

Rent-sharing

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Today's lecture

- 1 Preliminaries
- 2 How competitive are health insurance markets? (Dafny 2010)
- 3 Sharing innovative rents (Van Reenen 1996)
- 4 Regulation and rent-sharing (Rose 1987, Black-Strahan 2001)
- 5 Section: Card-Cardoso-Kline (2014)

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- 5 Looking ahead

Inter-industry wage differentials

- A long literature in economics has documented evidence of what are referred to as inter-industry wage differentials
 - ▶ Well-known Thaler *JEP* article opens with an anecdote about his secretary moving to IBM
 - ▶ That example captures that idea that some industries appear to pay higher wages than others, even when (measured) labor quality and occupation are held constant
- Classic analysis: Slichter (1950)
- Evidence from the CPS: Dickens-Katz (1987), Katz-Summers (1989)
 - ▶ Estimate relationship between log wage rate and individual characteristics (including occupations) + industry indicator variables
 - ▶ Document large, statistically significant “industry effects”
 - ▶ True in samples of unionized and non-unionized workers

Inter-industry wage differentials

- Some potential explanations
 - ▶ Compensating differentials: but, low quit rates (Katz-Summers 1989)
 - ▶ Unobserved worker quality: Murphy-Topel, Gibbons-Katz
 - ▶ Rent-sharing
- High compensation correlated with firm profits
- Various models predict a positive wage-effort relationship
 - ▶ Stand in contrast with textbook model of a competitive labor market, in which a worker's wage depends only on her productivity (profitability of her employer is irrelevant to the wage setting process)
 - ▶ Focus today is on tests for rent-sharing, not tests of specific models
- Important because deviations from competitive model of wage setting have important implications for a host of topics in labor economics, public finance, and macro economics

Evidence on rent-sharing

- Many studies documented a positive correlation between firm profitability and workers' wages in both unionized and non-unionized sectors (Slichter 1950; Dickens-Katz 1987; Katz-Summers 1989)
 - ▶ But: difficult to attribute to rent-sharing
- Panel data: can investigate the dynamic relationship between firm profitability and wage dynamics of incumbent workers
 - ▶ But: rely on strong assumptions regarding drivers of firm profitability
 - ▶ Dafny (2010); Card, Cardoso, Kline (2014)
- Quasi-experiments:
Van Reenen (1996), Rose (1987), Black-Strahan (2001)

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Dafny (2010)

- Empirical test: how competitive are health insurance markets?
- Key idea: test for evidence of conduct that can only occur in imperfectly competitive markets
- Based on field interviews: hypothesizes that employers are reluctant to switch health plans during “good times” - i.e. profits increase willingness to pay for incumbent health plans
 - ▶ Her initial empirical tests are based on this assumption:
do firms with higher profits pay higher health insurance premiums?
 - ▶ Then explores why it might be true

Proprietary (and extremely unique!) data

- Fully insured health plans offered by a sample of large, multisite employers from 1998-2005
- “Plan”-level data
 - ▶ Employer-geographic market-insurance carrier-plan type combination
 - ▶ WWW’s CIGNA HMO in Phoenix AZ
- Merges on profit data from Compustat
- Dafny et al. (2011) *BEJ* on data

Table 2

- $\log(\text{premiums})$ on $\text{lagged}(\text{profits})$: 10pp \Rightarrow 0.3% higher premiums
- Not very sensitive to controls
- Benefits do not increase with profitability

TABLE 2—THE RELATIONSHIP BETWEEN EMPLOYER PROFITS AND HEALTH INSURANCE PREMIUMS

	Dependent variable = $\ln(\text{annual premium})$; $N = 50,217$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged profits	0.024*** (0.009)	0.026*** (0.009)	0.043*** (0.014)	0.052*** (0.014)	0.043*** (0.014)	0.051*** (0.014)	0.030** (0.014)	0.040*** (0.014)
Family size	0.317*** (0.003)	0.317*** (0.003)	0.297*** (0.005)	0.297*** (0.005)	0.297*** (0.005)	0.297*** (0.005)	0.299*** (0.005)	0.298*** (0.005)
Plan design		0.362*** (0.024)		0.411*** (0.032)		0.413*** (0.032)		0.451*** (0.032)
Plan fixed effects	N	N	Y	Y	Y	Y	Y	Y
Market-year covariates								
Unemployment rate					0.023 (0.185)	0.002 (0.184)	N/A	N/A
$\ln(\text{average Medicare costs})$					0.073** (0.033)	0.084*** (0.032)	N/A	N/A
Market-year interactions							Y	Y

Notes: Models are estimated using the LEHID-FI-Compustat Sample. The unit of observation is the employer-market-carrier-plan type-year. Specifications correspond to equation (1) in the text, and are estimated by FGLS to account for serial correlation of errors among observations of the same employer-market-carrier-plan type (or “plan”). All specifications include fixed effects for employer, market, carrier, plan type, year, plan type-year, and employer-market.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

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Table 3

- Interaction with market structure: rent extraction by insurance carriers should be larger when competition is less fierce
- Coefficient on lagged profits declines as # insurance carriers increases

TABLE 3—THE RELATIONSHIP BETWEEN EMPLOYER PROFITS AND HEALTH INSURANCE PREMIUMS, BY MARKET STRUCTURE OF THE INSURANCE SECTOR

	Dependent variable = $\ln(\text{annual premium})$; $N = 50,217$			
	(1)	(2)	(3)	(4)
Lagged profits ×				
<=4 carriers	0.151*** (0.058)	0.148** (0.072)	0.145** (0.072)	0.168** (0.075)
5-6 carriers	0.047* (0.027)	0.002** (0.042)	0.002** (0.042)	0.060 (0.043)
7-8 carriers	0.034*** (0.012)	0.056*** (0.018)	0.055*** (0.018)	0.042** (0.018)
9-10 carriers	0.013** (0.014)	0.043** (0.019)	0.042** (0.019)	0.034* (0.019)
>10 carriers	0.011 (0.015)	0.035 (0.024)	0.034 (0.024)	0.027 (0.024)
Demographic factor	0.317*** (0.003)	0.297*** (0.005)	0.297*** (0.005)	0.298*** (0.005)
Plan design	0.363*** (0.024)	0.413*** (0.032)	0.415*** (0.032)	0.451*** (0.032)
Plan fixed effects	N	Y	Y	Y
Market-year covariates				
Unemployment rate			-0.109 (0.185)	N/A
Average Medicare costs			0.078** (0.033)	N/A
Market-year interactions	N	N	N	Y
<i>p</i> -values from $H_0: \gamma_{1,1} = \gamma_{2,1}; H_1: \gamma_{1,1} > \gamma_{2,1}$	0.01	0.07	0.07	0.04

Notes: Models are estimated using the LEHD-FI-Compustat Sample. The unit of observation is the employer-market-carrier-plan type-year. Specifications correspond to equation (2) in the text, and are estimated by FGLS to account for serial correlation of errors among observations of the same employer-market-carrier-plan type (or "plan"). All specifications include fixed effects for employer, market, carrier, plan type, year, number of carrier category, plan type-year, and employer-market.

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“Story”: Rent-sharing

- Results are consistent with a story in which firms are willing to pay more for health insurance when times are good, and in which - in concentrated insurance markets - health insurance carriers successfully extract some or all of this increased willingness to pay
- Interviews suggested this explanation: high switching costs to employees form changing health plans, “tough sell” in good times
- Proposes a bargaining model to explain why insurers may be more effective at extracting higher rents from more profitable firms in markets where fewer insurers compete

Table 7

- Bargaining model predicts that firms should be less likely to switch plans when they are more profitable
- Table 9 (not shown) documents that firms in more competitive markets are less likely to switch carriers when they experience a profit shock, also consistent with her bargaining model

TABLE 7—SWITCHING ANALYSIS

Dependent variable	carrierswitch	planswitch	carrierswitch	planswitch	carrierswitch	planswitch	carrierswitch	planswitch
FI + SI combined (<i>N</i> = 46,546)								
Lagged profits	-0.580*** (0.033)	-0.516*** (0.034)	-0.584*** (0.033)	-0.523*** (0.034)	-0.406*** (0.057)	-0.234*** (0.059)	-0.340*** (0.063)	-0.162** (0.064)
Market-year FEs	N	N	Y	Y	Y	Y	Y	Y
Employer FEs	N	N	N	N	Y	Y	N/A	N/A
Employer-market FEs	N	N	N	N	N	N	Y	Y
FI sample (<i>N</i> = 18,743)								
Lagged profits	-0.528*** (0.054)	-0.423*** (0.054)	-0.534*** (0.054)	-0.432*** (0.054)	-0.405*** (0.054)	-0.207** (0.054)	-0.418*** (0.104)	-0.167 (0.103)
Market-year FEs	N	N	Y	Y	Y	Y	Y	Y
Employer FEs	N	N	N	N	Y	Y	N/A	N/A
Employer-market FEs	N	N	N	N	N	N	Y	Y

Notes: Specifications correspond to equation (4) in the text. All models include year fixed effects. The unit of observation is the employer-market-year. Standard deviations in parentheses.

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Van Reenen (1996)

- Key insight: Use the quasi-rents earned by firms developing technological innovations as a source of quasi-experimental variation in firm rents, and to then ask whether those (instrumented) firm rents are passed through to workers in the form of higher wages
 - ▶ Quasi-rents: used here in the Schumpeterian sense of being the reward for the first commercialization of an invention
 - ▶ Could be due to patent rights, or to other first-mover advantages

Big picture comments

- I think of this paper as grabbing exactly the right conceptual thought experiment in a very novel way
- That said, in practice the study is limited by:
 - ① Data availability: firm-year aggregate average wages
 - ★ Linked firm-worker data would let you look at different groups of workers (some of whom may have experienced changes in their marginal product, others of whom should not have)
 - ★ Linked firm-worker data would also let you look at compositional changes (“skill upgrading”)
 - ② Lack of an instrument for timing of arrival of innovations across firms
- Both important partly because his rent-sharing estimates are large
- Ongoing work in these directions

Data

- Panel of British manufacturing firms who were listed on the London Stock Exchange for at least five continuous years between 1976-1982
- Accounts matched to information on innovations from the Science Policy Research Unit (SPRU) database
 - ▶ Details over 4,300 innovations first commercialized in UK since WWII
 - ▶ Data compiled by interviewing experts
 - ▶ Innovations: technologically important and commercially successful

First stage (prior work)

- SPRU innovations associated with significant increases in firm rents
 - ▶ Profit margins rose by about 6.2 percent relative to the mean after an SPRU innovation
- Important, b/c a “first stage” for the analysis in this paper

SPRU innovations

- Argues that SPRU innovations are better than patents because the distribution of patent value is very right skewed
- In practice, ways of identifying “high value” patents and focusing on those, and patent data may be preferable for other reasons
- Takes seriously that patents do not generate rents on average, and uses lagged patents as instruments for current innovations
 - ▶ Minimal discussion of the exclusion restriction here

Wage data

- Average real remuneration of UK workers in the company
- Important limitations

Rent data

- Quasi-rents: difference between real sales per head and average industrial wage
- Real profits per worker
- Tobin's q :
 - ▶ (Roughly) ratio between firm's market value and replacement value
 - ▶ The idea is that if the market value of a firm solely reflected the recorded assets of a company, Tobin's q would be 1.0
 - ▶ If Tobin's q is greater than 1.0, then the market value reflects some unmeasured or unrecorded assets of the company
 - ▶ Advantages of Tobin's q are that it is a market-based measure that is forward looking

Summary statistics: Table 2

- In the cross-section, innovating firms have higher wages than non-innovating firms
- In the cross-section, innovating firms have higher rents based on all three measures relative to non-innovating firms

Mnemonic	Definition	Innovators ^b		Noninnovators	
		Mean	Std dev.	Mean	Std dev.
<i>W</i>	Firm average wage	7.0002	1.2384	6.2515	1.5013
<i>N</i>	Firm employment in U. K.	11.8624	19.0551	2.7579	9.0473
<i>MS</i>	Sales/industry sales	0.0670	0.1142	0.0148	0.0412
<i>INNOV</i>	No. of firm innovations	0.2299	0.6528	0	
<i>INNOV (prod)</i>	No. of firm product innovations	0.1682	0.5372	0	
<i>PATENTS</i>	No. of patents granted to firm	4.5548	18.5596	0.1078	0.5591
\bar{W}	Industry wage	7.3108	1.0452	6.8180	1.3718
\bar{U}	Industry unemployment	0.0647	0.0345	0.0681	0.0362
<i>IDENSITY</i>	Industry union density	0.7194	0.1097	0.6868	0.1318
<i>K/L</i>	Firm capital-labor ratio	1057.8	2885.7	146.2	459.6
<i>IPI</i>	No. of innovations produced in industry	12.179	15.427	8.257	13.478
<i>R&D</i>	Industry R&D over sales	0.0145	0.0221	0.0113	0.0199
<i>CONC</i>	5 firm sales concentration ratio	0.4024	0.1650	0.4073	0.1669
<i>IMPORTS</i>	Industry imports over home demand	0.1864	0.1600	0.1949	0.1737
<i>II/N</i>	Real profits per worker	5.0718	4.0301	3.5718	3.6255
<i>QR/N</i>	Real quasi rents per worker	48.1204	84.9467	35.2396	39.4070
Average Q^c	(Market value/capital)–1	-0.2707	1.2361	-0.3599	1.2458
	Number of firms	449		149	
	Number of observations	2876 ^d		957	

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Reduced form estimates: Figure 1

- Implies that an innovation raises wages after four years, and lowers to its original level afterward
- Pattern is consistent with innovations creating rents for several years, but imitation and entry eventually driving wages back to their pre-innovation level

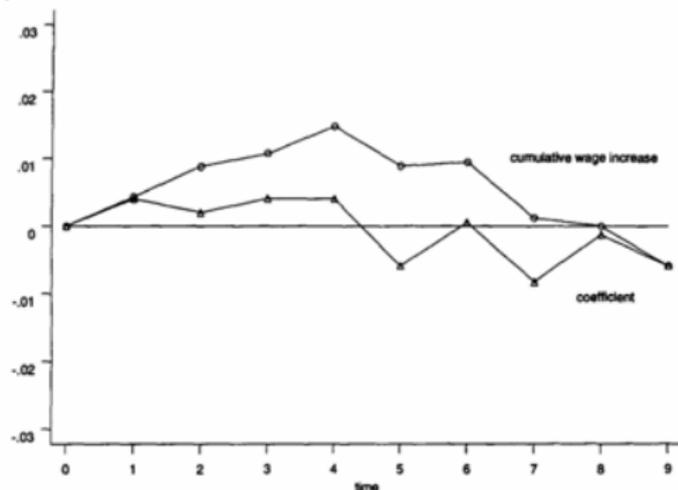


FIGURE I

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IV estimates: Table 3

- IV estimates are similar in magnitude to Abowd-Lemieux (1993), but much larger than estimates from other past studies

TABLE III
SUMMARY OF RESULTS FROM STRUCTURAL WAGE EQUATIONS

	$\log(QR/N)$	II/N	Average Q
(1) Static OLS	0.1137 <i>0.0227</i>	0.0059 <i>0.0024</i>	0.0013 <i>0.0014</i>
(2) Static IV	0.2886 <i>0.0886</i>	0.0537 <i>0.0228</i>	0.0379 <i>0.0206</i>
(3) Dynamic IV	0.2191 <i>0.0836</i>	0.0479 <i>0.0218</i>	0.0325 <i>0.0211</i>
(4) Dynamic IV restricted instruments	0.2239 <i>0.0842</i>	0.0489 <i>0.0227</i>	0.0342 <i>0.0225</i>

These are the coefficients on rents terms, and full specifications are in Appendices 2-4.
Quasi rents are in log differences, and profits per worker and average Q are in first differences.

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Regulation and rent-sharing: Rose (1987)

- Starting point: understanding rent-sharing is essential to analyzing government regulation, in part because regulatory protectionism can create rents over which workers and firms may negotiate
- Key idea: examining wage reductions to regulation-induced reductions in rents can provide a test of rent-sharing
- Empirical work focuses on the trucking industry, which was deregulated in the late 1970s and early 1980s
 - ▶ Anecdote about Nancy's undergraduate thesis

Regulation and rent-sharing

- Prior literature had documented the existence of monopoly rents in this industry and linked them to economic regulations
- One very powerful union (Teamsters) represented almost all unionized workers in this (heavily unionized) sector, which likely increased the bargaining power of organized labor in trucking

Regulation in the trucking industry

- From 1935 to the mid-1970s, regulation of the trucking industry included strict entry controls, restrictions on partially regulated and exempt carriers, and other regulations
- Prior work (including Nancy's undergraduate thesis!) suggested that this system of regulations increased trucking rates above competitive levels, ensuring high economic profits for regulated trucking firms
- Regulatory changes she examines led to substantial entry of new firms, expansion of existing firms, and enhanced price competition
- She argues that these reforms created a considerable exogenous shock to potential industry rents

Union contract evidence: Table 1

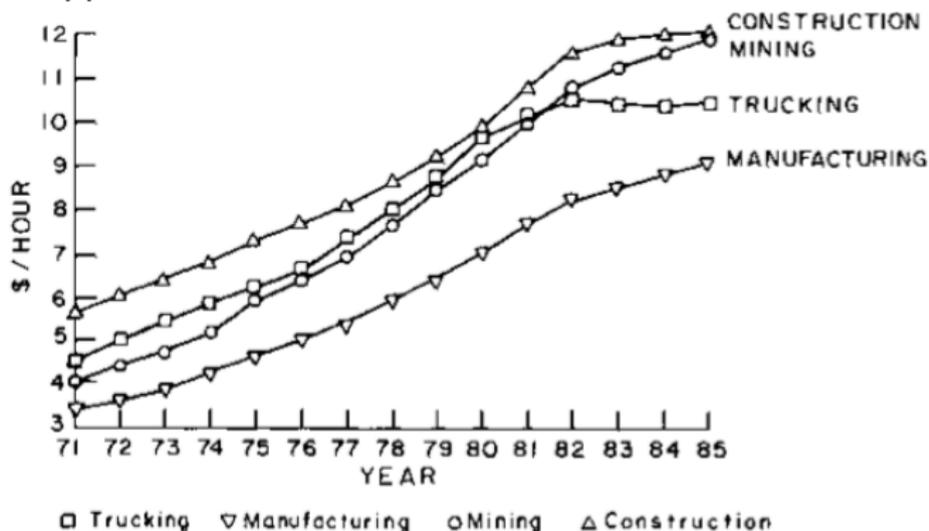
- The “regulation” period includes contracts signed through 1976; the “deregulation” period includes the 1982 and 1985 agreements; the 1979 contract is less clear
- The 1982 and 1985 agreements represent dramatic departures from the earlier pattern of contracts, which ended the general wage increase, and allowed less generous benefit coverage

Contract Years	Average Base Contract Wage (\$)	General Wage Increase	Cost-of-Living Provisions	Employer Contributions to Pensions, Benefits
1970–73	4.50 (est.)	\$1.85/hr.	1¢/hr. per .3 CPI; 8¢ max./yr.	\$8/wk. increase
1973–76	6.32	\$0.95/hr.	1¢/hr. per .3 CPI; 6¢ min., 8¢ max./yr.	\$16/wk. increase
1976–79	7.55	\$1.65/hr.	1¢/hr. per .4 CPI (4/77)	\$17/wk. increase
1979–82	9.60	\$1.50/hr.	1¢/hr. per .3 CPI (4/78) uncapped	\$30/wk. increase
1982–85	12.80	None	1¢/hr. per .3 CPI, diverted to benefits; deferred COLA: 47¢ to wages, 25¢ to benefits	No general increase
1985–88	13.26	\$1.50/hr.; pay decreases for part-time, new employees	31¢ of each year's 50¢ increase considered COLA	\$0.50/hr. increase

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Wage evidence: Figure 1

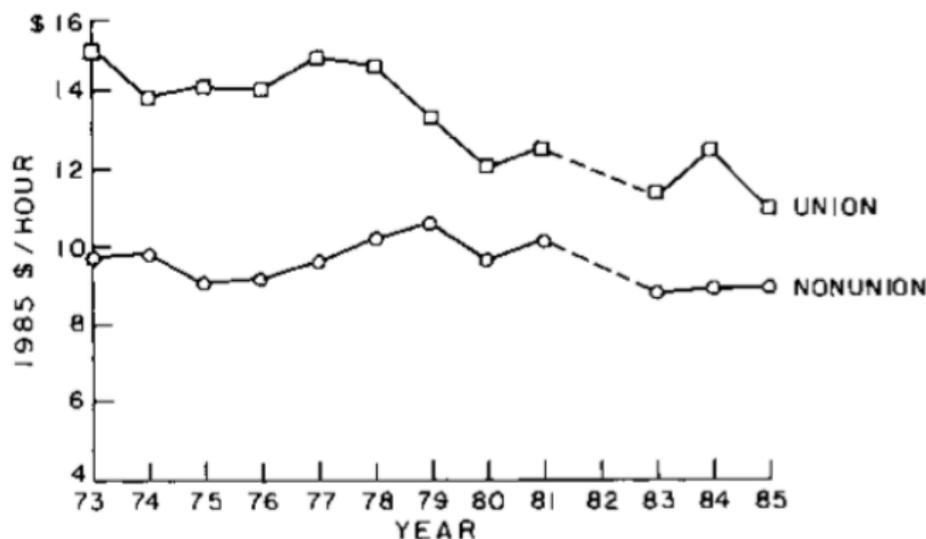
- Average hourly wages in trucking relative to similar unregulated sectors (construction, mining, manufacturing)
- Data support the conclusions drawn from the union contracts



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Union wage premium evidence: Figure 2

- CPS data on predicted union and non-union (constant dollar) wages
- Notable decline in union wage premium around time of deregulation



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Key take-aways

- Argues little evidence of rent spillovers to nonunion trucking industry drivers or truck drivers outside of the regulated trucking industry
- BOE suggests that the union may have been the dominant beneficiary of trucking regulation, capturing 65-76 percent of the total rents in the industry, which are 5-9 percent of industry revenues

Regulation and rent-sharing: Black and Strahan (2001)

- Banking deregulation and wages
 - ▶ Until mid-1970s, regulations constrained banks' ability to enter new markets by opening branches or by owning banks in multiple states
 - ▶ Over the subsequent 25 years, states gradually lifted these restrictions
 - ▶ Conceptualized as a shock to market competitiveness
 - ▶ Useful empirical setting: state-year panel variation (advantage relative to Rose 1987)
- Baseline estimates: banking wages declined post-regulation

Focus: Gender

- Focus on how gender wage gap changed following deregulation
- Post-deregulation, male wages fell by $\sim 12\%$ whereas female wages fell by only $\sim 3\%$, suggesting that rents were shared mainly with men
- Also document that women's share of employment in managerial positions increased following deregulation

- This gender gap in rent-sharing also comes up in Card, Cardoso and Kline (2014), which will be covered in section this week

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Looking ahead

Management

No reading assignment for next week

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14.662 Labor Economics II

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