% premium

## IV. What other features of the labor market can be explained by firm wage premiums?

### 1. cyclical wage variation

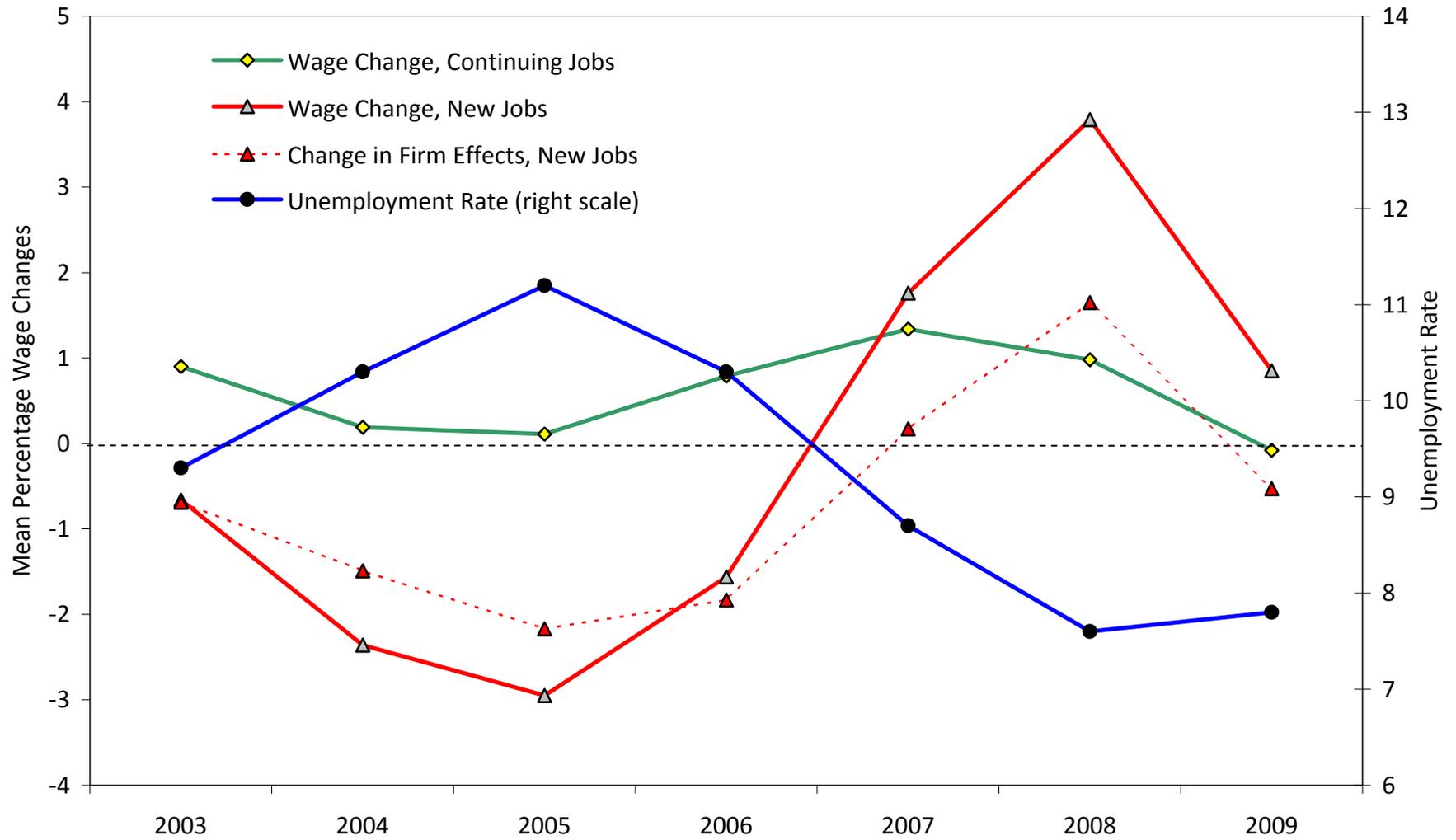
some part of cyclical wage adjustment arises from job-changers

Job changers:

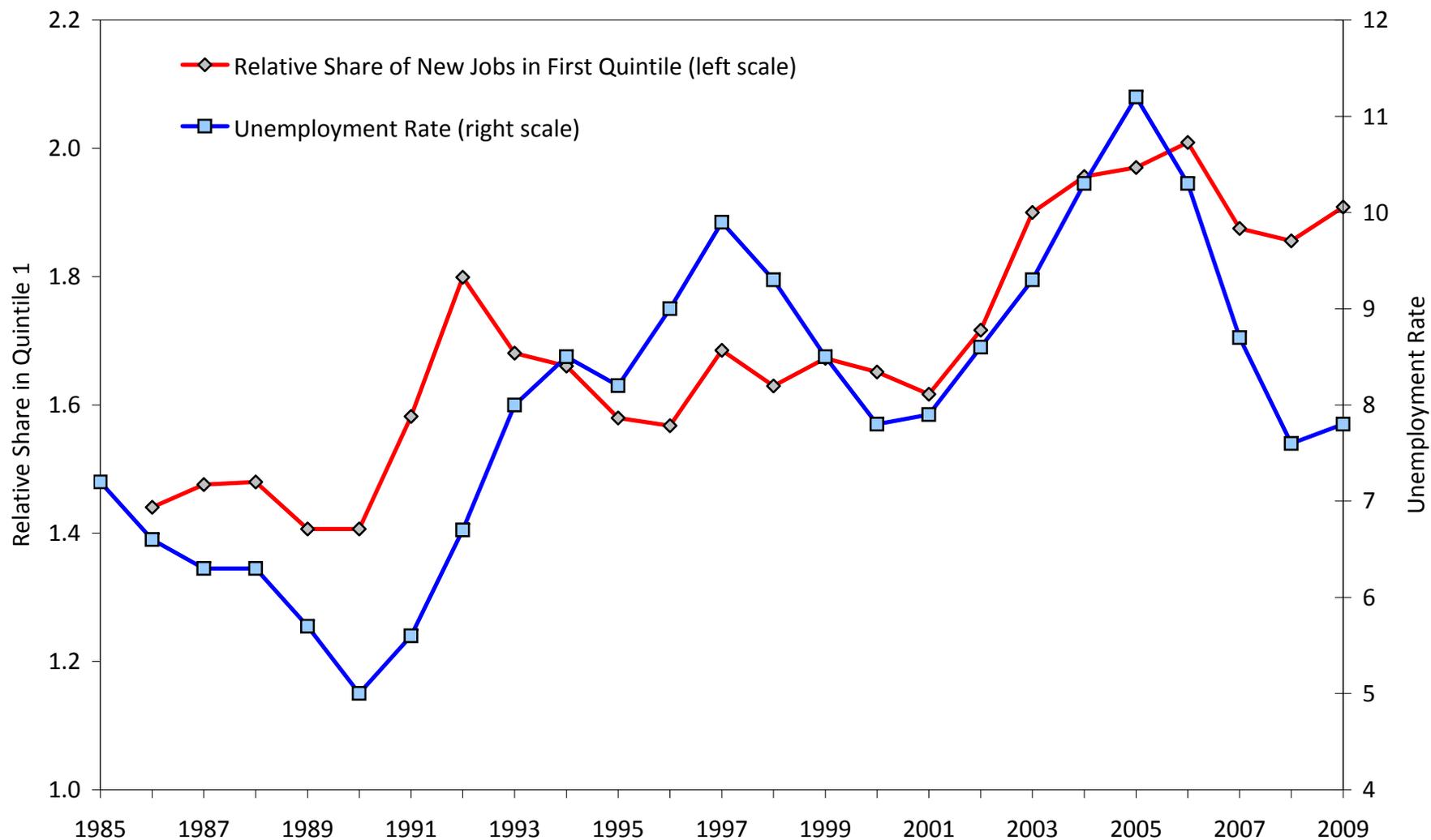
$$\Delta \log w_{it} = \underbrace{\psi_{J(i,t)} - \psi_{J(i,t)}}_{\Delta \text{firm effects}} + \underbrace{m_{i,J(i,t)} - m_{i,J(i,t-1)}}_{\Delta \text{match effects}} + \Delta \varepsilon_{it}$$

“quality” of new jobs (based on firm effect) is cyclical

Cyclicalty in Wage Changes for Continuing and New Jobs (Full Time Males Only)



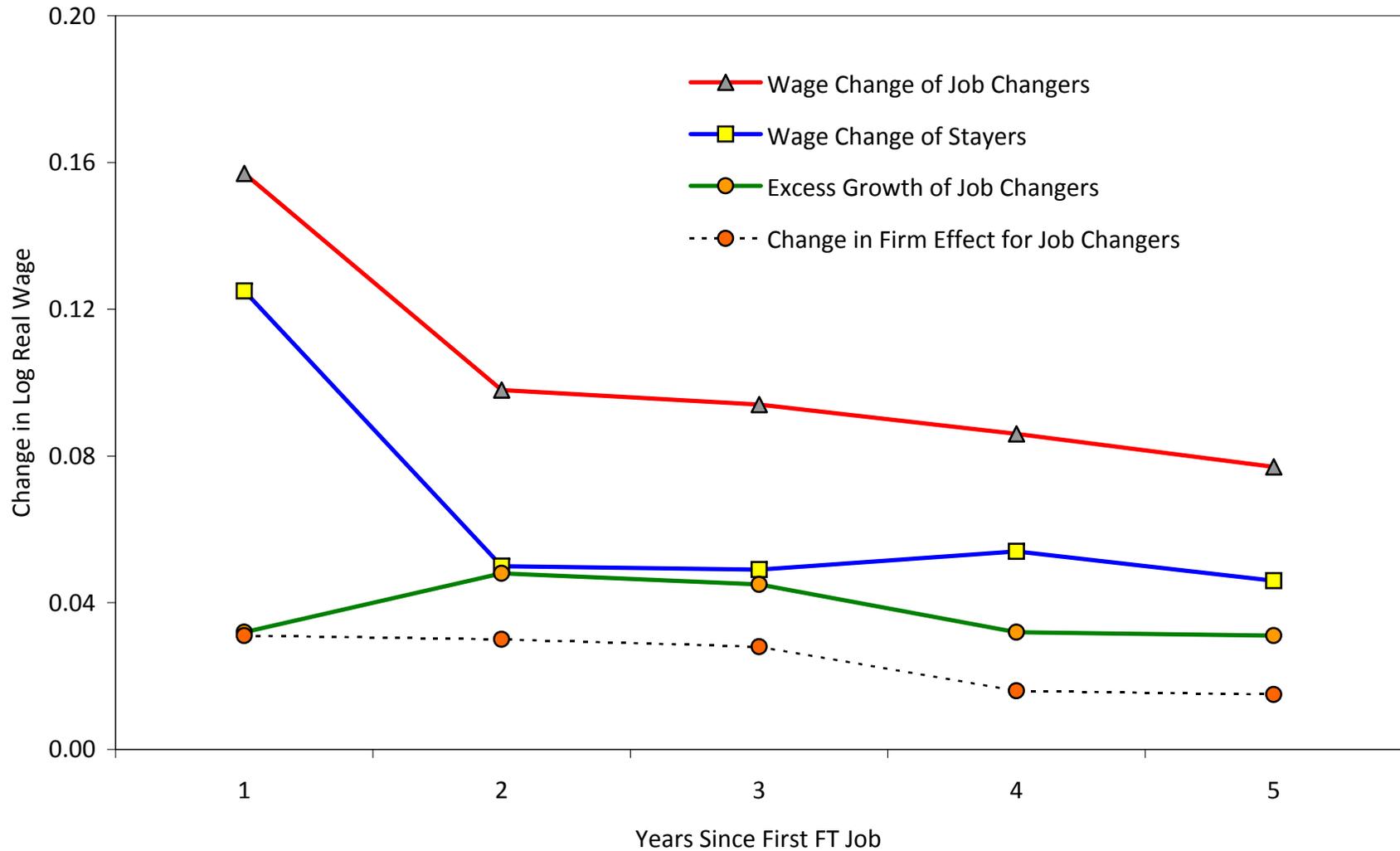
Relative Fraction of New Jobs in Bottom Quintile of Firm Quality



## 2. Early career progression

- Topel and Ward: young (male) workers' wages rise by changing jobs
- does this arise through rising firm quality (as measured by firm effects), rising match quality, or both?
- do long term effects of recession (Oreopoulos von Wachter, Kahn) come from lack of openings at high-wage firms?

Wage Gains to Job Mobility in First 5 Years of Career:  
Men With First Full Time Job in 1986/87 at Age 22-24



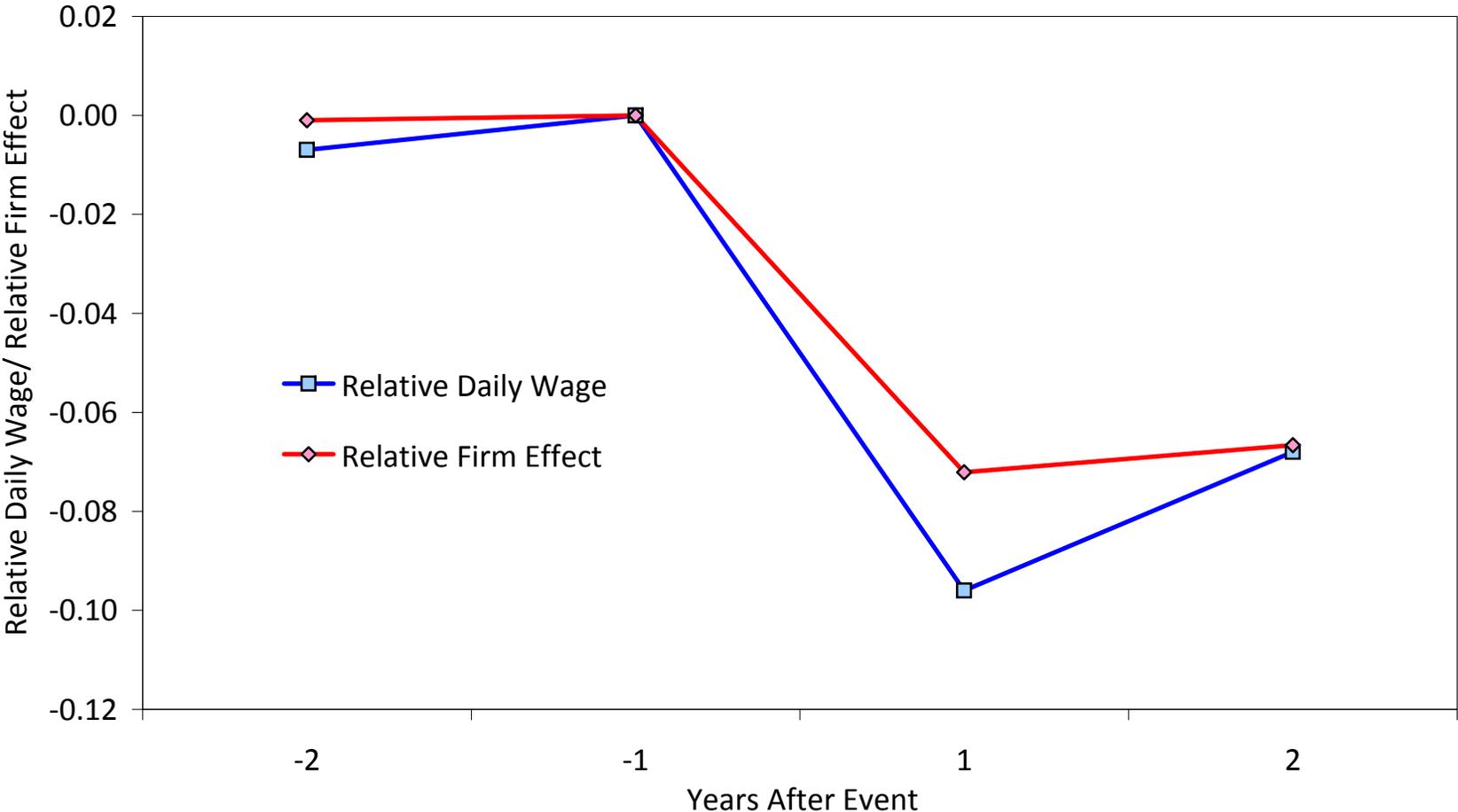
### 3. wage losses of displaced workers

- seminal JLS study: job losers in PA in early 1980s  
losses attributable to disappearing industry rents  
(and loss of union coverage)
- Davis + von Wachter: job losers with 3+ years tenure  
at plants with 50+ workers that shed 30% or more  
workers (*not closures*).

#### Earnings Losses (with 0's)

|               | 1 yr out | 5 yrs out | 10 yrs out |
|---------------|----------|-----------|------------|
| avg expansion | -10%     | -6%       | -4%        |
| avg recession | -17%     | -10%      | -6%        |

Contribution of Firm Effects to Wage Changes:  
Workers Affected by Large Layoff Events, 2004-2007



Full time men with 2+ years of wage data before and after downsizing of 30% or more at firms with 50+ workers

#### 4. Gender gaps

-women and men work at different firms

-women may also gain less from high- $\psi$  firms

i.e.:  $\psi_{j\text{Female}} = \lambda \psi_{j\text{Male}}$   $\lambda$ =relative bargaining power

Card, Kline, Cardoso - firms in Portugal that hire M&F's

1) Oaxaca style decomposition (assign F's  $\psi_{j\text{Male}}$ )

+ reweight F's to same firm distribution

2)  $\psi_{jG} = a + b_G (VA/L)_f$  ( $G=F, M$ )

3)  $\Delta w_{iG} = a + b_G \Delta (VA/L)_f$

## Oaxaca counterfactuals:

- raw MF wage gap (hourly wages) = 0.23

- give F's the male firm effects = 0.20

- give F's the male firm distribution = 0.19

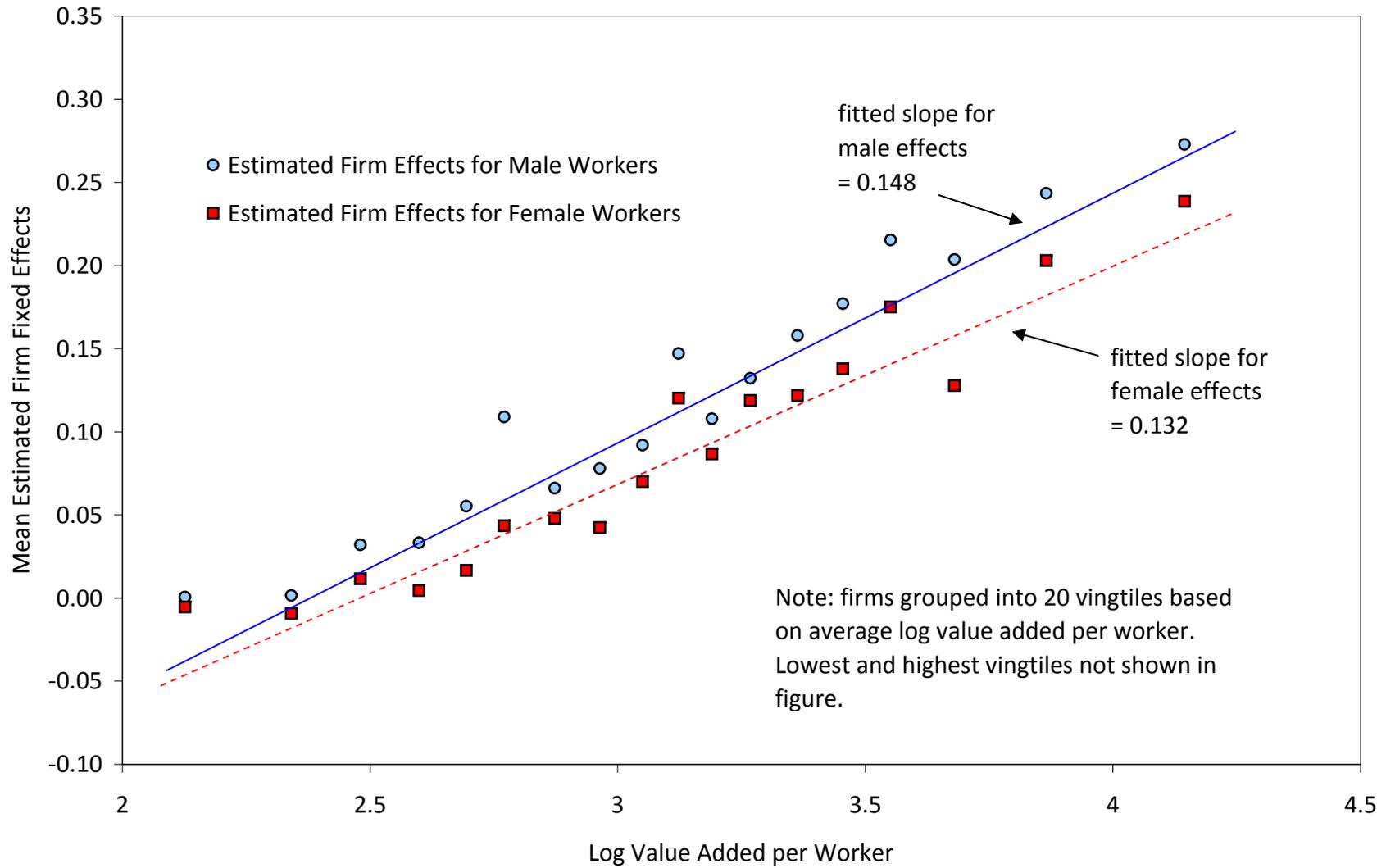
15% of gender gap due to lower rents, 20% to firm distribution

$$\text{Ex 2: } \psi_{jG} = a + b_G (VA/L)_f \quad b_F = 0.9 \quad b_M$$

using observed distribution of VA/L => 15% of gender gap to to lower rent sharing

$$\text{Ex 3: } \Delta w_{iG} = a + b_G \Delta(VA/L)_f \quad b_F = 0.9 \quad b_M$$

Figure 6a: Relation of Estimated Male and Female Firm Effects to Value Added per Worker



## V. What else *might* be related to firm wage premiums?

1. Other “gaps”
  - a. racial wage gaps
  - b. rising return to education (Germany)
  - c. immigrant assimilation (Portugal)
  - d. rise in incomes of the top 1%
2. Networks
  - network capital =  $\text{mean}(\psi_j)$  for friends
3. Intergeneration correlation in earnings (Kramarz-Skans)