The Evolution of Gender Roles in Labor Markets, Education and Household Structure

David Autor, MIT and NBER

14.662 Spring 2017

Outline

1. **Context – Gains along four economic margins**
   - Skills acquisition
   - Occupational attainment
   - Real wage levels
   - Employment to population rates
2. **The gender earnings gap**
3. **Gender norms and gender roles**
4. **Labor markets, marriage, children's HH structure**

U.S. College Completion Rates by Birth Cohort

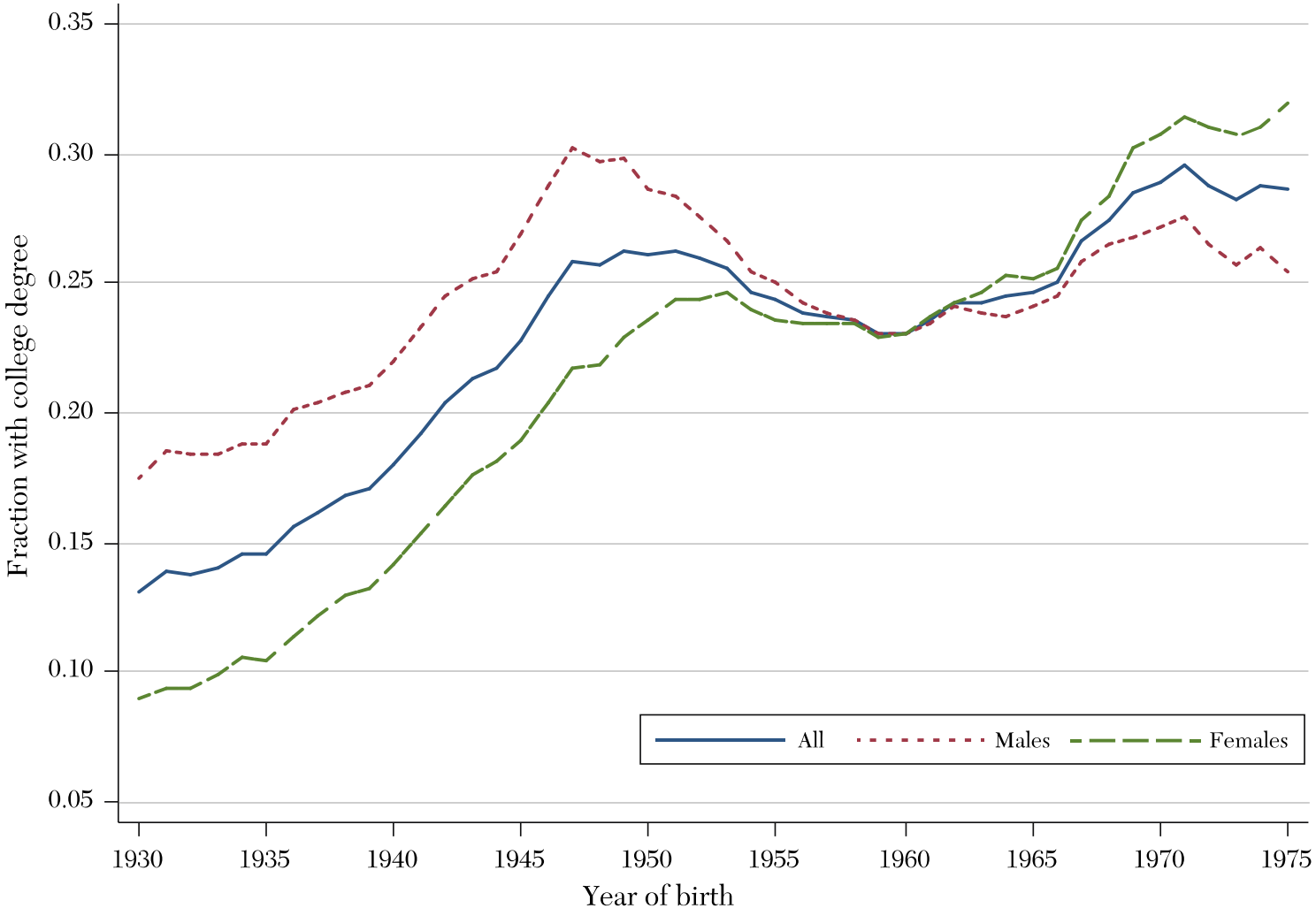
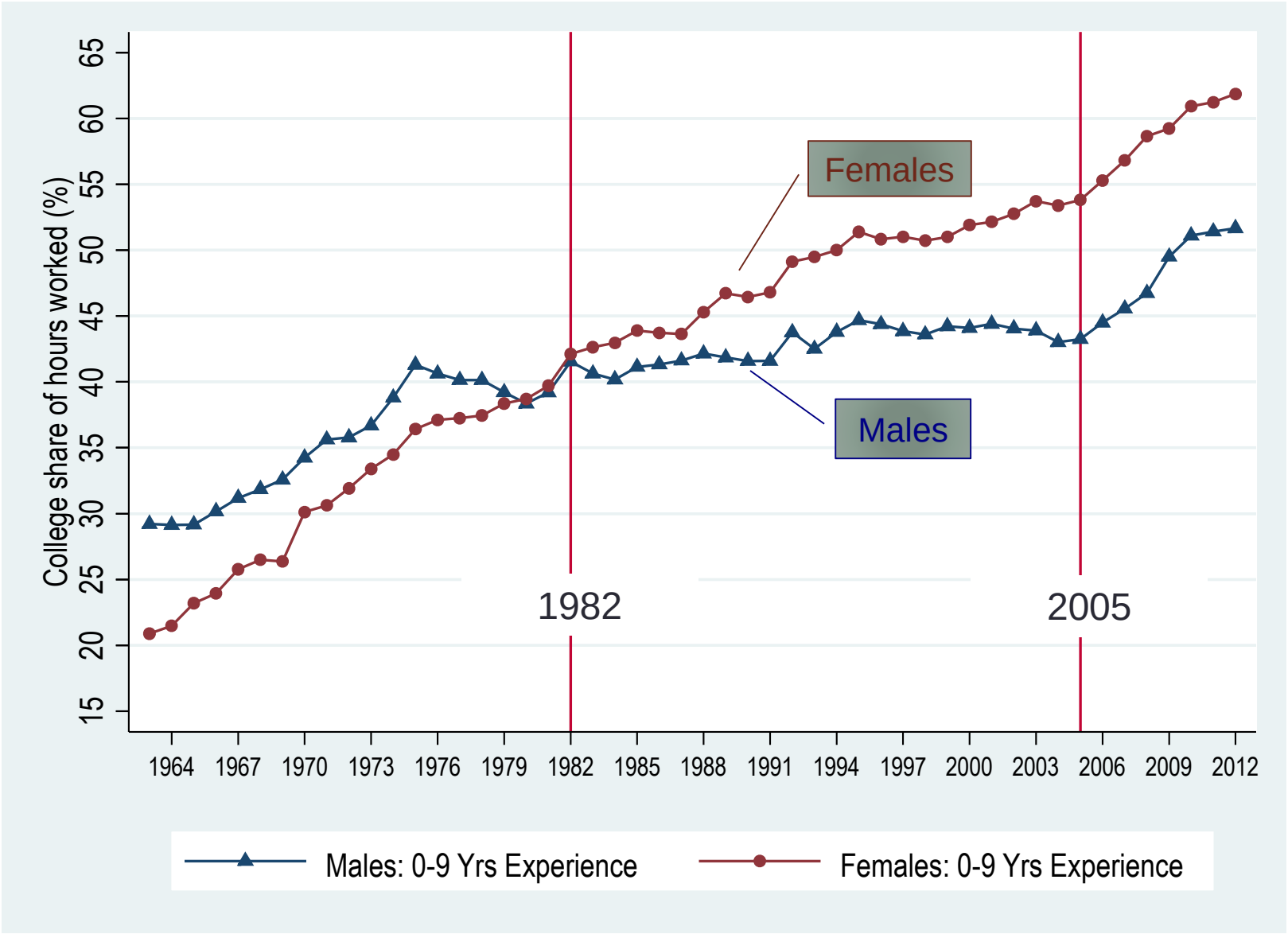


Figure 8. College Completion Rates by Birth Cohort: 1930–1975

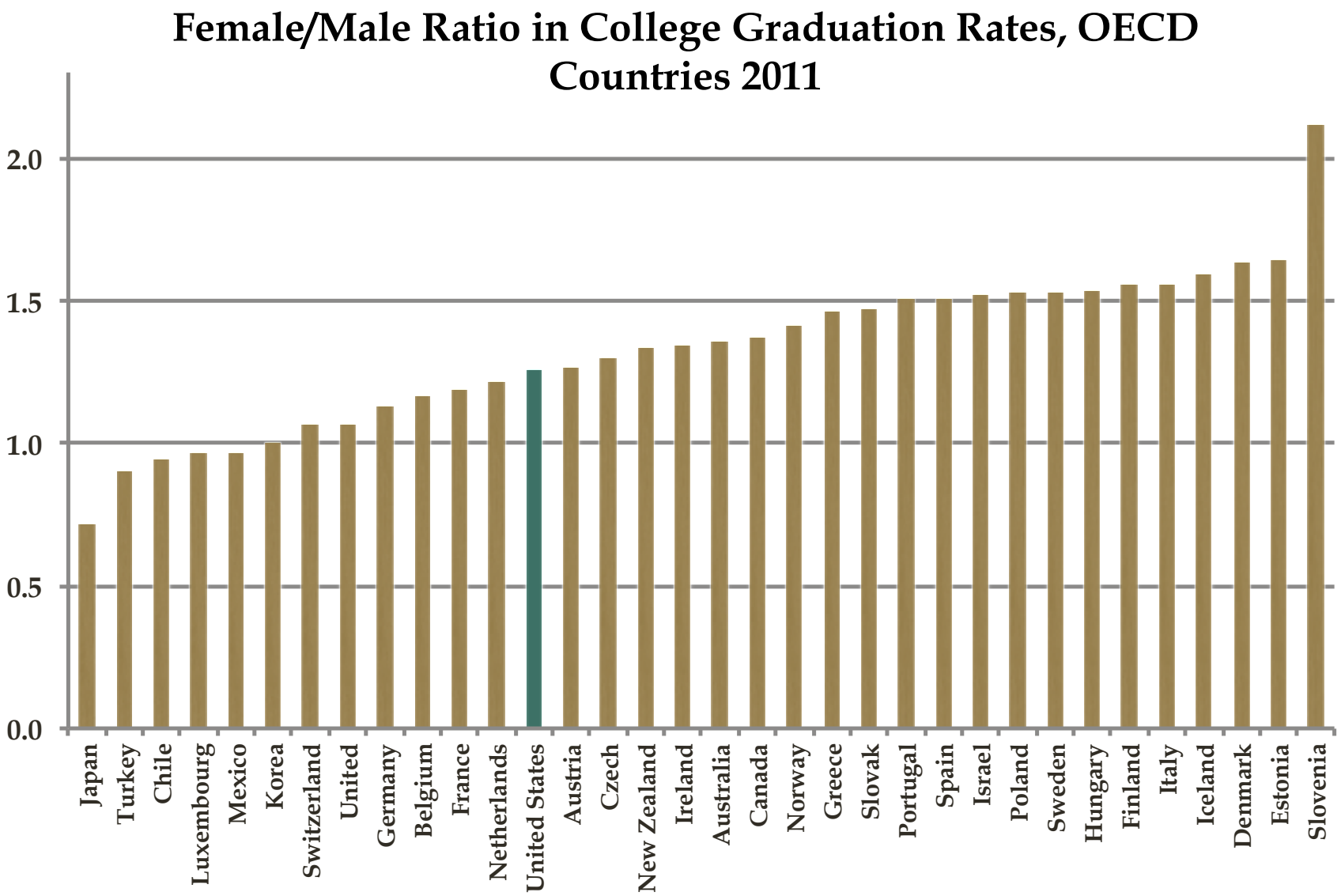
Acemoglu and Autor 2012

Largest Contributor to Widening Earnings Inequality: Deceleration in Supply of U.S. College Graduates

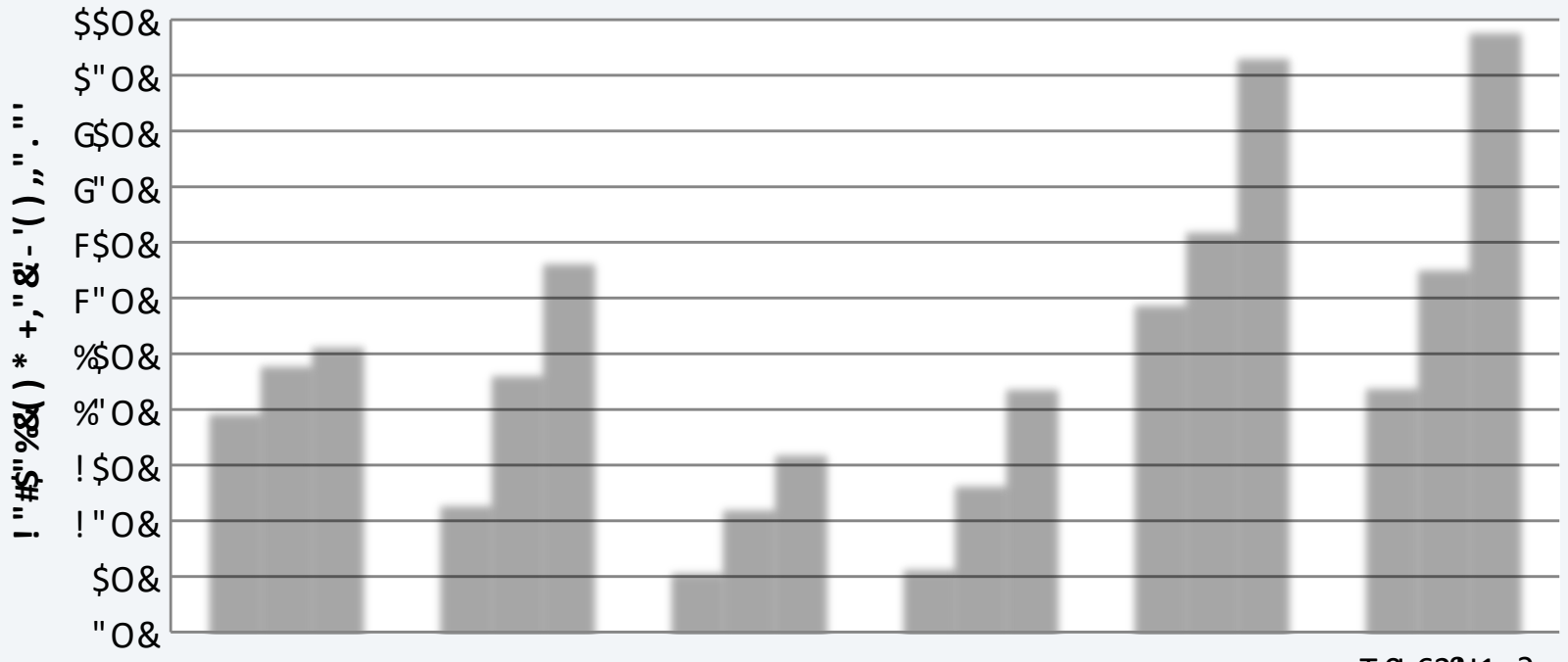


Autor, 2014

Ratio of Female/Male College Graduates among Ages 25-34 in OECD Countries in 2011



U.S. College Completion Rates by Sex, 1970-2008: Young Adults, 25 – 34



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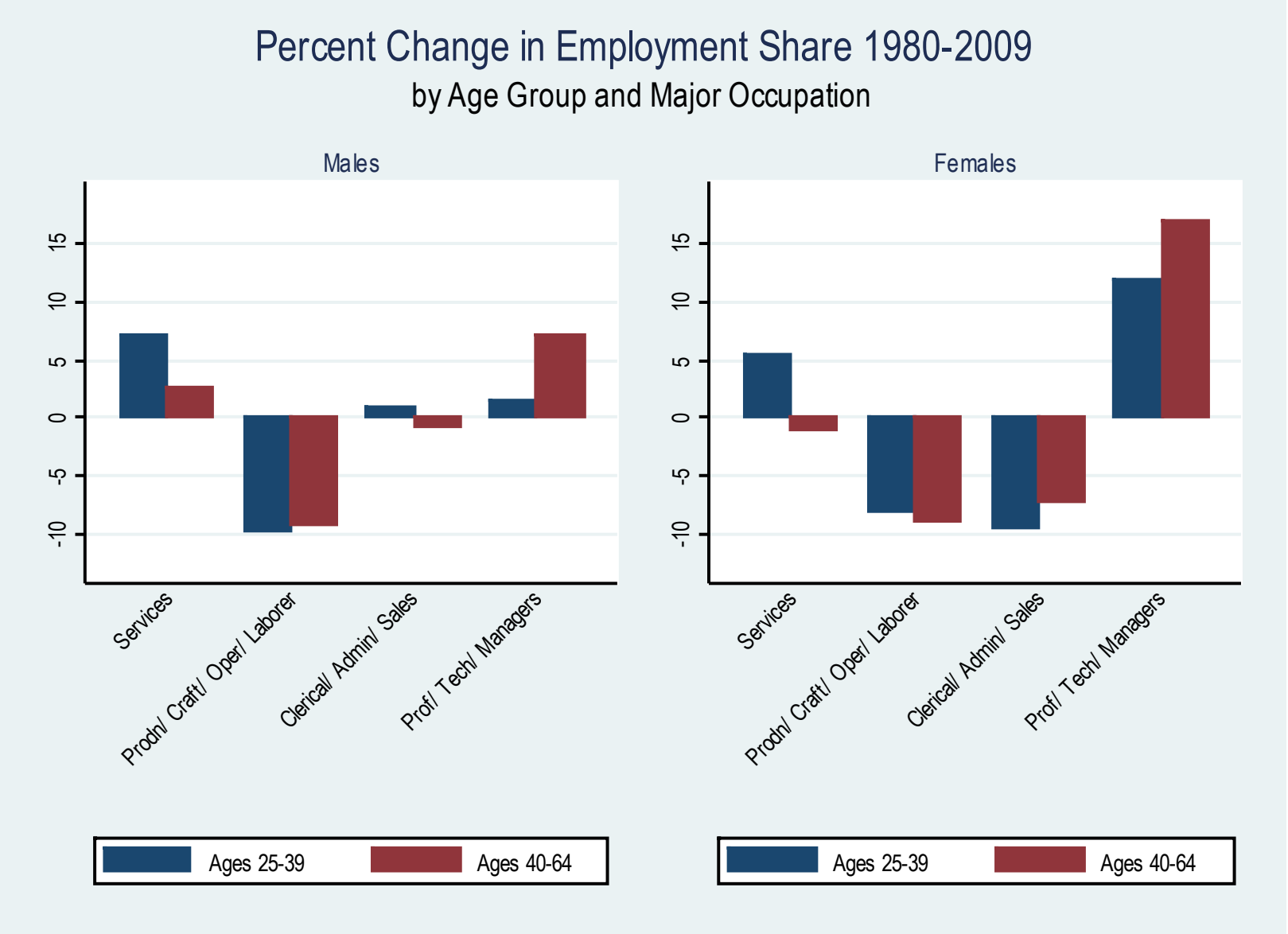
Autor and Wasserman 2013

Females have Adapted Much More Successfully than Males to Employment 'Polarization'



Autor and Wasserman 2013

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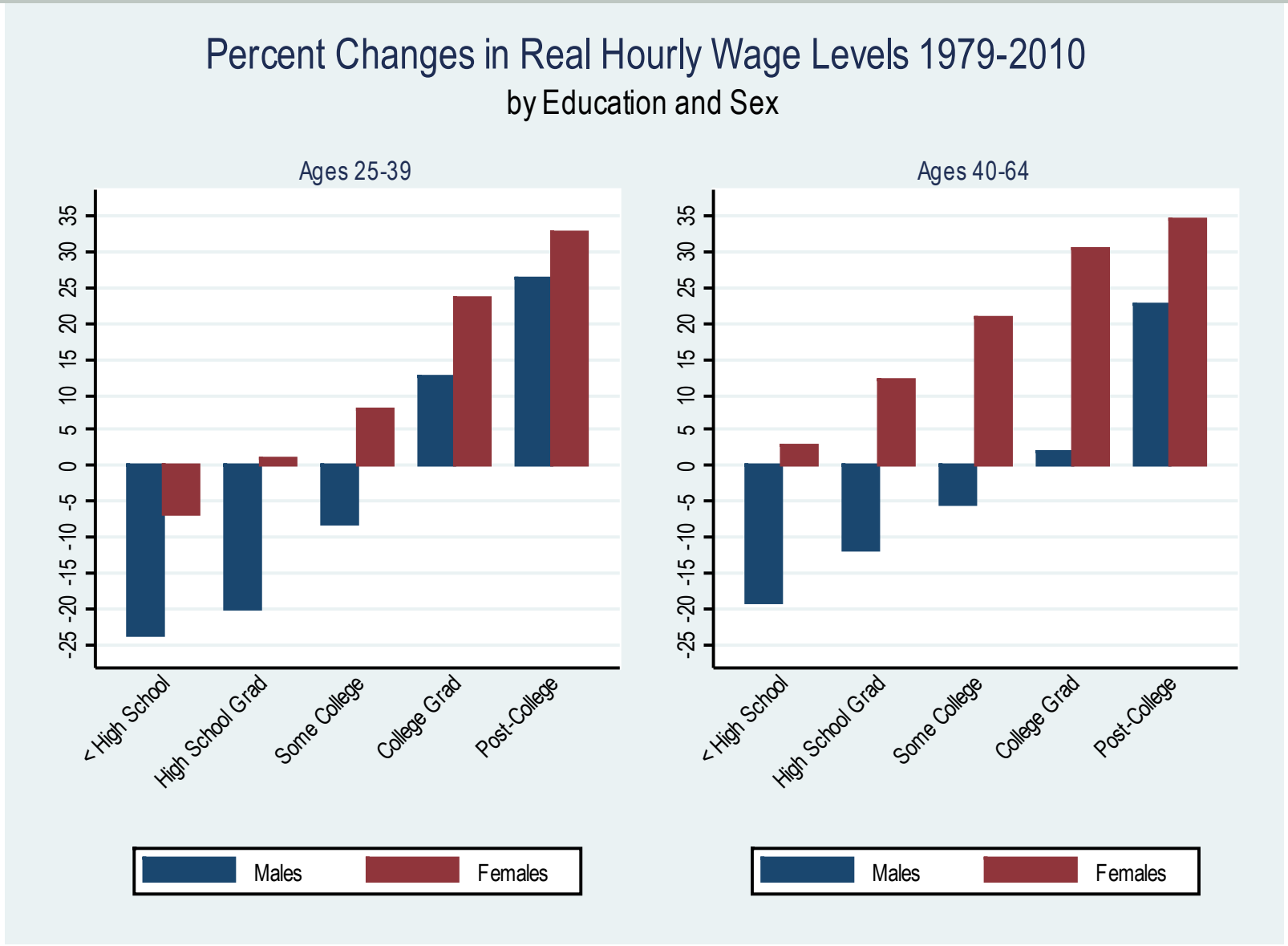
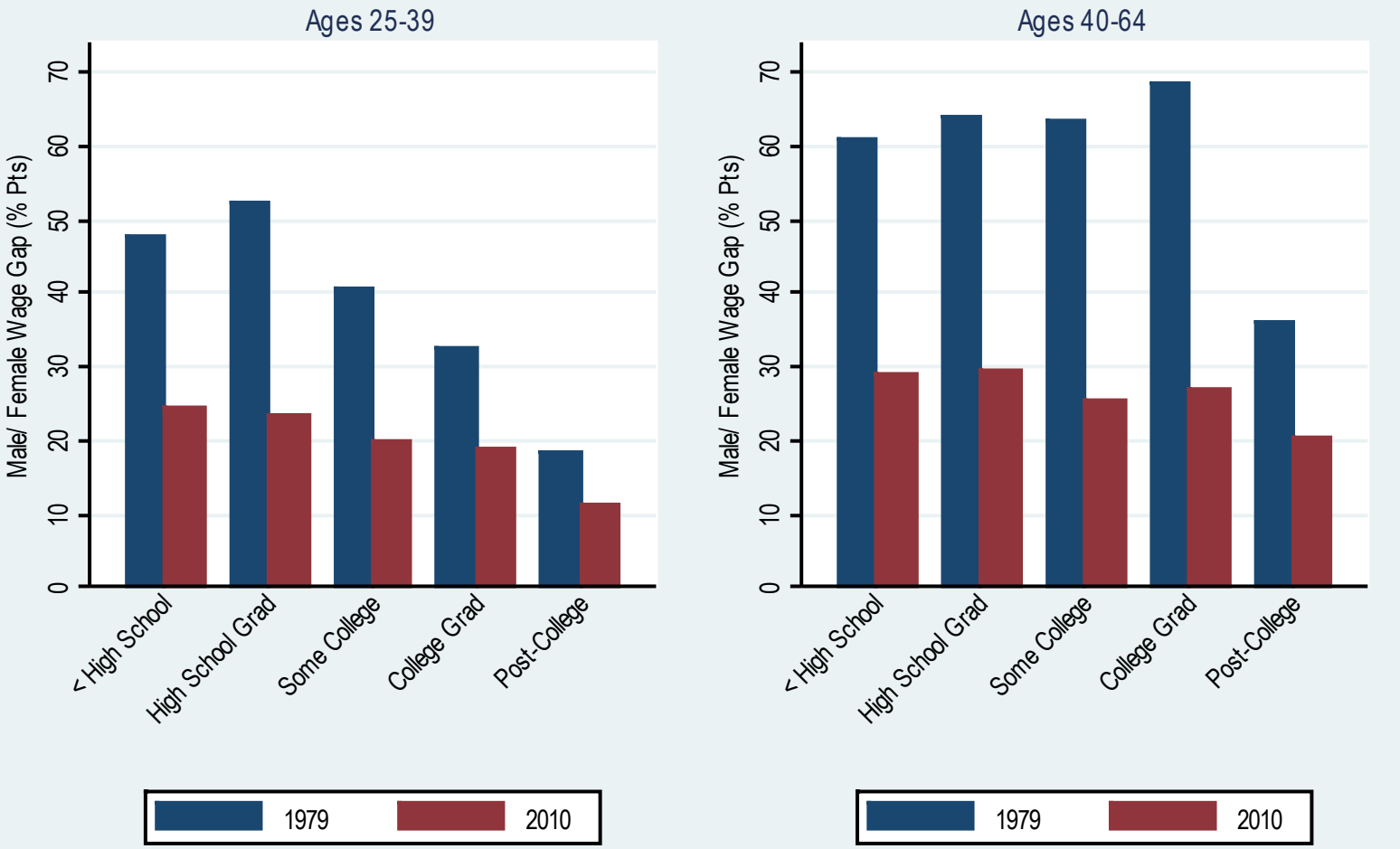
Wage Gains Weak/Negative for Non-College, Much Better for Females than Males



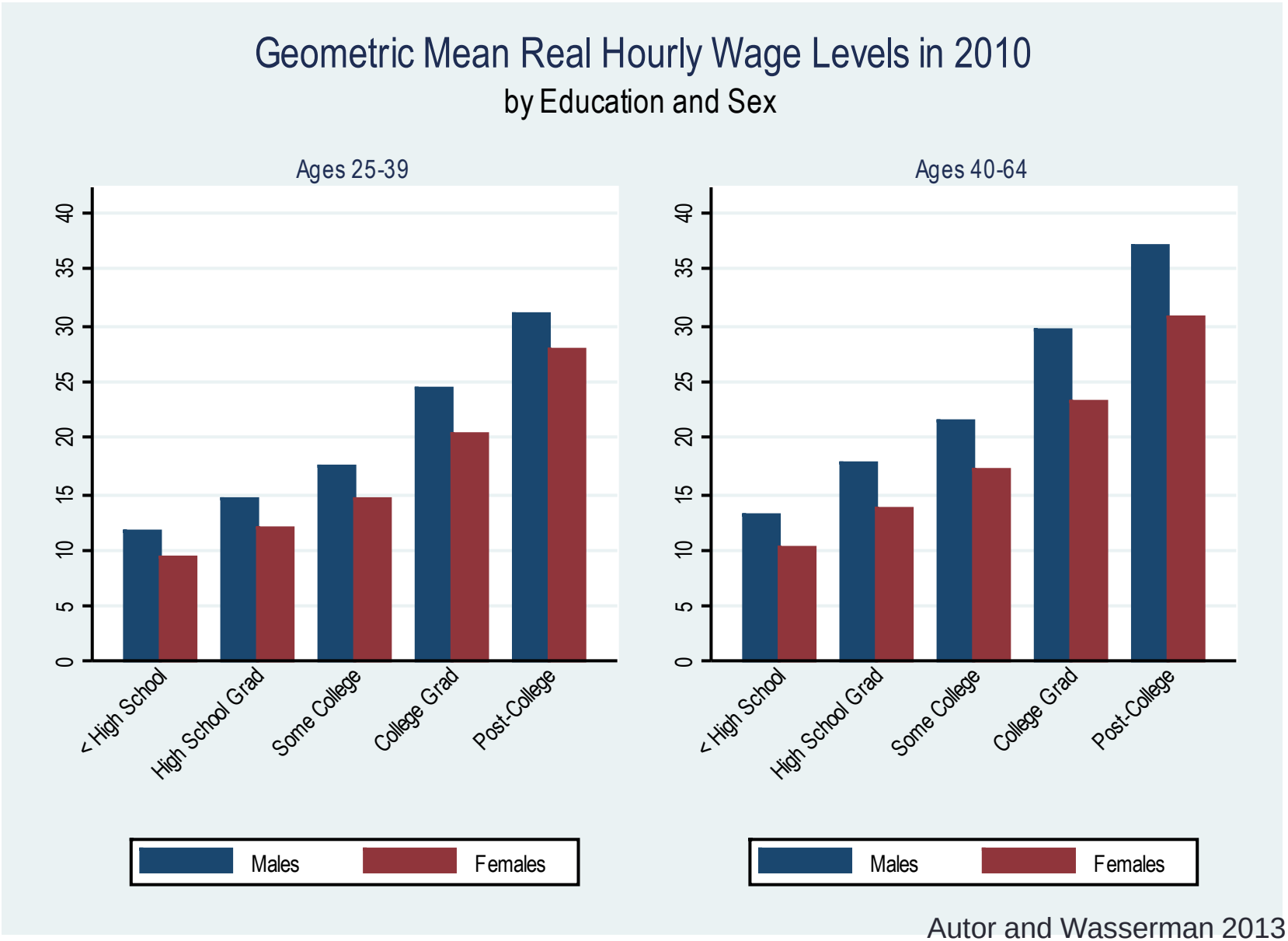
Autor and Wasserman 2013

Gender Gap in Earnings has Fallen Dramatically, Especially among Non-College



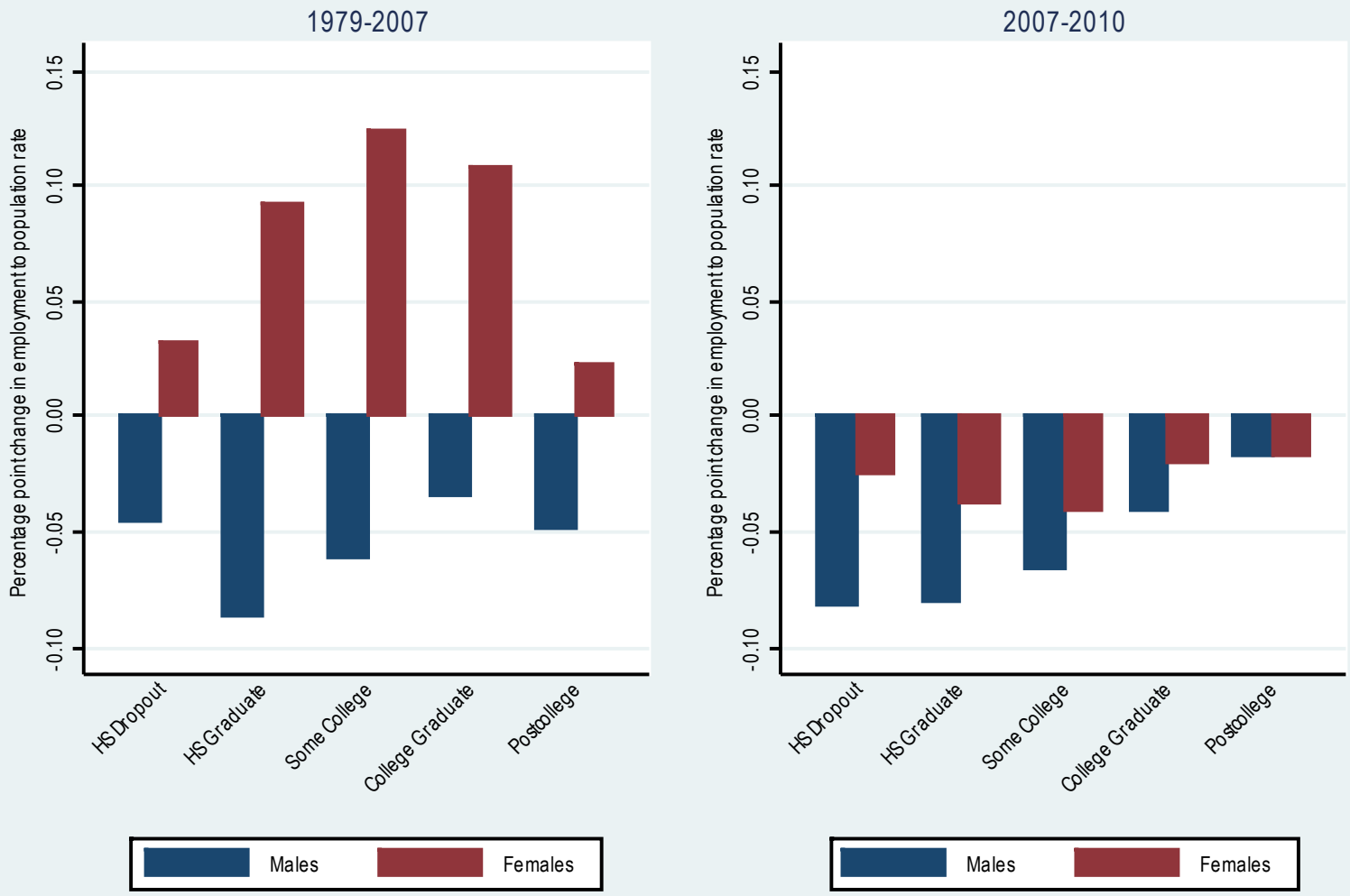
Autor and Wasserman 2013

Yet Males Earn More at Every Education Level with the Largest % Advantage at Lower Education Levels



Autor and Wasserman 2013

Emp/Pop Has Fallen Among Males, Esp. Among Low Education Males



Autor and Wasserman 2013

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Bargaining, Sorting, and the Gender Wage Gap

Card, Cardoso, Kline
QJE '16

Question

More profitable firms may command wage premiums in a frictional labor market (e.g. Manning, 2003)

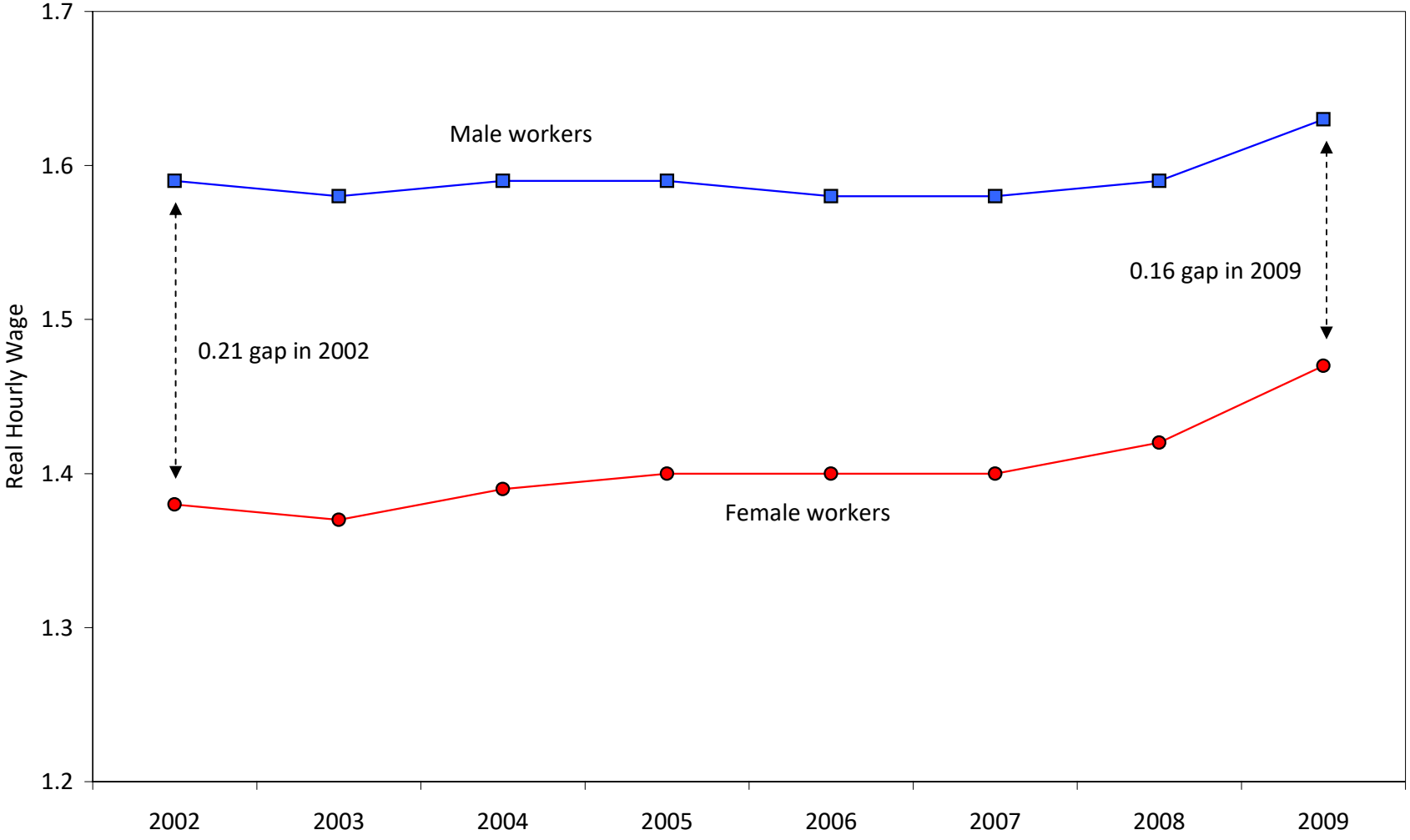
1. Do equally-productive men and women strike different wage bargains?
2. Do women sort to firms with lower premiums?
3. Contrast to productivity/discrimination explanations for gender wage gaps (Mulligan and Rubenstein, 2008; Becker, 1957)

Approach

- Abowd, Kramarz, Margolis (1999) approach identifies wage premiums from matched worker-firm data
  - Estimate premium distribution for men and women
  - Decompose gap into within-and between-firm components
  - Need a normalization to compare premiums across gender

Hourly Gender Pay Gap, Portugal, 2002 – 2009

Figure 1: Trends in Real Hourly Wage of Men and Women



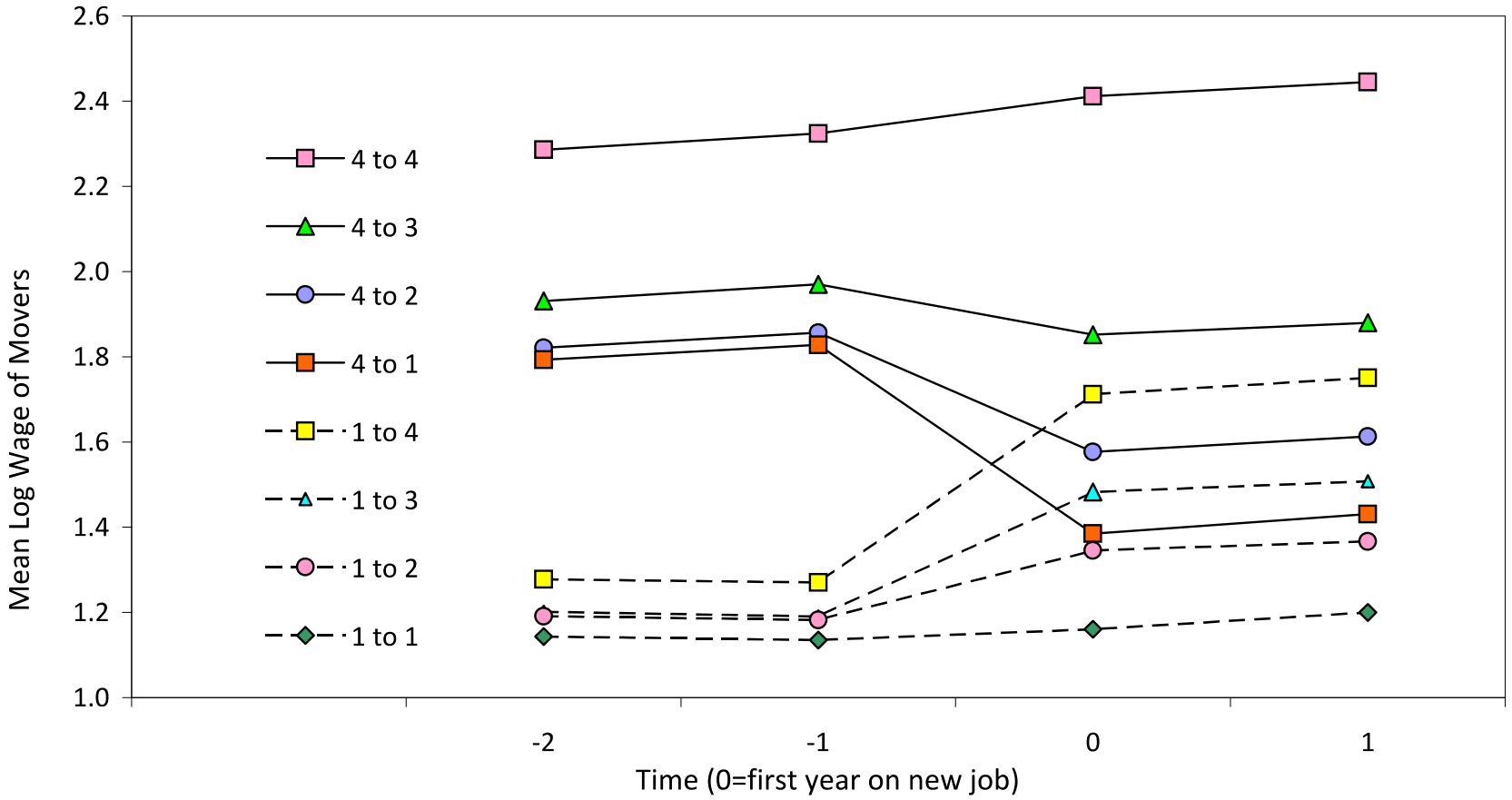
Card, Cardoso, Kline 2014

Facts about Gender Segregation in Portugal

1. On average, 70% of female's coworkers are female
2. On average, 76% of male's coworkers are male
3. 21% and 19% of males (females) work at all-male (all-female) firms
4. 83% of women and 27% of men are in 'mainly female' occupations (mainly = above median of occupations overall)

Comparison of Wage Changes by Quartile of Wages at Origin and Destination Firms

Figure 2a: Mean Wages of Male Job Changers, Classified by Quartile of Mean Co-Worker Wage at Origin and Destination Firm

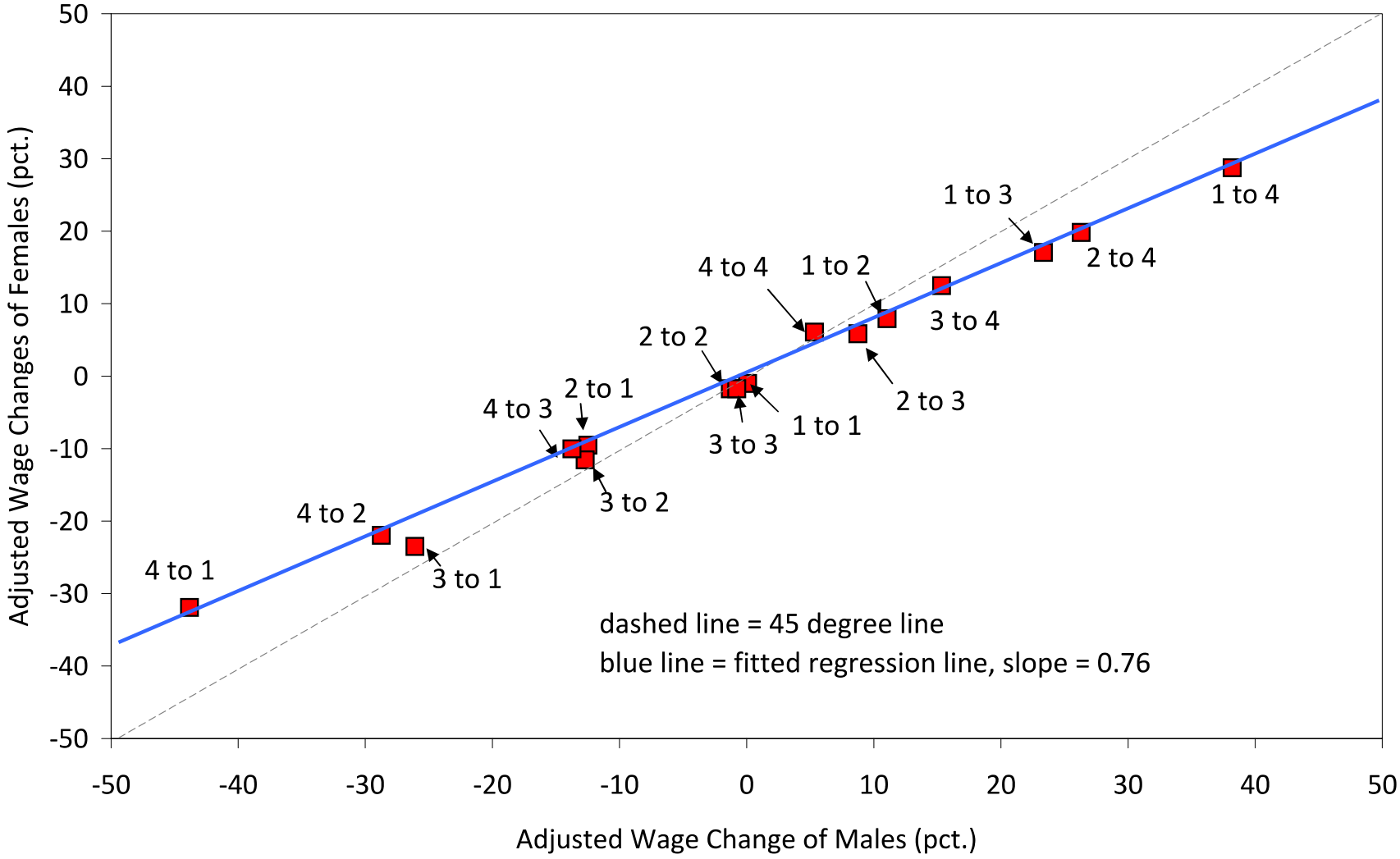


Notes: figure shows mean wages of male workers at mixed-gender firms who changed jobs in 2004-2007 and held the preceding job for 2 or more years, and the new job for 2 or more years. Each job is classified into quartiles based on mean log wage of co-workers (quartiles are based on coworker wages in last year on old job and first year on new job).

Card, Cardoso, Kline 2014

Comparison of Wage Changes of Male/Female Movers by Quartile of Wages at Origin and Destination Firms

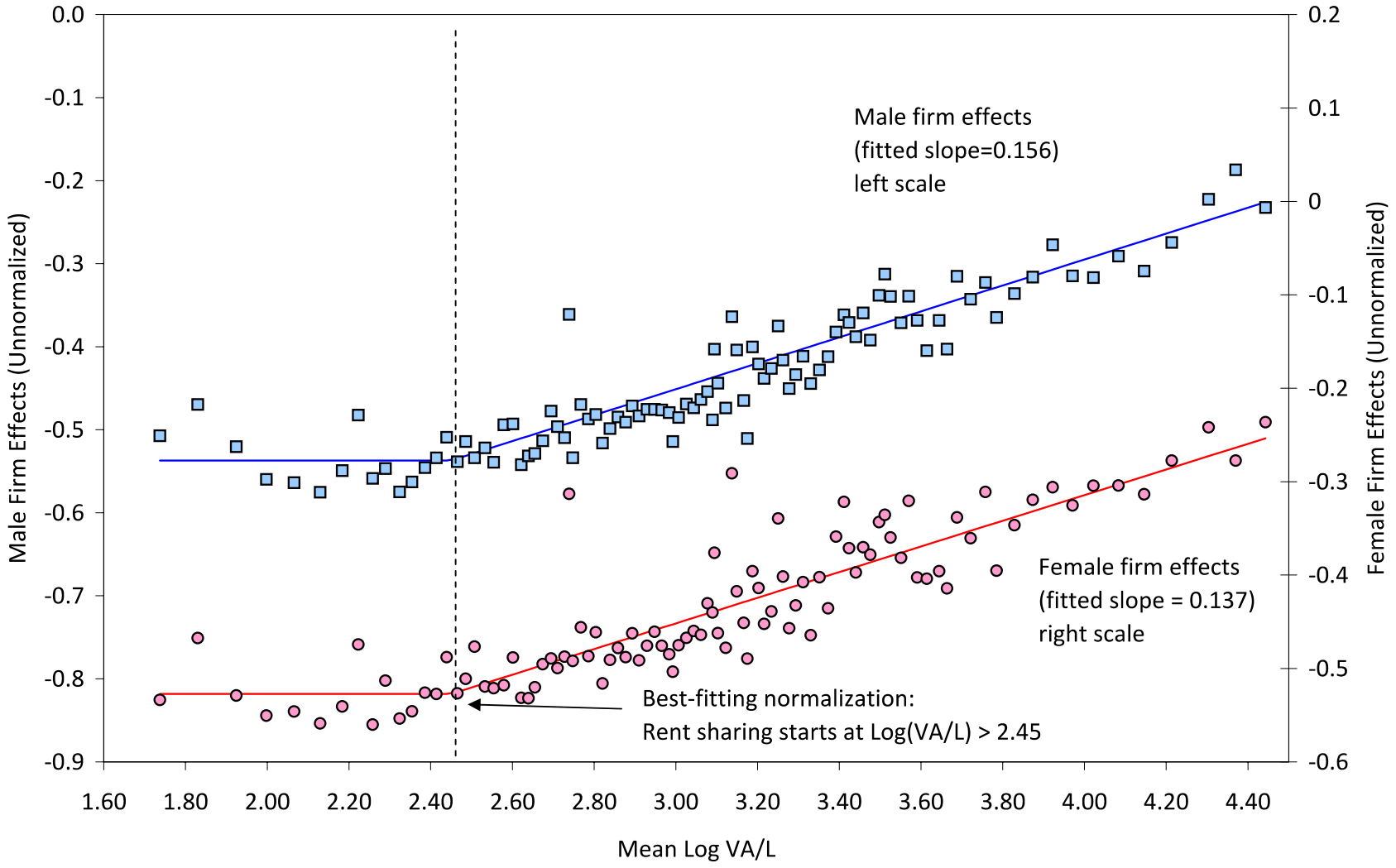
Figure 3: Comparison of Adjusted Wage Changes of Male/Female Job Movers by Quartile of Coworker Wages of Origin and Destination Jobs



Card, Cardoso, Kline 2014

Firm Fixed Effects vs. Log Value Added/Worker

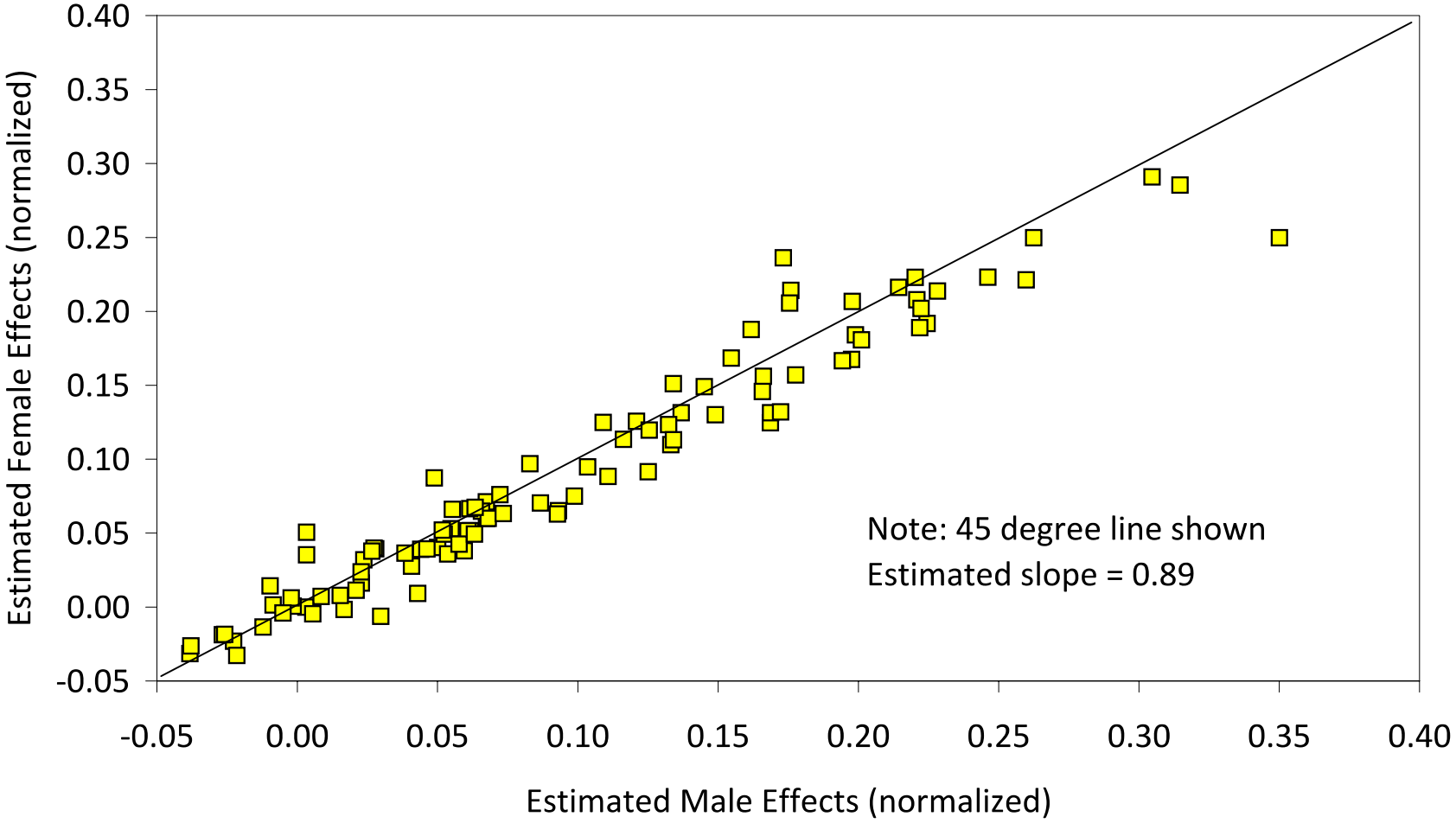
Figure 4: Firm Fixed Effects vs. Log Value Added/Worker



Card, Cardoso, Kline 2014

Estimated Firm Effects for Female and Male Workers. Firm Groups Based on Mean Log VA/L

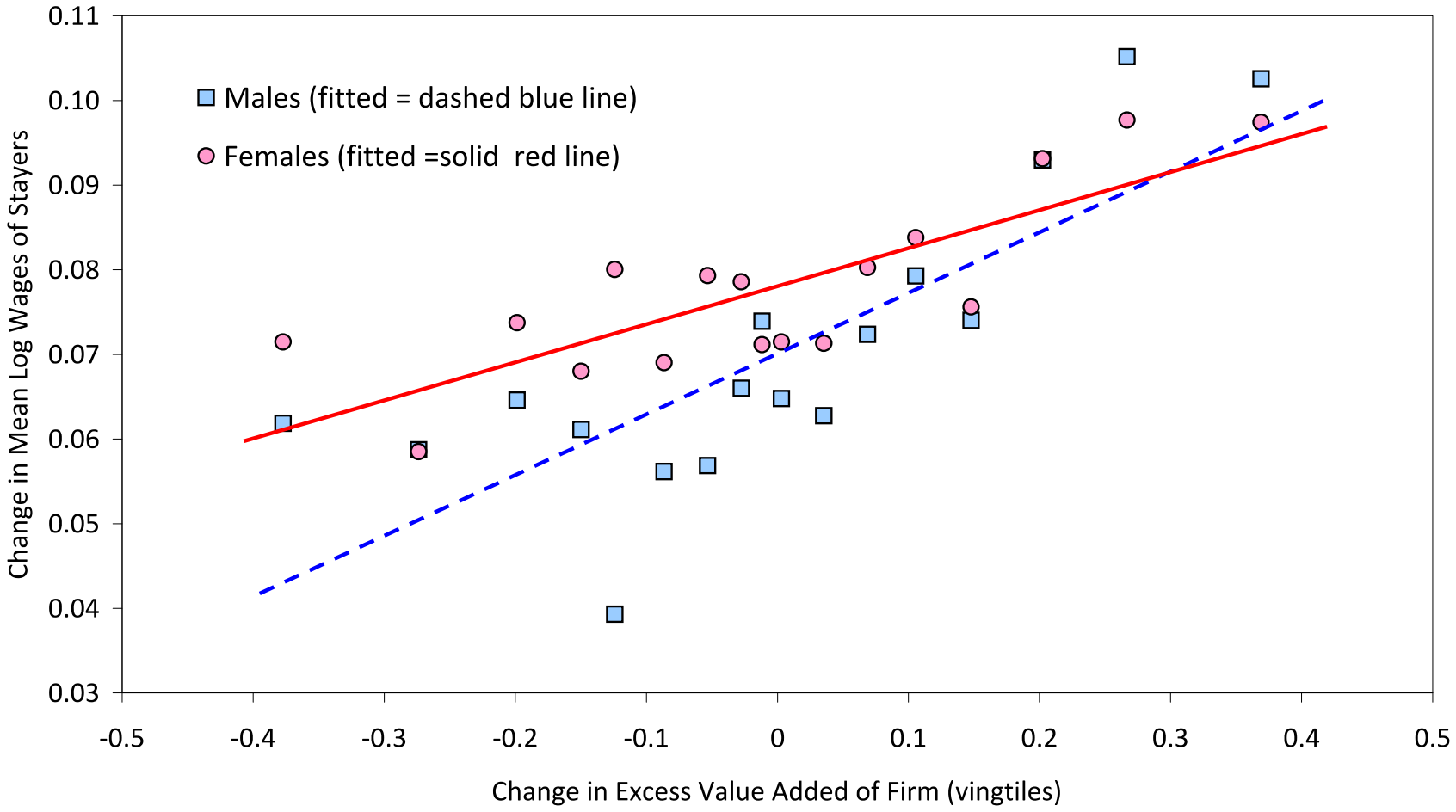
Figure 5: Estimated Firm Effects for Female and Male Workers:
Firm Groups Based on Mean Log VA/L



Card, Cardoso, Kline 2014

Changes in Excess Value Added and Changes in Wages of Stayers, 2006 – 2009

Figure 6: Changes in Excess Value Added and Changes in Wages of Stayers, 2006-2009



Note: Data for stayers are grouped into 20 cells based on changes in log value added per worker in excess of 2.45. Bottom and top vingtiles not shown.

Card, Cardoso, Kline 2014

Contribution of Firm-Based Wage Components to Male-Female Wage Gap

	Gender Group: Males (1)	Gender Group: Females (2)	Difference: Males−Females (pct. of overall gap) (3)
1. Mean log wage of group	1.715	1.481	0.234 (100.0)
Means of Estimated Firm Effects:			
2. Firm Effects for Males ($\widehat{\psi}^{M}_{j(i,t)}$)	0.148	0.114	0.035 (14.9)
3. Firm Effects for Females ($\widehat{\psi}^{F}_{j(i,t)}$)	0.145	0.099	0.047 (19.9)
4. Within-group Difference in Mean Effects for Males and Females (percent of overall gap)	0.003 (1.2)	0.015 (6.3)	
5. Mean Male Firm Effect Among Men - Mean Female Firm Effect Among Women (Total contribution of firm-specific factors)			0.049 (21.2)
6. Sample sizes	6,012,521	5,012,736	

Card, Cardoso, Kline 2014

Firm Fixed Effects vs. Log Value Added/Worker

1. Female employees receive ≈ 90% of wage premiums earned by men
   - Similar estimates of relative bargaining power: between-firm wage premiums (switchers) and changes in firm-specific premiums over time (stayers)
2. Women are less likely to work at firms that pay higher premiums to either gender
   - Sorting effects most important for low-skill workers
3. Bargaining and sorting effects explain about one-fifth of cross-sectional gender wage gap in Portugal
   - Raw log gap: 0.234
   - Contribution of sorting: 0.035 – 0.047
   - Contribution of bargaining: 0.003 – 0.015

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Progressive Company Pays Both Men And Women 78% Of What They Should Be Earning

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A Grand Gender Convergence: Its Last Chapter

Claudia Goldin

AEA Presidential Lecture

January 2014

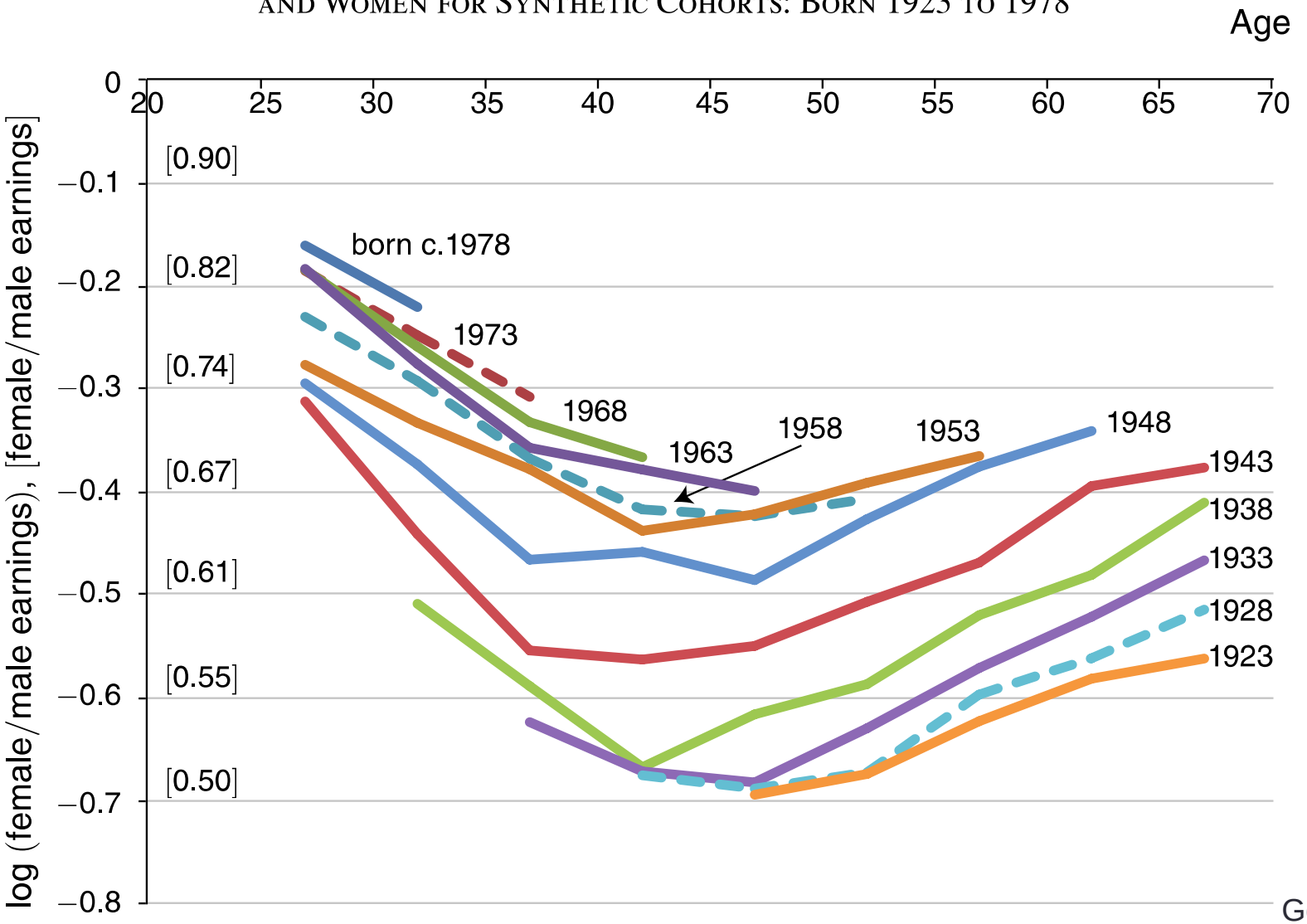
Goldin's Thesis – Time, the Final Frontier

"The gender gap in pay would be considerably reduced and might vanish altogether if firms did not have an incentive to disproportionately reward individuals who labored long hours and worked particular hours. Such change has taken off in various sectors, such as technology, science, and health, but is less apparent in the corporate, financial, and legal worlds."

Goldin 2014

Female/Male Log Earnings Gap has U-Shape Over Lifecycle

FIGURE 1. RELATIVE EARNINGS OF (FULL-TIME, FULL-YEAR) COLLEGE GRADUATE MEN AND WOMEN FOR SYNTHETIC COHORTS: BORN 1923 TO 1978



Goldin 2014

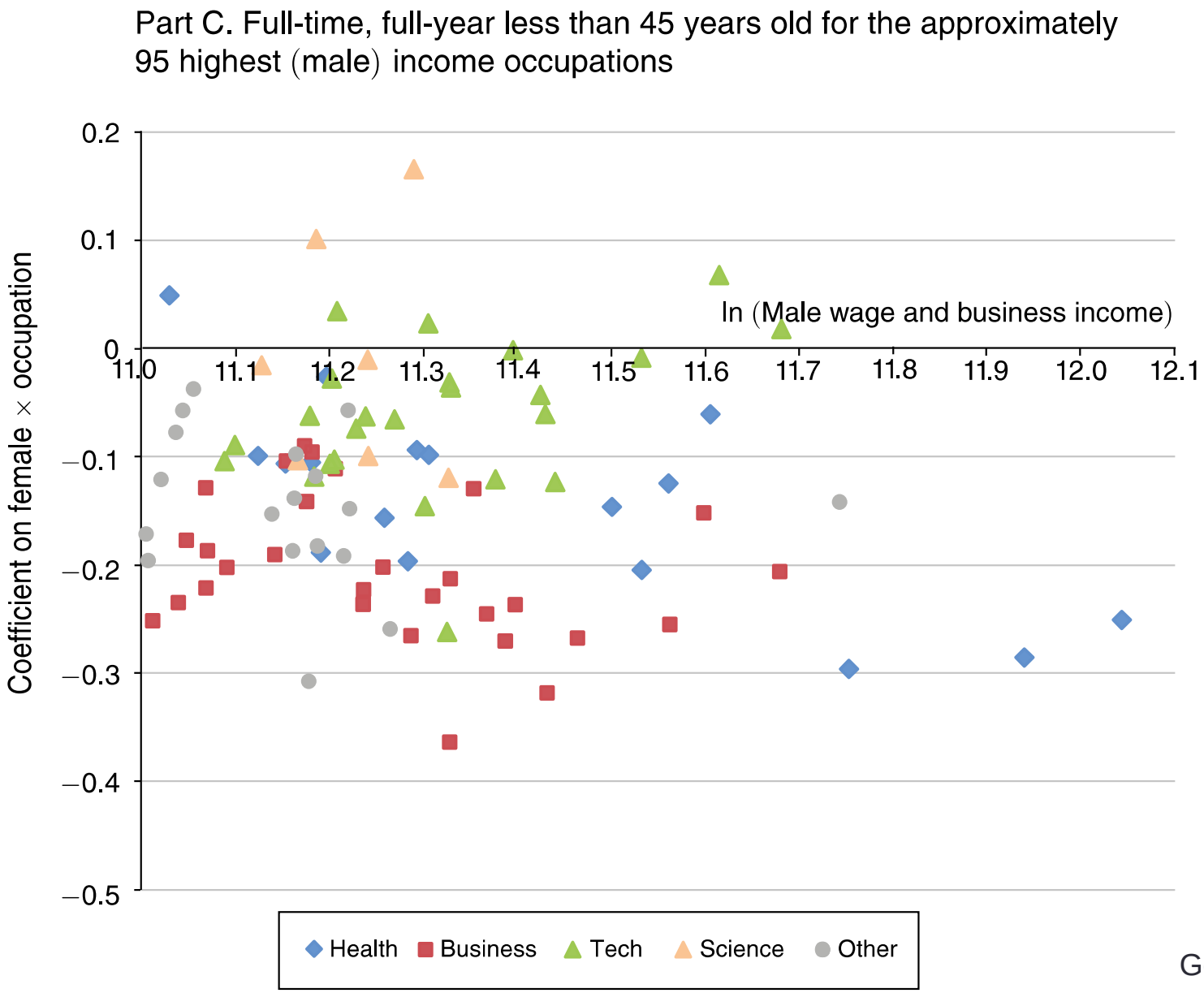
The Gender Wage Gap is Mostly a Within-Occupation Phenomenon (2009 – 2011 data)

TABLE 1—RESIDUAL GENDER DIFFERENCES IN EARNINGS AND THE ROLE OF OCCUPATION

Sample	Variables included	Coefficient on female	Standard error	R^2
Full-time	Basic	−0.248	0.00101	0.112
Full-time	Basic, time	−0.193	0.00100	0.163
Full-time	Basic, time, education	−0.247	0.000905	0.339
Full-time	Basic, time, education, occupation	−0.192	0.00104	0.453
All	Basic	−0.320	0.00105	0.102
All	Basic, time	−0.196	0.000925	0.353
All	Basic, time, education	−0.245	0.000847	0.475
All	Basic, time, education, occupation	−0.191	0.000963	0.563
Full-time, BA	Basic	−0.285	0.00159	0.131
Full-time, BA	Basic, time	−0.230	0.00158	0.177
Full-time, BA	Basic, time, education	−0.233	0.00155	0.216
Full-time, BA	Basic, time, education, occupation	−0.163	0.00158	0.374
All, BA	Basic	−0.384	0.00173	0.119
All, BA	Basic, time	−0.227	0.00151	0.380
All, BA	Basic, time, education	−0.229	0.00148	0.407
All, BA	Basic, time, education, occupation	−0.163	0.00151	0.525

Goldin 2014

Largest Gender Gaps in Highly Paid (Male) Occupations are in 'Business' Occupations



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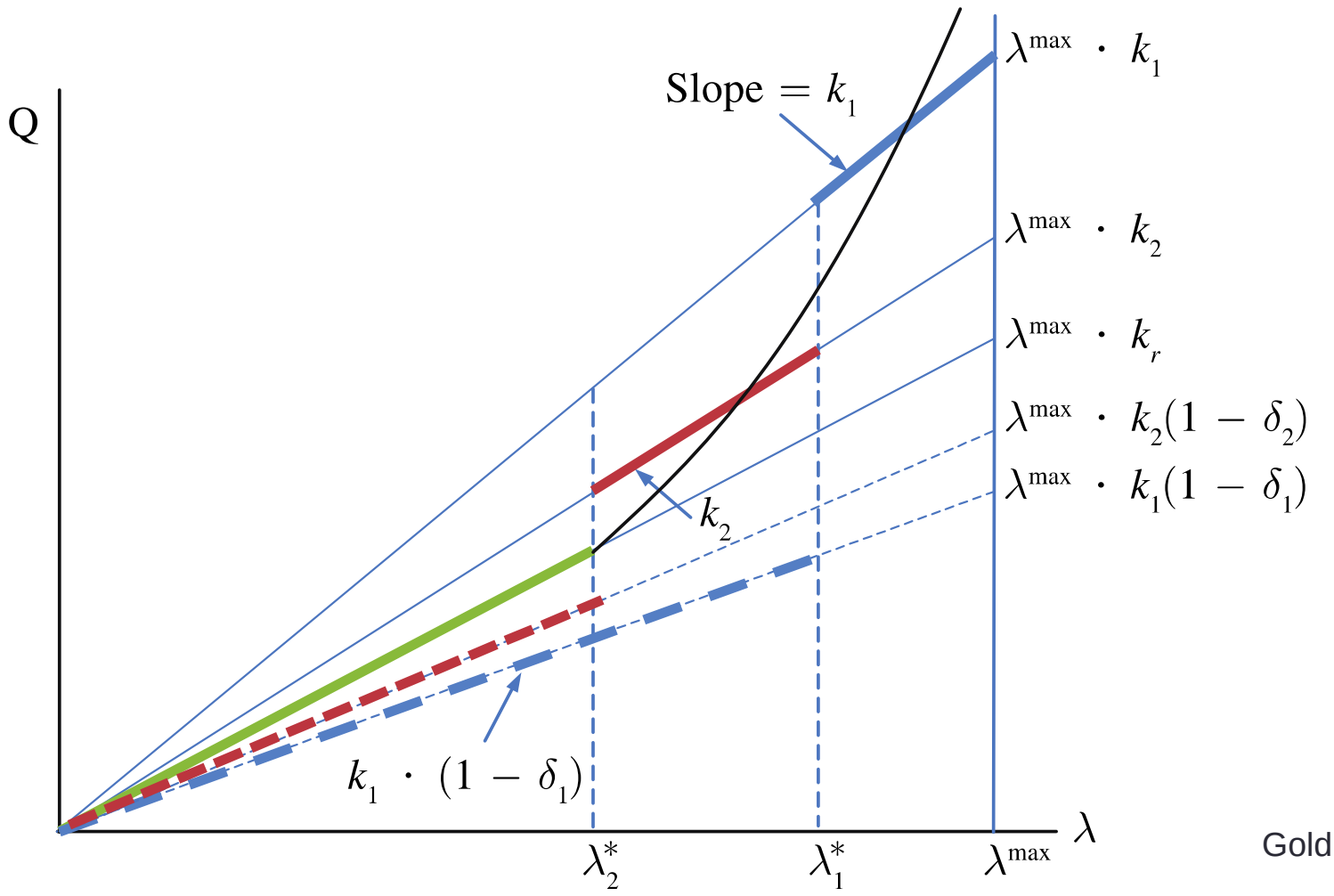
An 'Indivisibilities' Theory of Occupational Pay Differentials:

Q is output
λ_i is hours worked by i

$$Q = \begin{cases} \lambda_i k_j & \text{if } \lambda_i > \lambda_j^* \\ \lambda_i k_j \cdot (1 - \delta_j) & \text{if } \lambda_i \leq \lambda_j^* \end{cases}$$



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Gender Pay Gap is Larger in Occupations that Appear to Reward Long Hours (Occ x Hours OLS Coefficient)

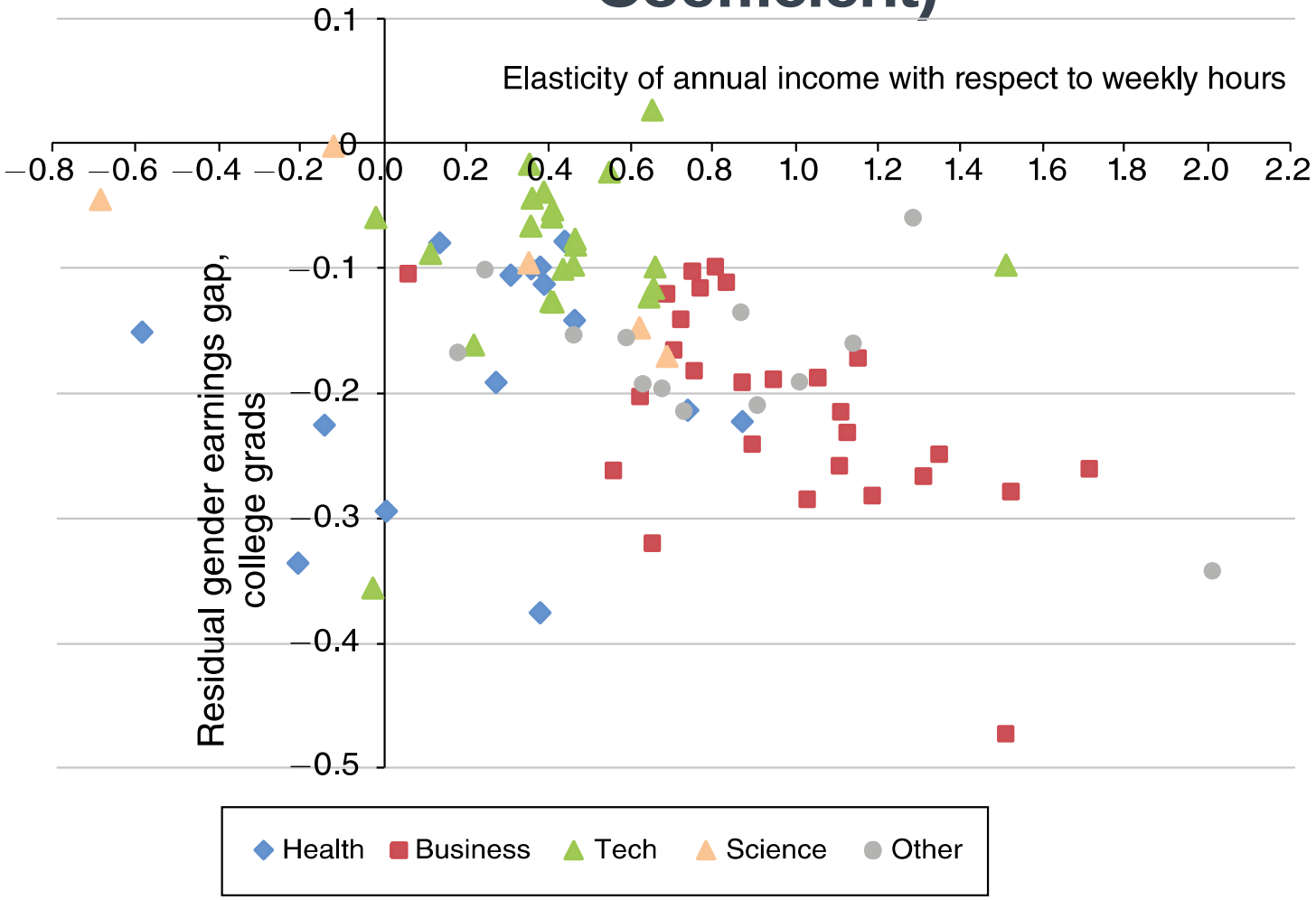

FIGURE 3. RELATIONSHIP BETWEEN THE ELASTICITY OF EARNINGS WITH RESPECT TO HOURS AND THE GENDER EARNINGS GAP

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Business, Health & Law: *High* Time Pressure, Customer Contact, Relationships, Structure, & Authority

TABLE 2—O*NET CHARACTERISTICS: MEANS (NORMALIZED) BY OCCUPATIONAL GROUP

O*Net characteristics	Technology and science	Business	Health	Law
1. Time pressure	−0.488	0.255	0.107	1.51
2. Contact with others	−0.844	0.171	0.671	0.483
3. Establishing and maintaining interpersonal relationships	−0.611	0.548	0.276	0.781
4. Structured vs. unstructured work	−0.517	0.313	0.394	1.22
5. Freedom to make decisions	−0.463	−0.00533	0.974	0.764
Number of occupations	31	28	16	1

Goldin 2014

F/M Earnings Gap Larger in Occs that Demand Time Pressure, Customer Contact, Maintaining Relationships, etc.

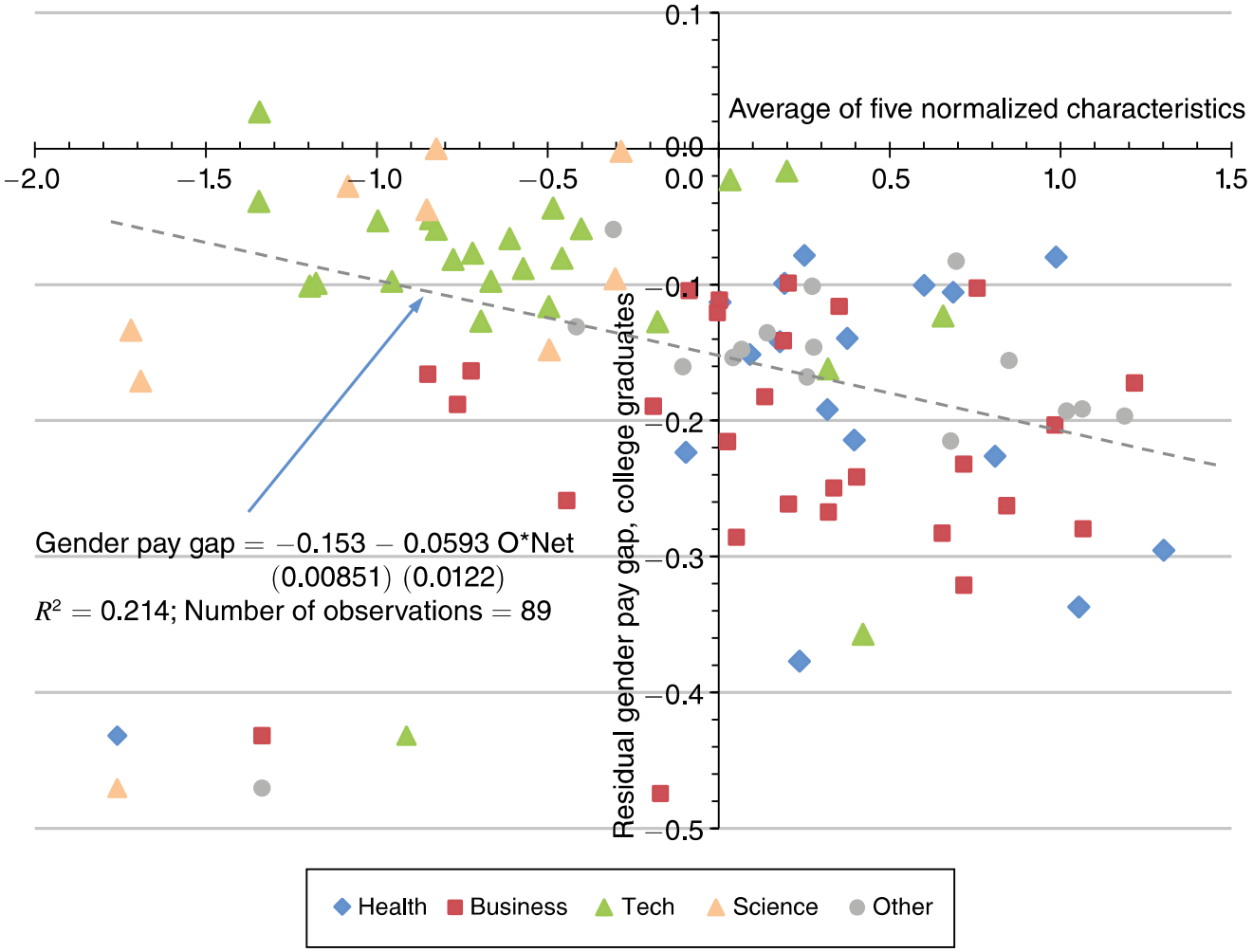

FIGURE 5. O*NET CHARACTERISTICS AND THE RESIDUAL COLLEGE GENDER EARNINGS GAP BY OCCUPATION

Goldin 2014

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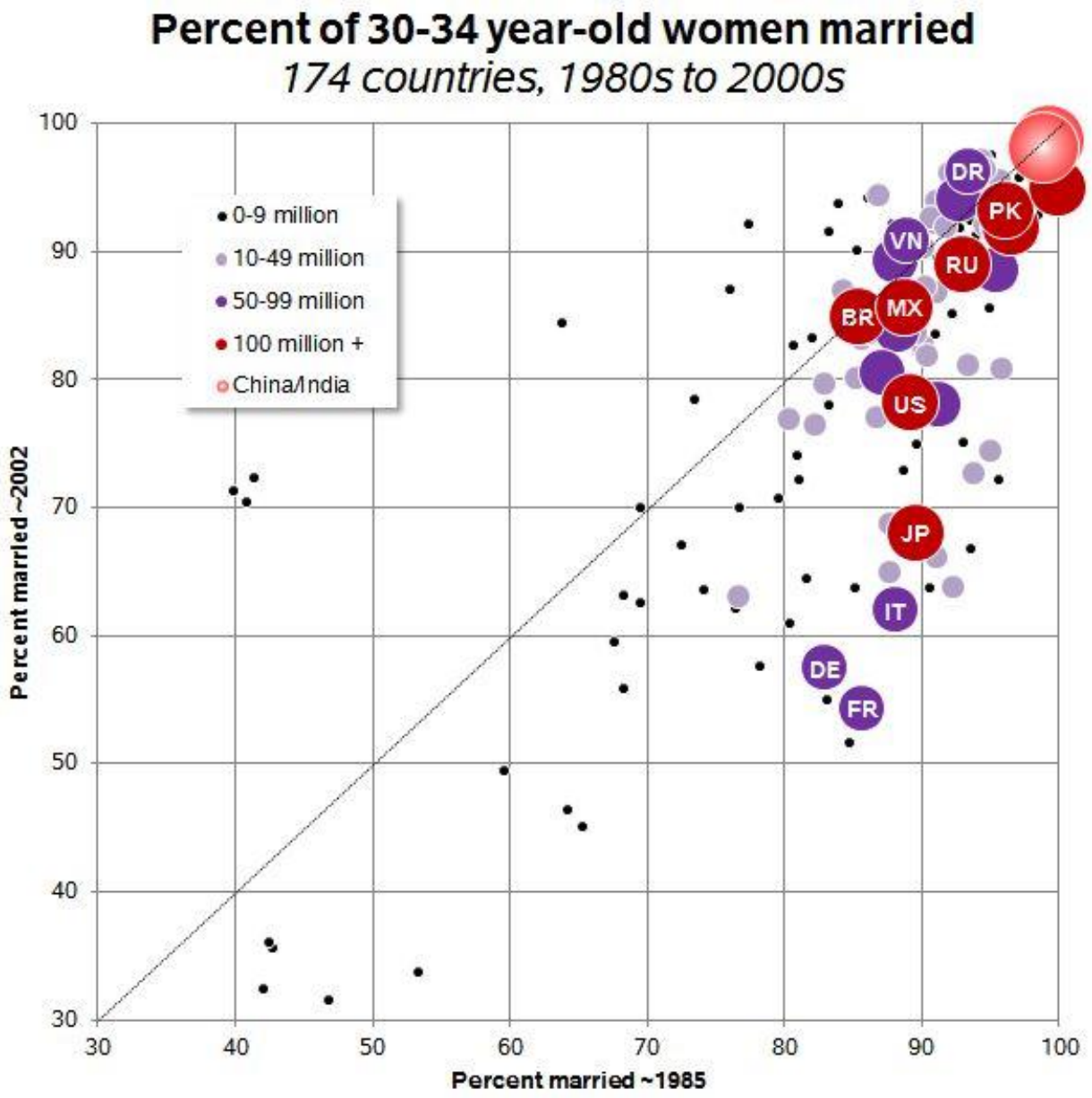
3. **Gender norms and gender roles**
   - Bringing home the bacon
   - Dual audience signaling
4. **Labor markets, marriage, children's HH structure**

Gender Identity and Relative Income Within Households

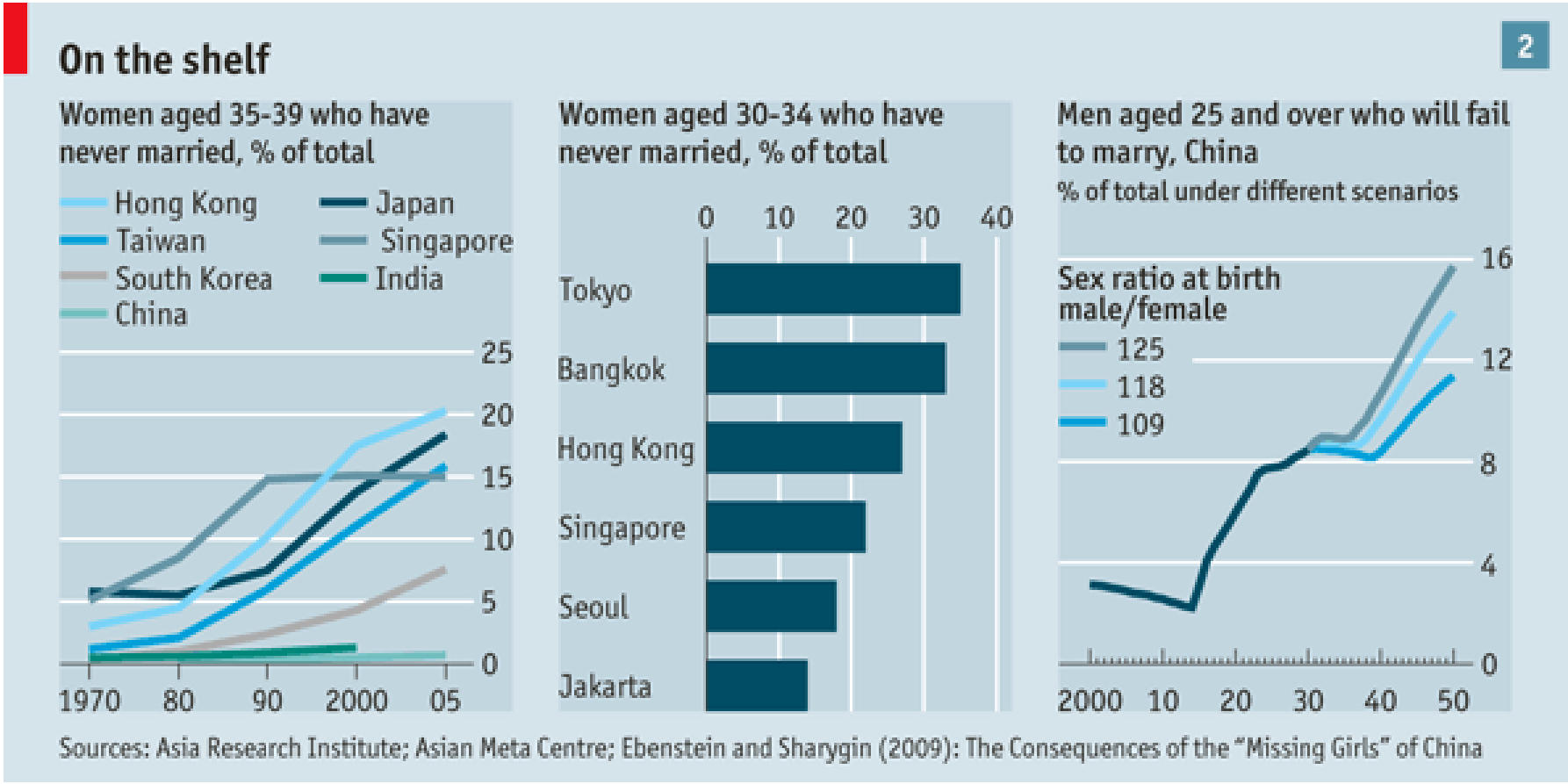
Bertrand, Kamenica, Pan
QJE, 2015

Marriage Rates Falling Globally



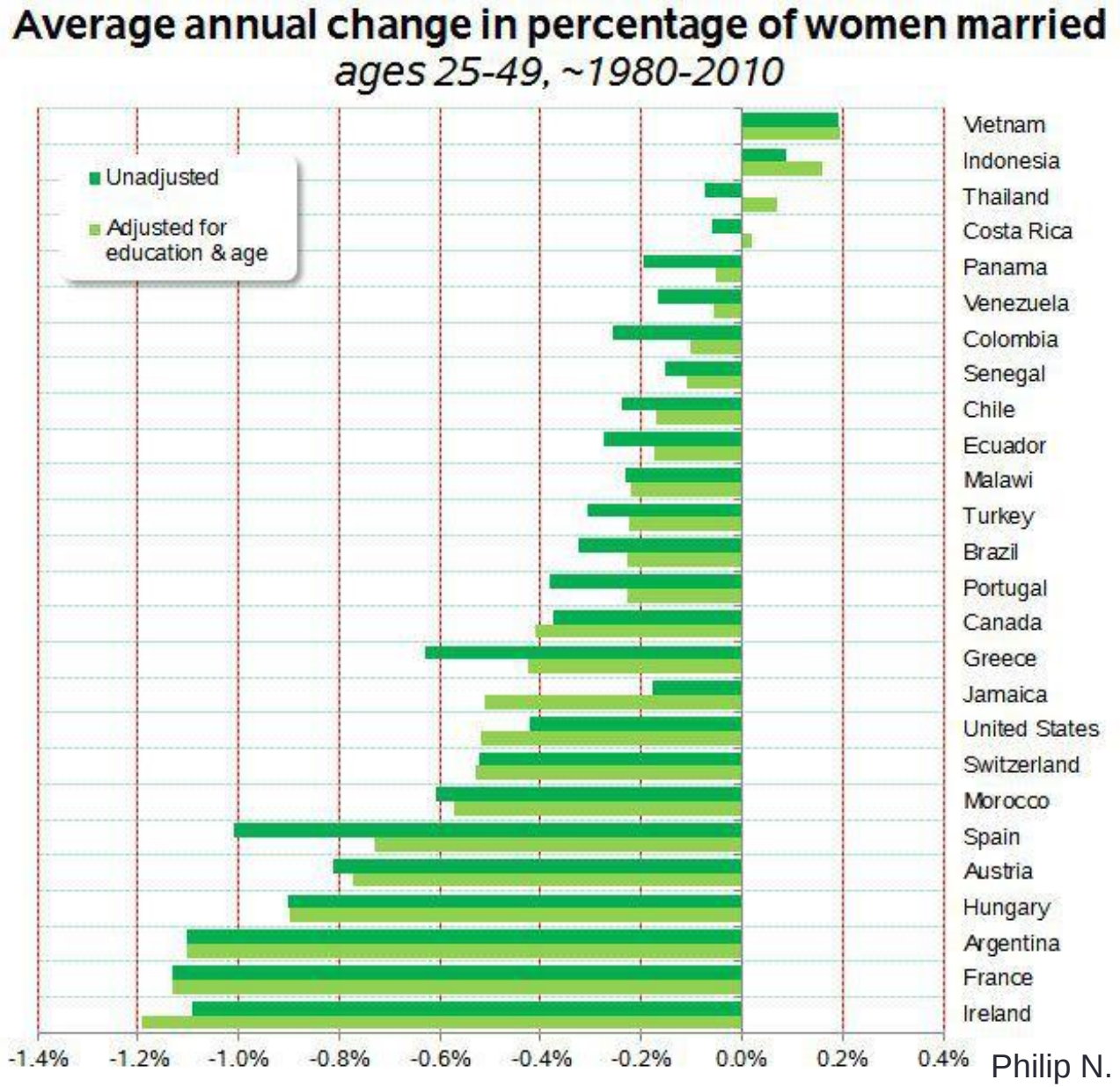
Philip N. Cohen 2013

Marriage Rates Falling in Asia
[Claim: Not Offset by Cohabitation, etc.]



Economist 2011

Marriage Rates Declining Worldwide 1980 – 2010



Philip N. Cohen 2013

What Are Men and Women Looking For?

- Speed dating experiment
  - *Fisman, Iyengar, Kamenica and Simonson QJE '06*
  - Generate (1) random matching of subjects and (2) random variation in the number of potential partners
- Women
  - Put great weight on the intelligence, race of partner
  - Selectivity strongly increasing in group size
- Men
  - Respond more to physical attractiveness
  - Selectivity invariant to group size
  - Do not value women's intelligence or ambition when it exceeds their own

What Are Men and Women Looking For?

TABLE I
NUMBER OF PARTICIPANTS IN EACH SPEED DATING SESSION

Round #	Women	Men
1	10	10
2	16	19
3	10	10
4	18	18
5	10	10
6	16	16
7	10	10
8	20	20
9	9	9
10	21	21
11	9	10
12	18	20
13	19	18
14	14	10

Fisman et al. 2006

Do We Have a Match?
Dependent Variable {0,1}: Requests Contact Info

TABLE IV

EFFECT OF OWN ATTRIBUTES ON SUBJECTIVE ATTRIBUTE WEIGHTS

	(1)	(2)	(3)	(4)
Ambition	0.009	0.031***	0.020**	0.030***
	(0.008)	(0.008)	(0.010)	(0.009)
Ambition × (Ambition > Own Ambition)	0.012	−0.058***	−0.012	−0.047***
	(0.014)	(0.013)	(0.016)	(0.016)
Attractiveness	0.113***	0.134***	0.097***	0.136***
	(0.006)	(0.007)	(0.008)	(0.009)
Attractiveness × (Attractiveness > Own Attractiveness)	0.023	0.014	0.060***	0.006
	(0.015)	(0.013)	(0.015)	(0.014)
Intelligence	0.049***	0.030***	0.041***	0.044***
	(0.009)	(0.009)	(0.011)	(0.010)
Intelligence × (Intelligence > Own Intelligence)	−0.007	−0.043**	0.007	−0.064***
	(0.019)	(0.018)	(0.018)	(0.020)
Subject's gender	Female	Male	Female	Male
Own attribute measure	Self-rating		Partnerconsensus	
Observations	2985	2978	3031	3016
R^2	0.47	0.50	0.33	0.50

Fisman et al. 2006

Effect of SAT Score (Undergrad College) and Zip Income Dependent Variable $\{0,1\}$: Requests Contact Info

TABLE V

PARTNERS' OBJECTIVE CHARACTERISTICS AND SUBJECTS' DECISIONS

	(1)	(2)	(3)	(4)	(5)	(6)
log(SAT)	0.681**	−0.101	0.681**			
	(0.293)	(0.289)	(0.288)			
log(Income)				0.088*	0.014	0.088*
				(0.053)	(0.052)	(0.052)
log(Density)				−0.020*	−0.022**	−0.020*
				(0.011)	(0.010)	(0.011)
log(SAT)			−0.782*			
*Male			(0.409)			
log(Income)						−0.074
*Male						(0.074)
log(Density)						−0.001
*Male						(0.015)
Subject's gender	Female	Male	Both	Female	Male	Both
Observations	794	1120	1914	1915	2410	4325
R^2	0.32	0.27	0.29	0.28	0.30	0.30

Linear probability model; robust standard errors in parentheses, clustered by partner. The level of observation is a subject-partner meeting. The dependent variable in all regressions is Decision, an indicator variable that takes on a value of one if a subject desired contact information for a partner. Log(SAT) is the logarithm of the median SAT score in 2003 of the partner's undergraduate institution. Log(Income) is the logarithm of median income of the partner's ZIP code in 1990, measured in dollars, based on United States census data. Log(Density) is the logarithm of the population density of the partner's ZIP code in 1990, measured in people per square mile, based on United States census data. Male is an indicator variable denoting whether a subject is male. All regressions include subject fixed effects, and all observations are weighted by the inverse of the number of observation per subject. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Fisman et al. 2006

Effect of Group Size: Number of Speed Date Meetings Experienced
Dependent Variable {0,1}: Requests Contact Info

TABLE VII
EFFECT OF GROUP SIZE ON SELECTIVITY

	(1)	(2)	(3)
Group size	−0.013**	0.003	−0.036
	(0.005)	(0.005)	(0.036)
Male			−0.166*
			(0.092)
Group size* Male			0.018**
			(0.007)
Subject's gender	Female	Male	Both
Round FE	No	No	Yes
Observations	200	200	400
R^2	0.05	0.00	0.11

Robust standard errors are in parentheses. Regressions are at the subject level. The dependent variable in all regressions is the fraction of partners for whom the subject desired contact information. Group size is the number of meetings experienced by a subject. Male is an indicator variable denoting whether the subject is male. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

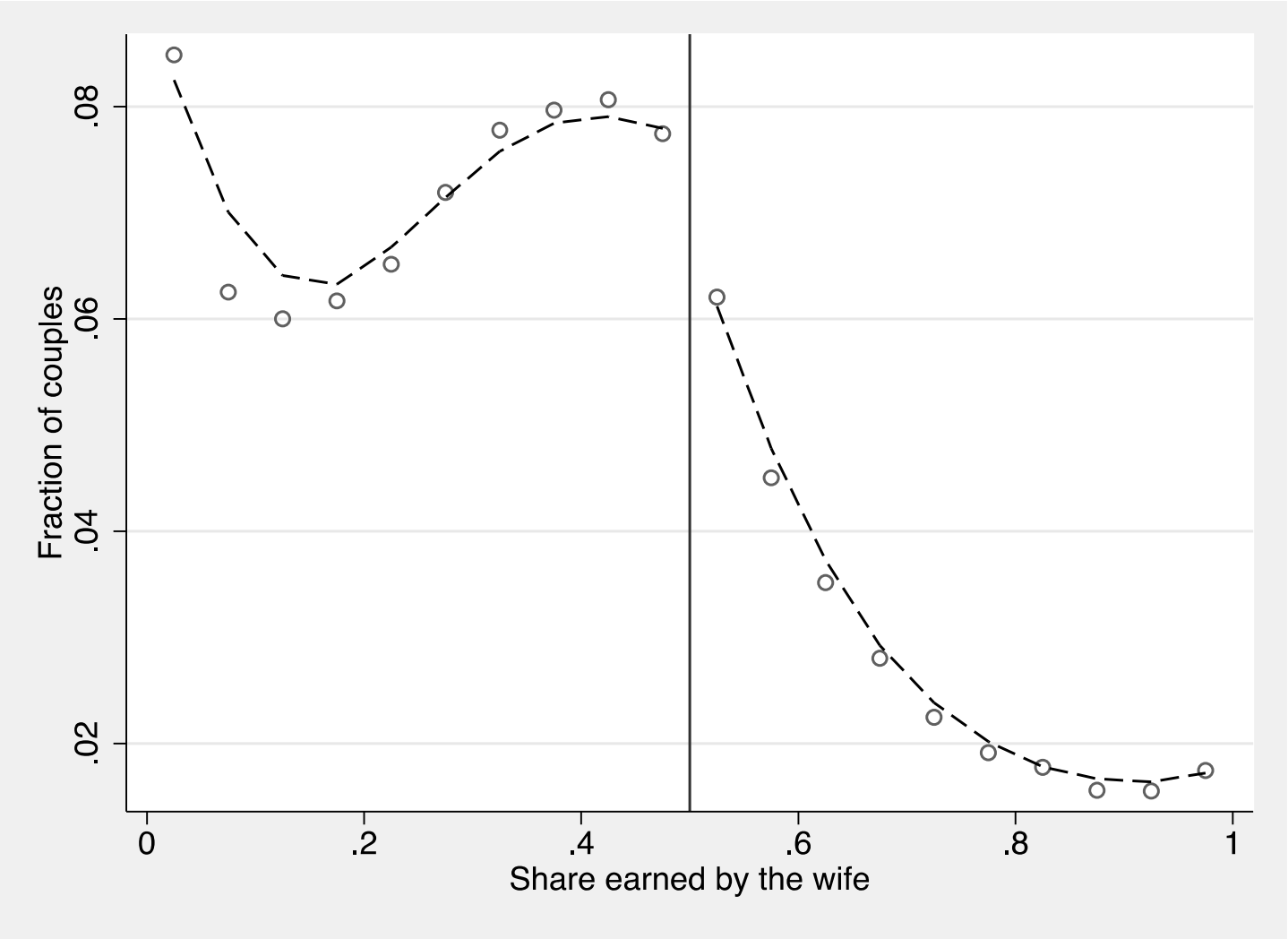
Fisman et al. 2006

Gender Identity and Relative Income Within Households

Bertrand, Kamenica, Pan
QJE, 2015

The Gender Cliff in Household Earnings: Administrative Data

Figure I: Distribution of relative income (SIPP Administrative Data)

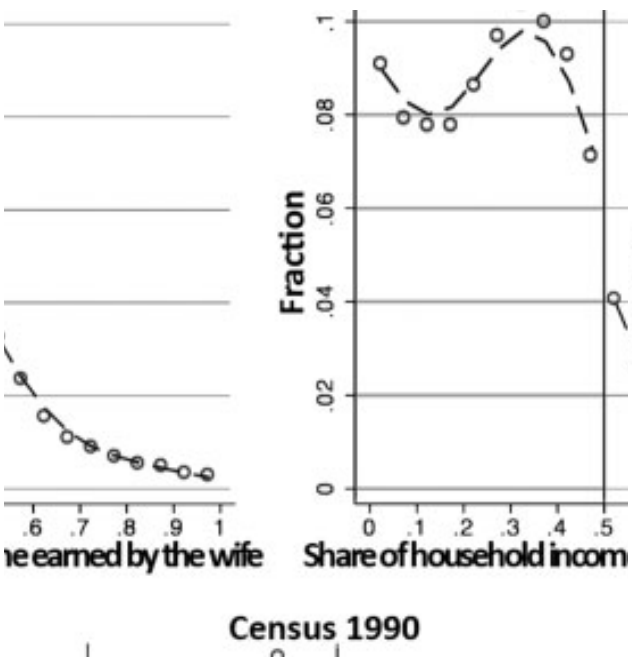


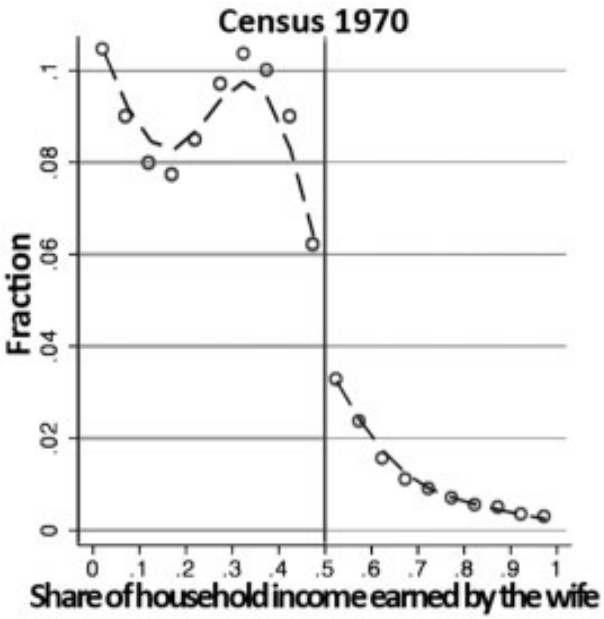
Bertrand, Kamenica, Pan QJE 2015

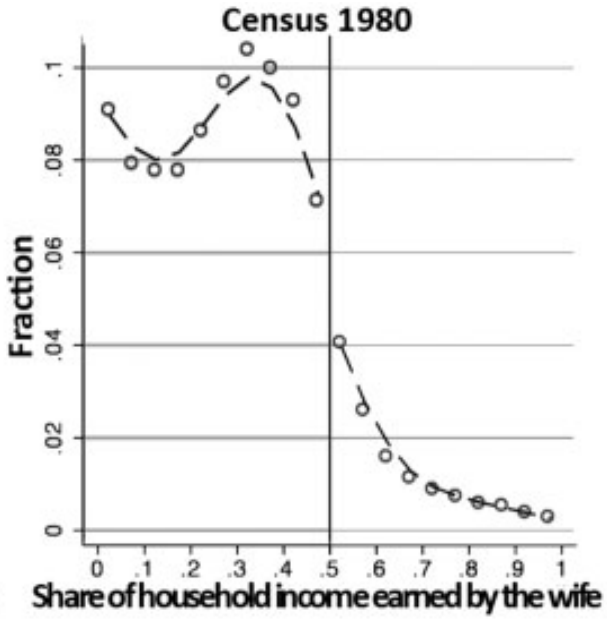
The Gender Cliff in Household Earnings: Survey Data

Bertrand, Kamenica, Pan QJE 2015

The Gender Cliff in Household Earnings: Survey Data







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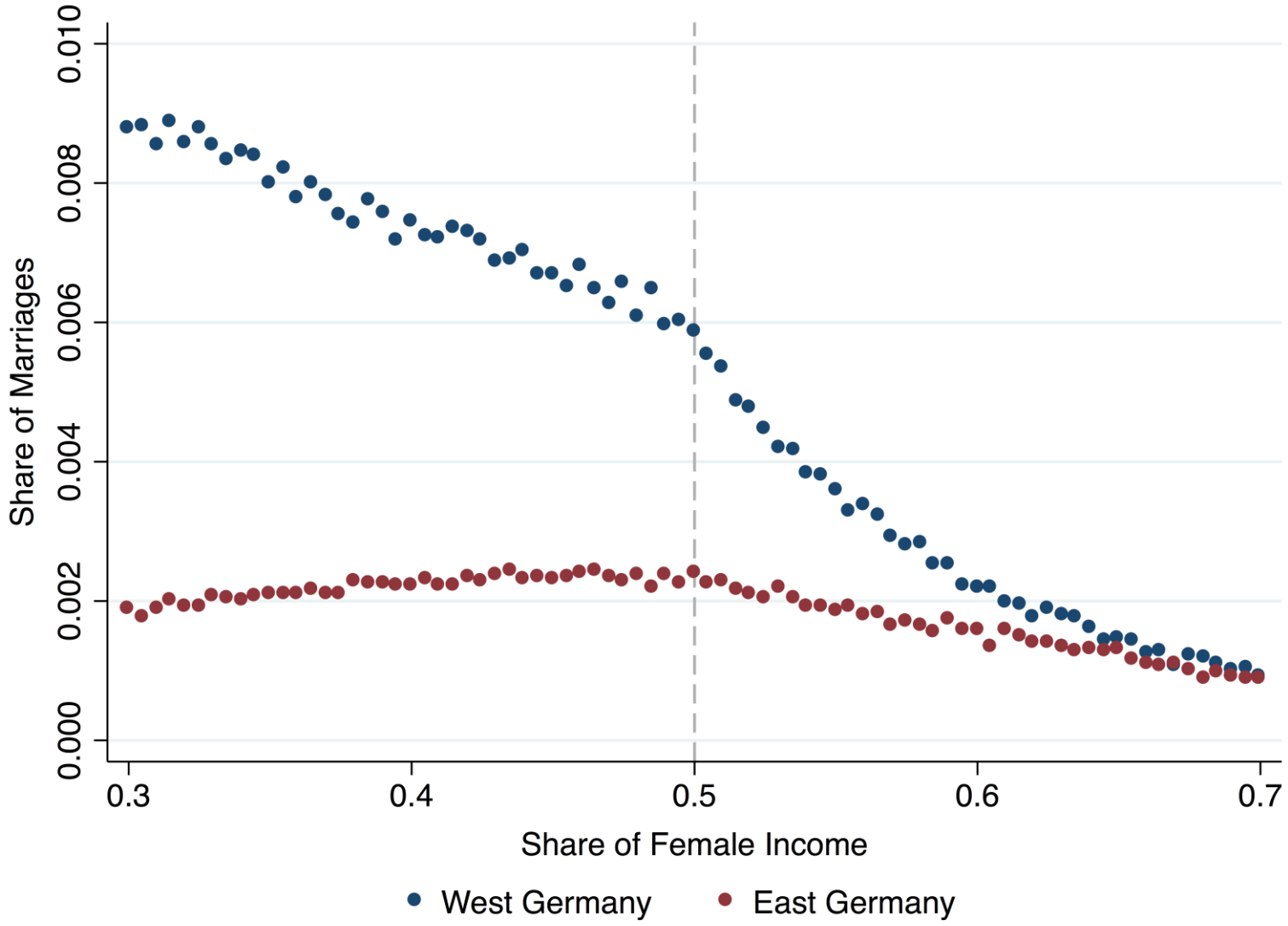
Some Quasi-Supportive Evidence from West Germany



Nikolaus Hildebrand 2017

Relative Earnings in 'Marriage Markets' and Marriage Rates

Defining marriage markets

1. Race groups: non-Hispanic whites, non-Hispanic blacks, and Hispanics
2. Age groups: 22–31 for women and 24–33 for men; 32–41 for women and 34–43 for men; and 42–51 for women and 44–53 for men
3. Education groups: high school degree or less; some college or more
4. State of residence

Basic pattern

- Overall likelihood that a randomly chosen woman earns more than a randomly chosen man is about 25%
- It's rising: 17–20% in 1980 to about 31–33% in 2010

Bertrand, Kamenica, Pan QJE 2015

TABLE I

POTENTIAL RELATIVE INCOME AND MARRIAGE RATES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Actual			Predicted			Bartik		
Income measure:	Dependent variable: *shareMarried*								
PrWomanEarnsMore	–0.080	–0.046	–0.209***	–0.266***	–0.252***	–0.236***	–0.515***	–0.343*	–0.351*
	[0.075]	[0.080]	[0.074]	[0.068]	[0.066]	[0.062]	[0.189]	[0.183]	[0.181]
ln Average Women's Income	0.055*	0.171**	0.088	0.066*	0.266**	0.151	0.270	0.943***	0.461
	[0.030]	[0.071]	[0.074]	[0.036]	[0.108]	[0.108]	[0.177]	[0.333]	[0.371]
ln Average Men's Income	0.023	–0.092	0.005	–0.001	–0.201**	–0.063	0.114	–0.558*	–0.097
	[0.032]	[0.070]	[0.073]	[0.053]	[0.084]	[0.093]	[0.140]	[0.292]	[0.348]
Sex Ratio			–0.030***			–0.027***			–0.006
			[0.007]			[0.007]			[0.007]
Female Incarceration Rate			–0.369			–0.292			–0.048
			[0.241]			[0.232]			[0.172]
Male Incarceration Rate			0.433***			0.210***			0.056
			[0.089]			[0.071]			[0.069]
Female Average Years of Education			0.009			0.005			–0.002
			[0.008]			[0.007]			[0.007]
Male Average Years of Education			–0.031***			–0.023**			–0.010
			[0.010]			[0.008]			[0.007]
Number of Females (per million)			0.001			0.003			–0.003
			[0.005]			[0.006]			[0.008]
Number of Males (per million)			0.004			0.002			0.005
			[0.005]			[0.006]			[0.007]

Fraction Married Lower Where Women are Predicted to Earn More than Men (Dep Var: Share Married)

	(1)	(2)	(3)
	Actual		
ome measure:			
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	[0.075]	[0.080]	[0.074]
Average Women's Income	0.055*	0.171**	0.088
	[0.030]	[0.071]	[0.074]
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			[0.008]
le Average Years of Education			–0.031***
			[0.010]
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			[0.005]
mber of Males (per million)			0.004
			[0.005]

Fraction Married Lower Where Women are Predicted to Earn More than Men (Dep Var: Share Married)

	(5) Predicted	(6)	(7) Bartik	(8)	(9)
Dependent variable: *shareMarried*					
[illegible]***	–0.252***	–0.236***	–0.515***	–0.343*	–0.351*
[illegible]	[0.066]	[0.062]	[0.189]	[0.183]	[0.181]
[illegible]*	0.266**	0.151	0.270	0.943***	0.461
[illegible]	[0.108]	[0.108]	[0.177]	[0.333]	[0.371]
[illegible]	–0.201**	–0.063	0.114	–0.558*	–0.097
[illegible]	[0.084]	[0.093]	[0.140]	[0.292]	[0.348]
[illegible]		–0.027***			–0.006
		[0.007]			[0.007]
[illegible]		–0.292			–0.048
		[0.232]			[0.172]
[illegible]		0.210***			0.056
		[0.071]			[0.069]
[illegible]		0.005			–0.002
		[0.007]			[0.007]
[illegible]		–0.023**			–0.010
		[0.008]			[0.007]
[illegible]		0.003			–0.003
		[0.006]			[0.008]
[illegible]		0.002			0.005
		[0.006]			[0.007]
Female Incarceration Rate					–0.369
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[illegible] Female Average Years of Education					0.009
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[illegible] Male Average Years of Education					–0.031***
					[0.010]
Number of Females (per million)					0.001
					[0.005]
Number of Males (per million)					0.004
					[0.005]

TABLE II

POTENTIAL RELATIVE INCOME AND WIFE'S LABOR FORCE PARTICIPATION

	(1)	(2)	(3)	(4)
	Dependent variable: *Wife in the labo*			
PrWifeEarnsMore	–0.178***	–0.142***	–0.139***	–0.143***
	[0.004]	[0.004]	[0.004]	[0.004]
Observations	7,384,176			
R-squared	0.097	0.103	0.104	0.145
Additional controls:				
Cubic in *lnHusbIncome*	no	yes	yes	yes
lnMedianWifePotential × *lnHusbIncome*	no	no	yes	yes
anyChildren	no	no	no	yes
Wife's demographic group × Husband's demographic group	no	no	no	yes
PrWifeEarnsMore AtMarriage	no	no	no	no
Vigintiles of the wife's and the husband's potential income at marriage	no	no	no	no
Marriage duration fixed effects	no	no	no	no
Sample restriction	none	none	none	none

What Makes for a Happy Marriage? (Data: *National Survey of Family and Households*)

RELATIVE INCOME AND MARITAL SATISFACTION

	(1)	(2)	(3)	(4)
Panel A: dependent variable: *happyMarriage*				
wifeEarnsMore	–0.068**	–0.060*	–0.070*	–0.065*
	[0.031]	[0.032]	[0.036]	[0.037]
Observations	7,659	7,659	7,659	7,659
R-squared	0.025	0.026	0.025	0.025
Panel B: dependent variable: *marriageTrouble*				
wifeEarnsMore	0.082***	0.078***	0.079**	0.086**
	[0.027]	[0.029]	[0.033]	[0.034]
Observations	7,520	7,520	7,520	7,520
R-squared	0.047	0.048	0.047	0.048
Panel C: dependent variable: *discussSeparation*				
wifeEarnsMore	0.068***	0.064***	0.060**	0.065**
	[0.024]	[0.024]	[0.028]	[0.028]
Observations	7,507	7,507	7,507	7,507
R-squared	0.034	0.034	0.034	0.034
Additional controls:				
Cubic in *lnWifeIncome* and *lnHusbIncome*	no	yes	no	no
relativeIncome	no	no	yes	yes
|*Wife-Husb Income Rank*|	no	no	no	yes

Bertrand, Kamenica, Pan QJE 2015

What Makes for a Happy Marriage? Relative Income and Pr[Divorced] Fives Years Later (Mean Divorced = 0.12)

RELATIVE INCOME AND DIVORCE

	(1)	(2)	(3)	(4)
	Dependent variable: *divorced*			
wifeEarnsMore	0.062**	0.060**	0.048	0.051*
	[0.025]	[0.026]	[0.030]	[0.030]
Observations	3,439	3,439	3,439	3,439
R-squared	0.080	0.086	0.080	0.080
Additional controls:				
Cubic in *lnWifeIncome* and *lnHusbIncome*	no	yes	no	no
relativeIncome	no	no	yes	yes
|*Wife-Husb Income Rank*|	no	no	no	yes

Bertrand, Kamenica, Pan QJE 2015

Other Outcomes

1. **Nonmarket work hours**
   - Wives with potential earnings > spouse do more work at home
2. **Longitudinal data**
   - LFP
   - Divorce
   - Home production

Bertrand, Kamenica, Pan QJE 2015

Outline

1. **Context – Gains along four economic margins**
2. **The gender earnings gap**
3. **Gender norms and gender roles**
   - Bringing home the bacon
   - Dual audience signaling
4. **Labor markets, marriage, children's HH structure**

‘Acting Wife:’ Marriage Market Incentives and Labor Market Investments

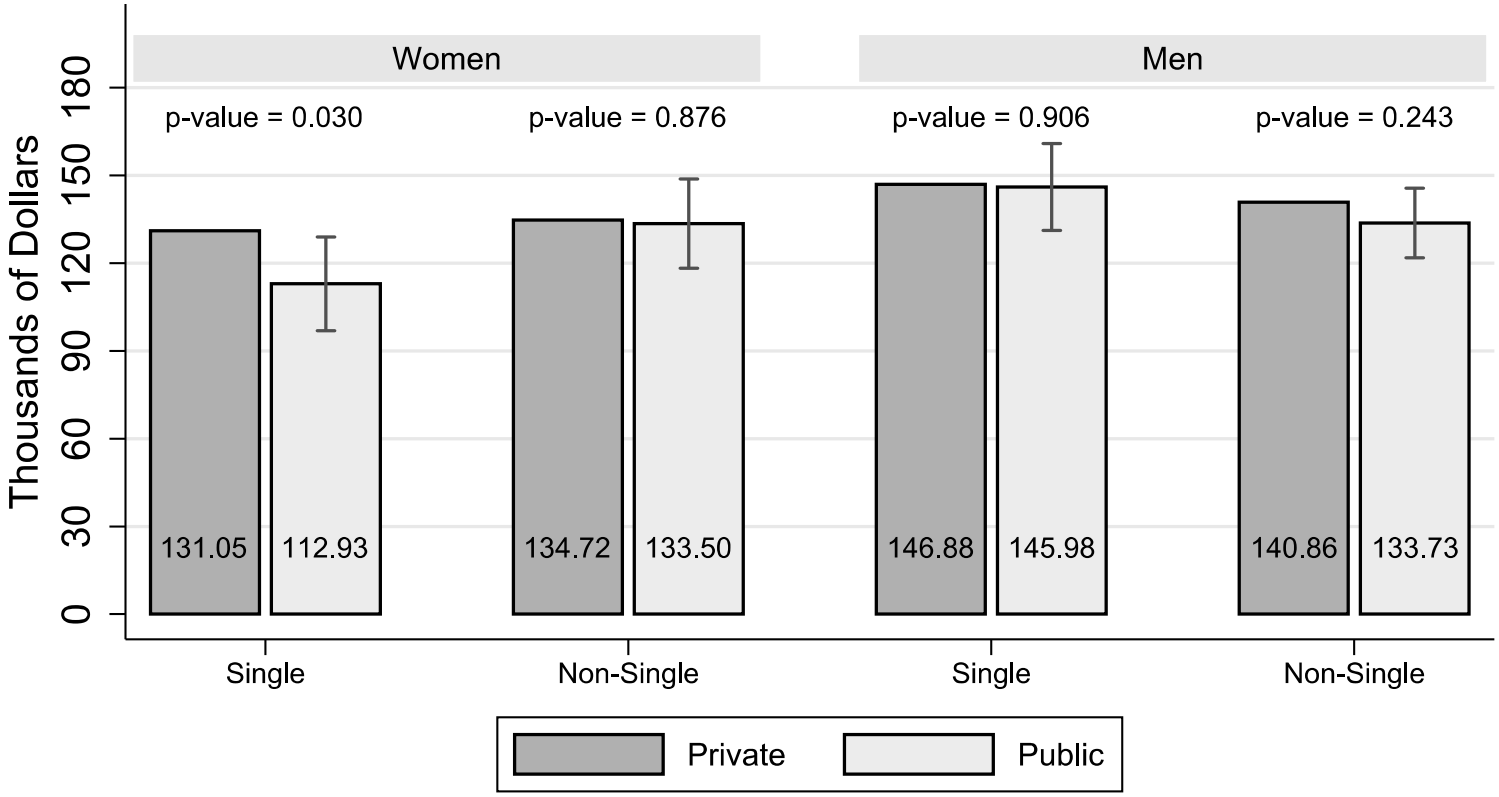
Bursztyn, Fujiwara and Pallais

NBER Working Paper, January 2017

Women Appear to Shade Desired Compensation When Info May be Publicly Observed

Figure 4. Desired Compensation

Primary Experiment



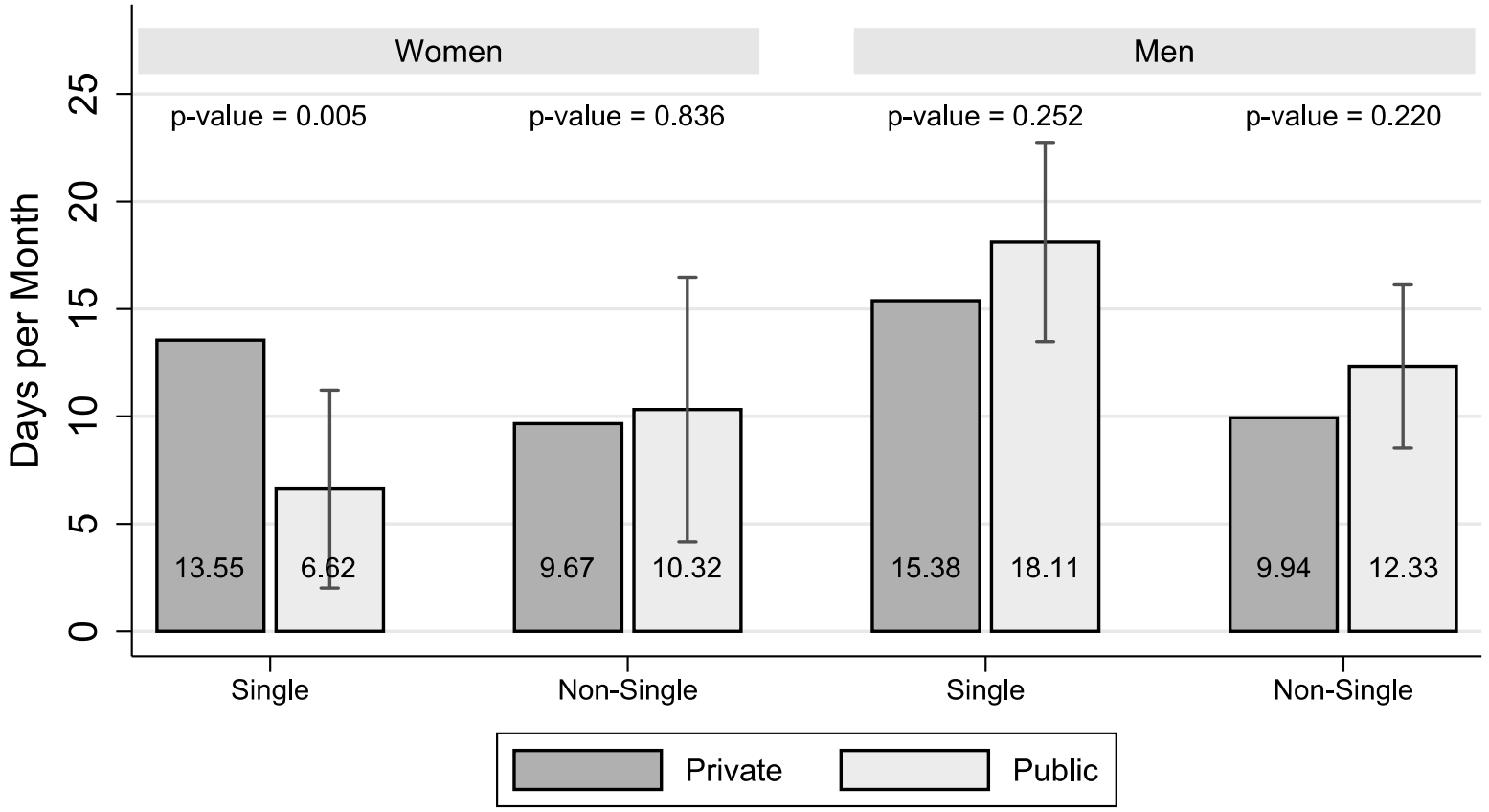
Notes: Students were asked their desired compensation in their first year after graduation, including base pay, performance pay, and equity, but excluding signing bonus. Desired compensation is coded as the midpoint of the chosen range, except for "under $75,000" (coded as $62,500) and "above $250,000" (coded as $262,500). Some respondents chose two or more consecutive answers. Their responses are coded as the midpoint of the full range chosen. Whiskers show the 95% confidence interval calculated from regressions of desired compensation on an indicator for being in the public treatment using robust standard errors. Non-single respondents are in a serious relationship, cohabiting, engaged, or married.

Bursztyn, Fujiwara, Pallais 2017

Women Appear to Shade Desired Compensation When Info May be Publicly Observed

Figure 5. Days per Month Willing to Travel

Primary Experiment



Notes: Students were asked how often they are willing to travel for work. Willingness to travel is coded as the midpoint of the chosen range, except for “rather not travel” (coded as 0) and “as much as necessary” (coded as 30). Whiskers show the 95% confidence interval calculated from regressions of the number of days per month the respondent was willing to travel on an indicator for being in the public treatment using robust standard errors. Non-single respondents are in a serious relationship, cohabiting, engaged, or married.

Bursztyn, Fujiwara, Pallais 2017

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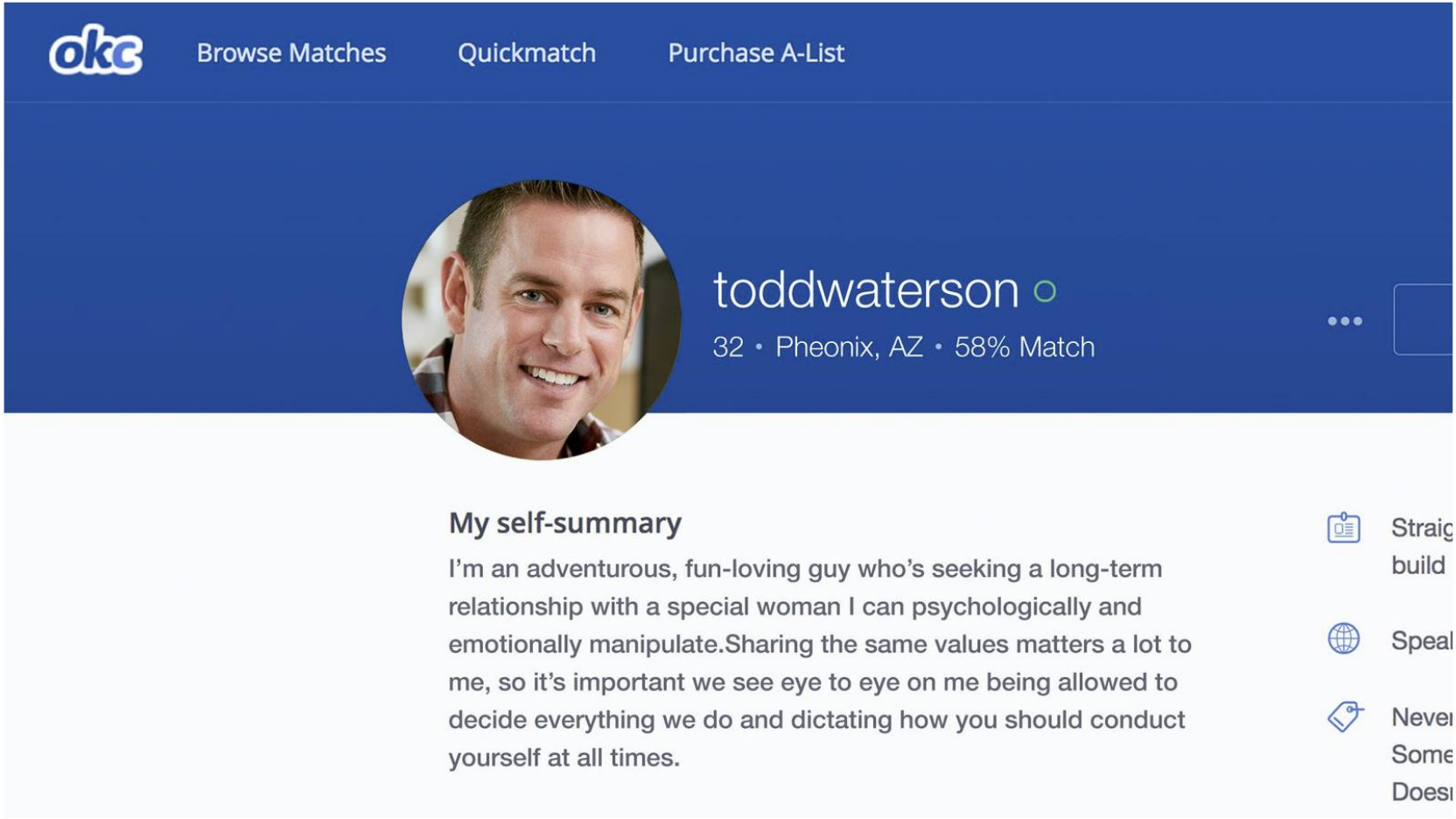
Dating Profile Flatly States Man Looking For Someone He Can Control

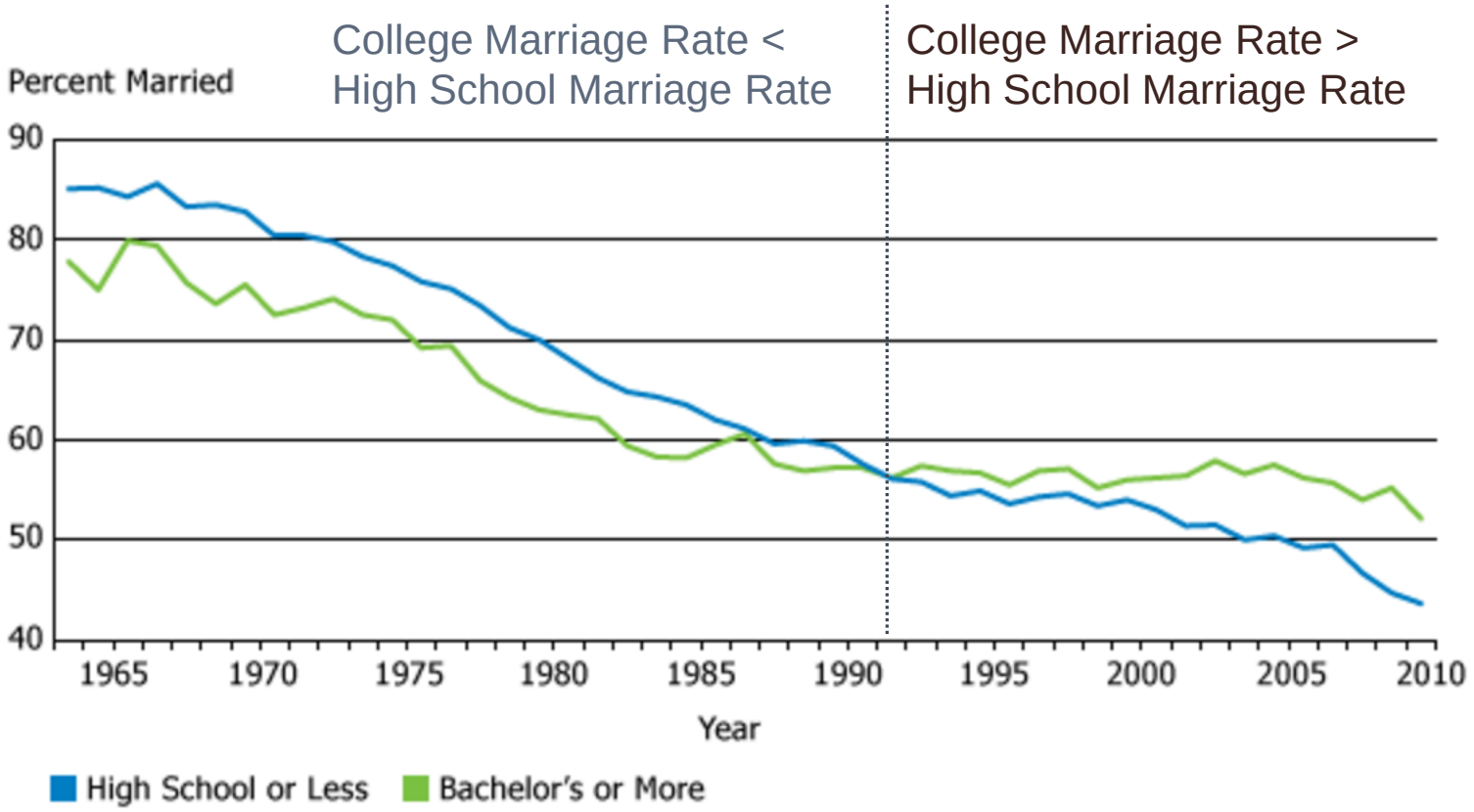


Outline

1. Context – Gains along four economic margins
2. The gender earnings gap
3. Gender norms and gender roles
   - Bringing home the bacon
   - Dual audience signaling
4. **Labor markets, marriage, children's HH structure**

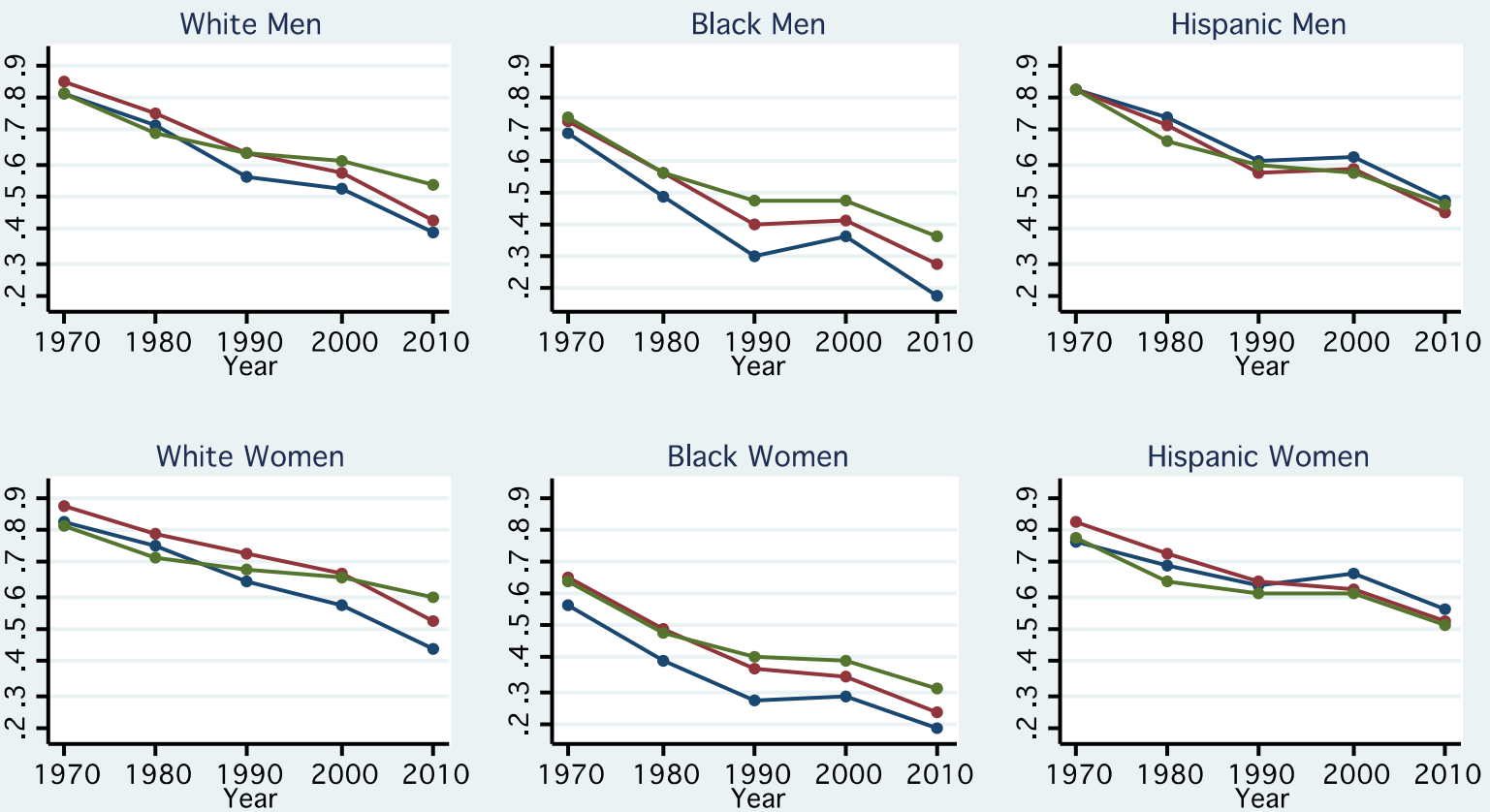
Marriage Rates Diverging by Education After Mid-1980s

Marriage Rates Among Young Adults Ages 25-34, 1965-2010 (Percent)



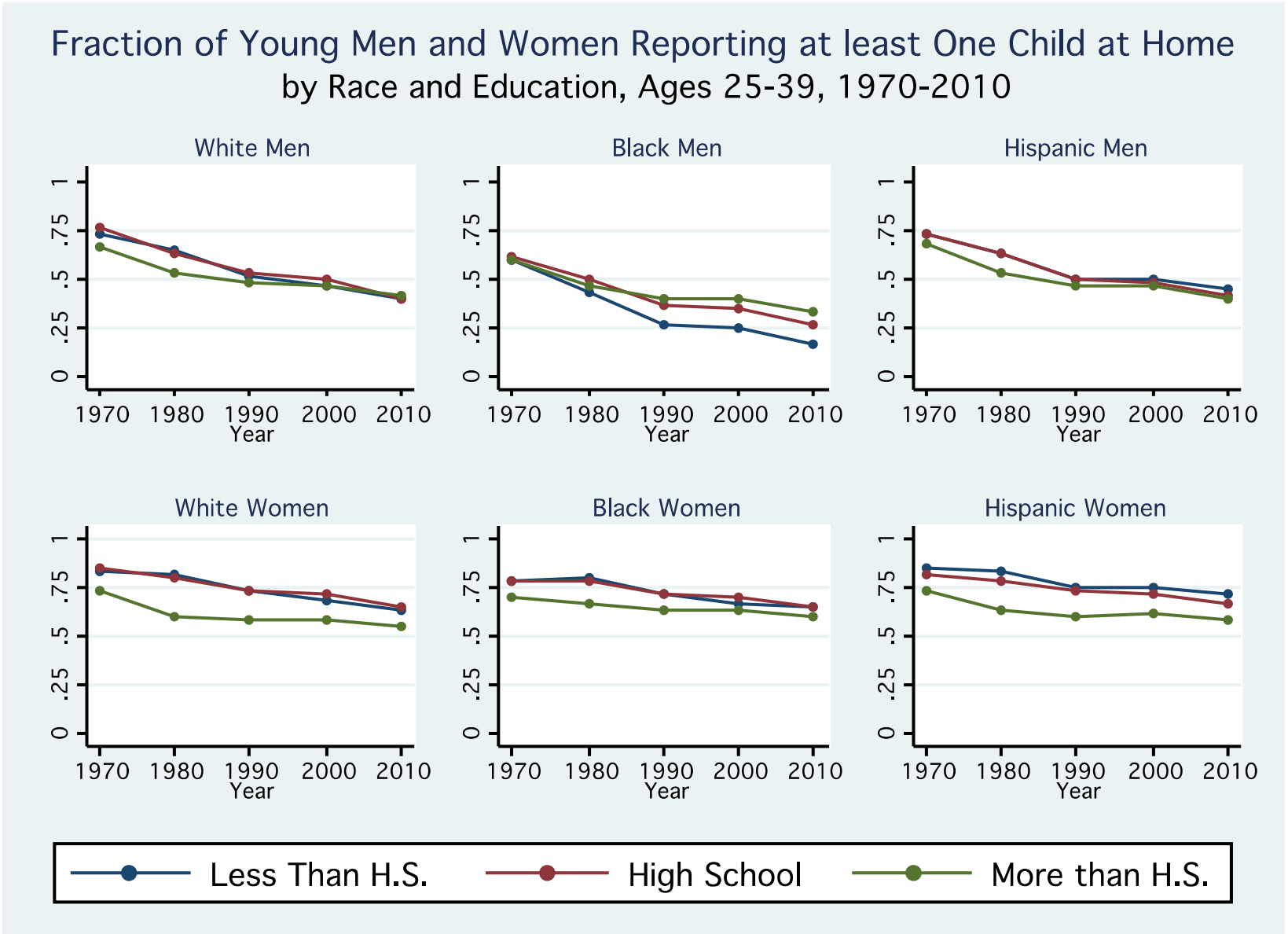
Source: U.S. Census Bureau, 2000 Census and American Community Survey.

Marriage Rates Fell Substantially b/w1970 – 2010, and by More Among Less Educated



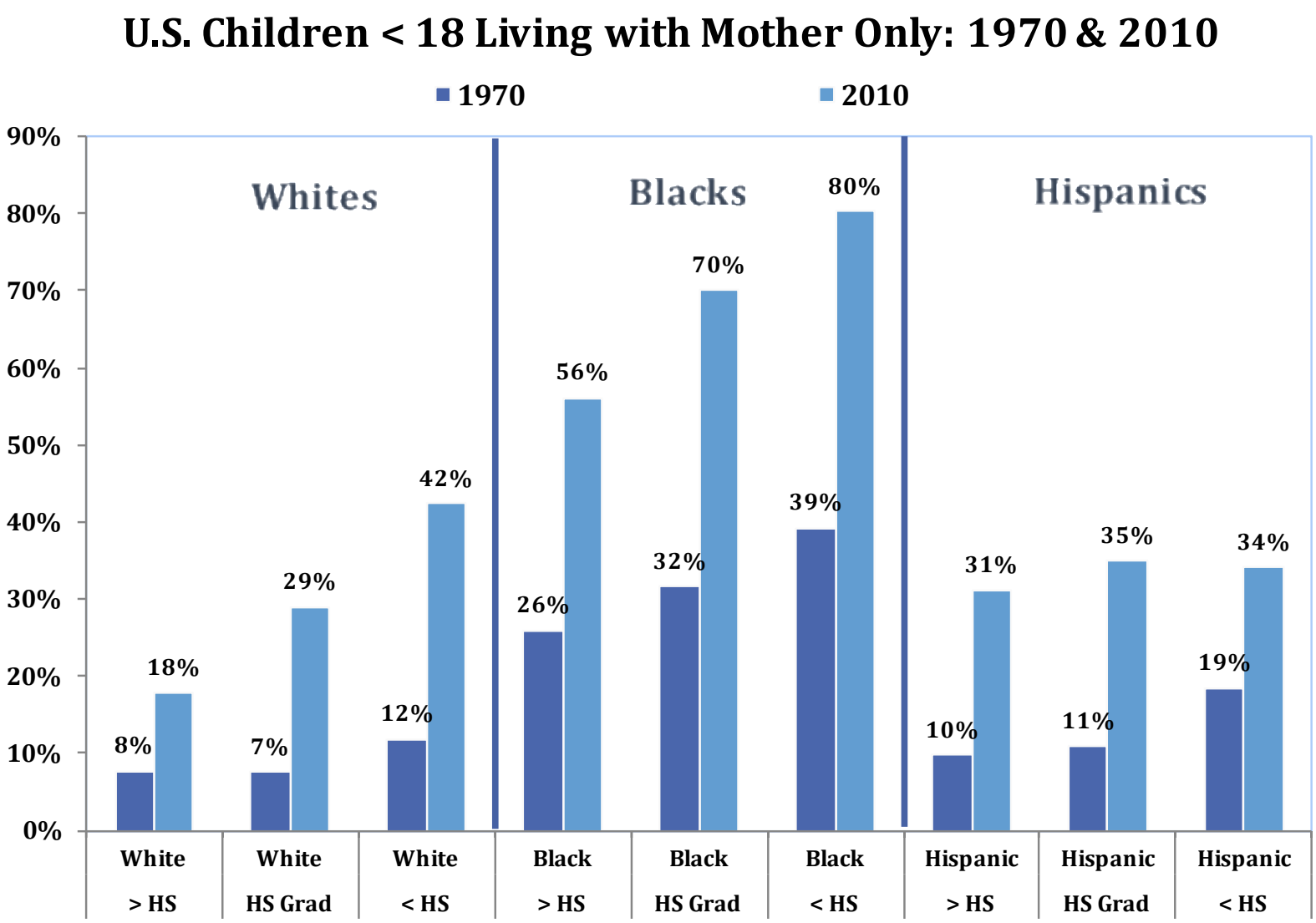
Autor and Wasserman 2013

Marriage Has Declined but Fertility has not Changed Much → Males not Cohabiting with Kids



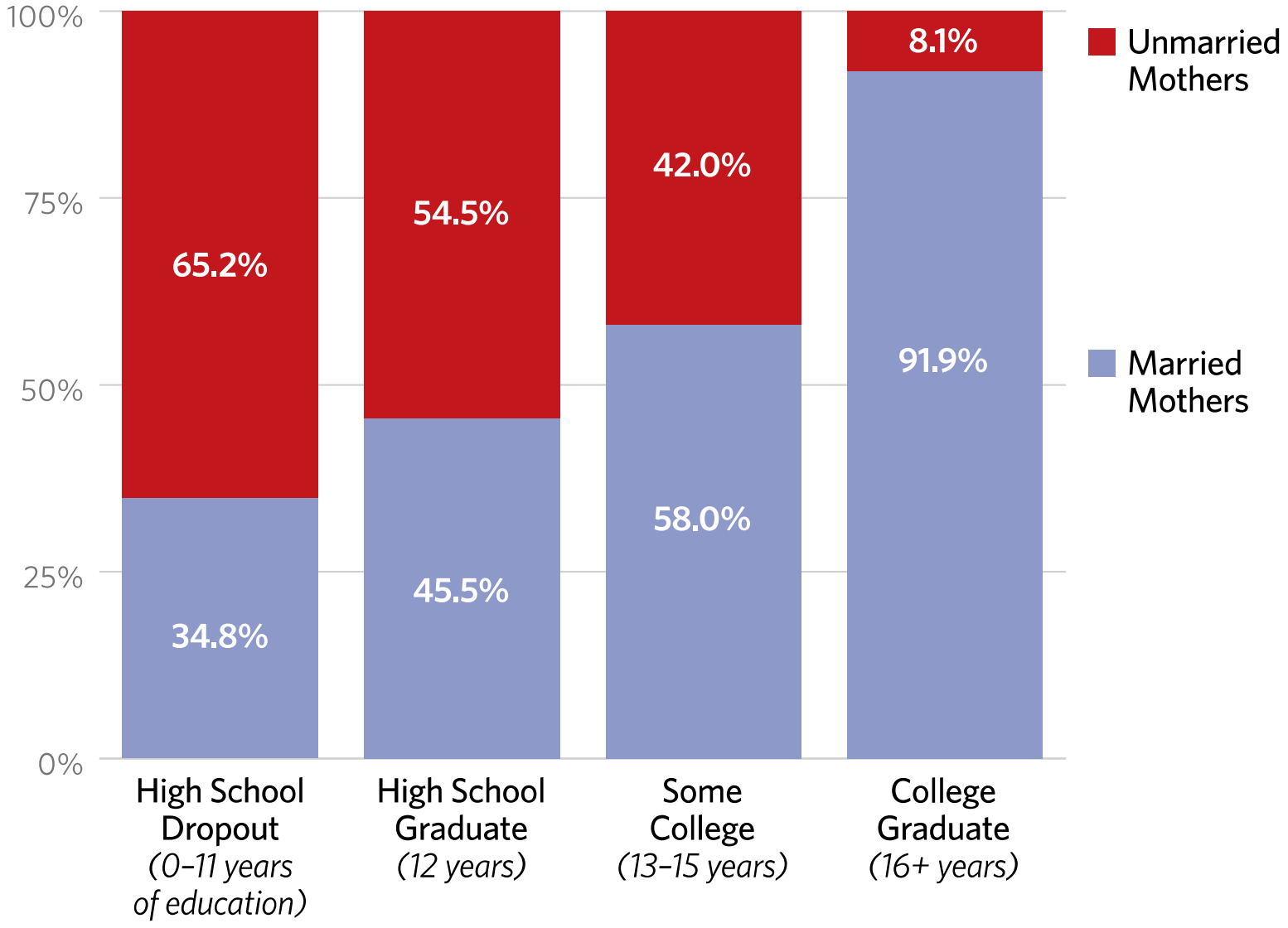
Autor and Wasserman 2013

A Rising Fraction of Kids Grows Up in Single-Headed Households



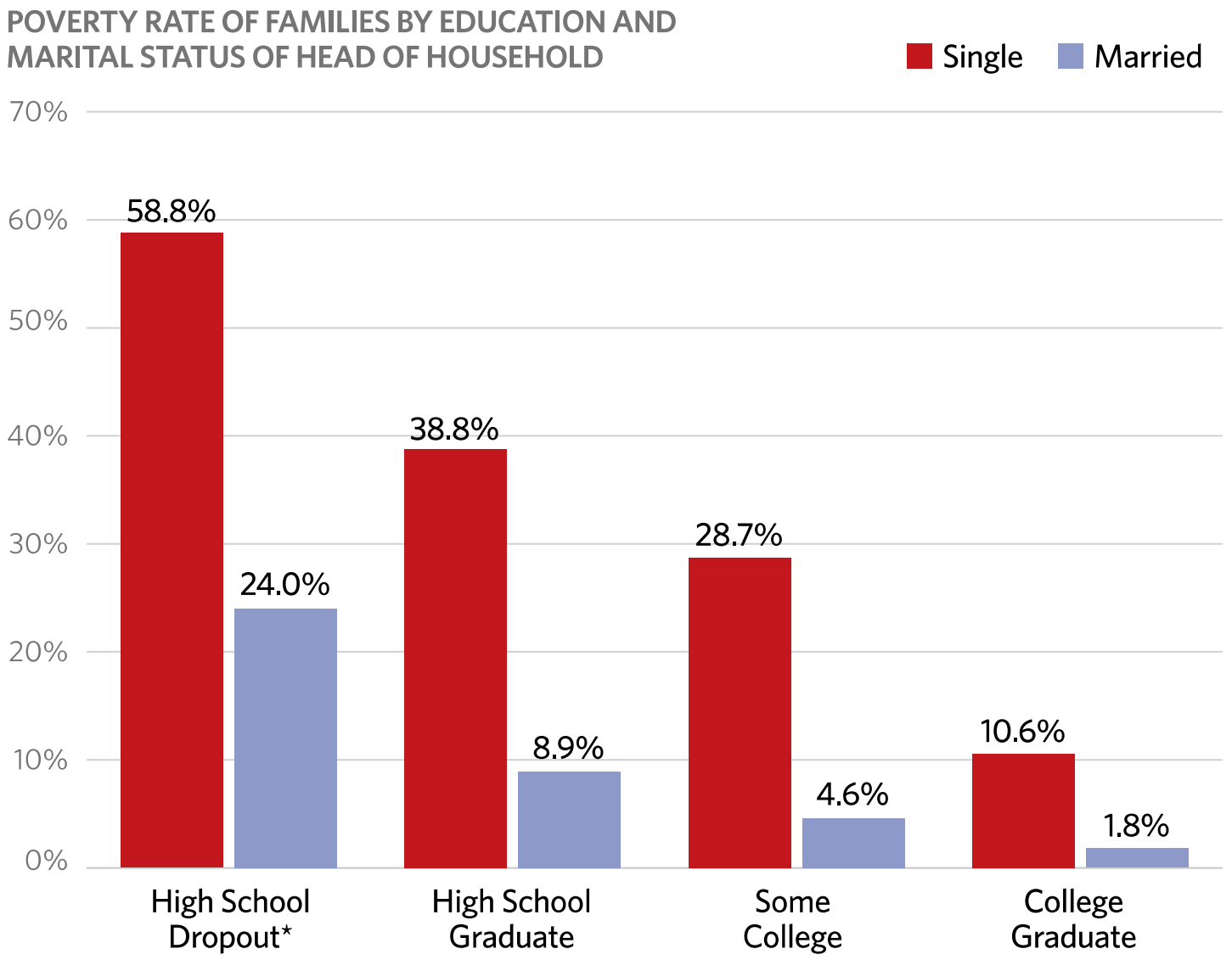
Autor and Wasserman, 2013

Unmarried with Children: Non-Marital Childbearing Much Higher among Non-College Women (2008 data)



Rector 2012

Single & Poor: Poverty Far Higher Among Single-Headed Households at Every Education Level (2008 data)



Rector 2012

Relevant Work

Daniel Patrick Moynihan ‘65

- *The Negro Family: The Case For National Action*

William Julius Wilson ‘87

- *The Truly Disadvantage*

Akerlof, Yellen and Katz ‘96

- “An Analysis of Out-of-Wedlock Childbearing in the United States”

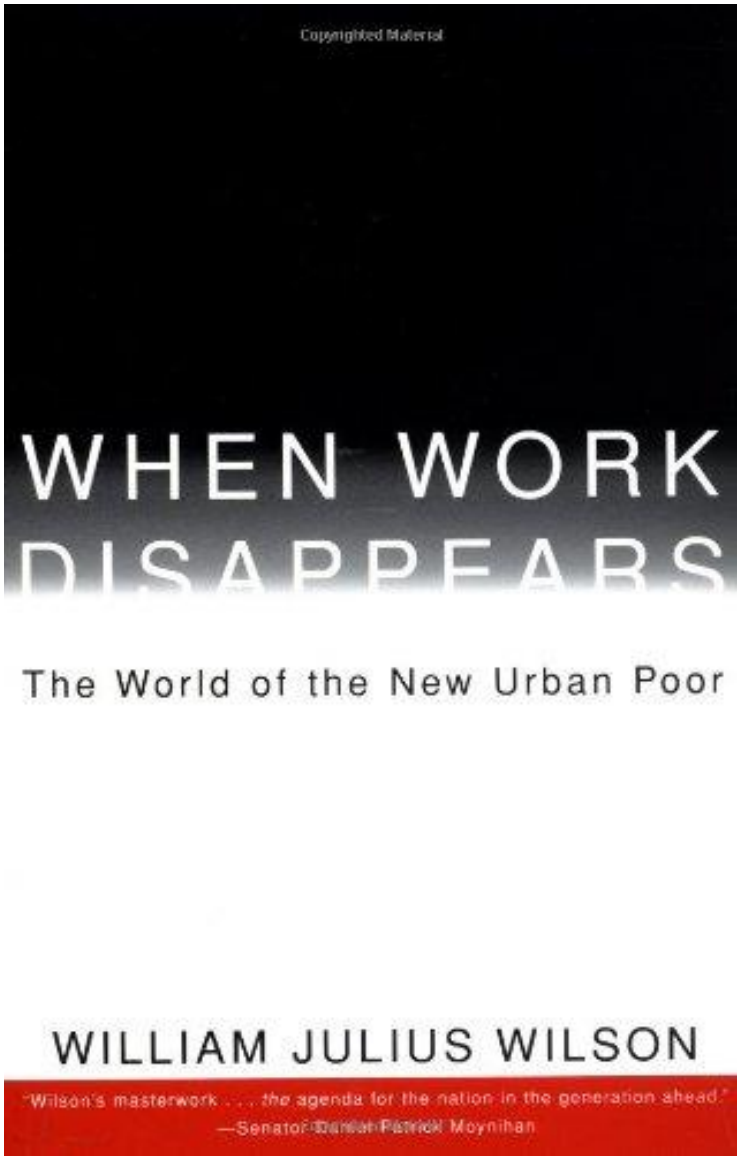
William Julius Wilson ‘96

- *When Work Disappears*

Charles Murray ‘12

- *Coming Apart: The State of White America 1960 – 2010*

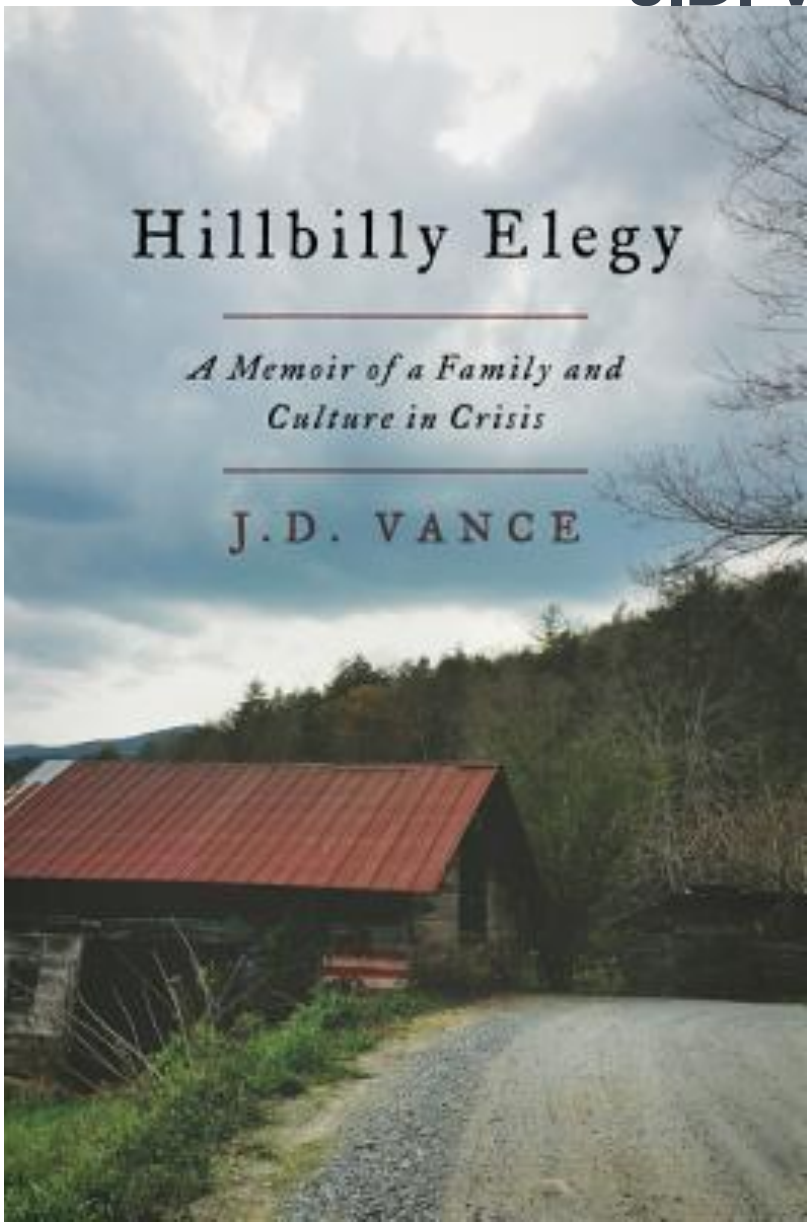
When Work Disappears, William Julius Wilson, 1996



"A neighborhood in which people are poor but employed is different from a neighborhood in which people are poor and jobless. Many of today's problems in the inner-city ghettos—crime, family dissolution, welfare, low levels of social organization, and so on—are fundamentally a consequence of the disappearance of work."

Hillbilly Elegy: A Memoir of Family and Culture in Crisis

J.D. Vance, 2016



"Wilson's book spoke to me. I wanted to write him a letter and tell him that he had described my home perfectly. That it resonated so personally is odd, however, because he wasn't writing about the hillbilly transplants from Appalachia—he was writing about black people in the inner cities."

When Work Disappears: Manufacturing Decline and the Falling Marriage-Market Value of Men

Autor, Dorn and Hanson

NBER Working Paper
February 2017

Approach (Manufacturing Decline and Marriage-Market Value of Men)

- Estimate causal effect of trade shocks on *employment, earnings, and non-market outcomes*
- Identify gender-specific employment shocks
  - Trade shocks that differentially affect men, women
- Tracing impacts of local labor market shocks to
  1. Employment and earnings by sex
  2. Marriageable men and missing men
  3. Marital status
  4. Birth outcomes
  5. Children's household structures

Manufacturing Decline and Marriage-Market Value of Men

1. Trade and manufacturing
2. Empirical approach
3. A simple model
4. Results

Manufacturing Provides 'Good' Jobs (Especially for Males)

Annual Wage + Salary Income: 2000 Census IPUMS Data

	III. Log Annual Wage and Salary Income								IV. Annual Wage and Salary Income							
	(1)		(2)		(3)		(4)		(1)		(2)		(3)		(4)	
Male x Employed in Manufacturing	**0.18**	**	**0.19**	**	**0.19**	**	**0.20**	**	**1,334**	**	**1,890**	**	**1,879**	**	**2,153**	**
	(0.02)		**(0.02)**		**(0.01)**		**(0.01)**		**(291)**		**(277)**		**(265)**		**(268)**	
Female x Employed in Manufacturing	**0.13**	**	**0.20**	**	**0.20**		**0.21**	**	**508**		**1,464**	**	**1,483**		**1,764**	**
	(0.02)		**(0.02)**		**(0.02)**		**(0.02)**		**(319)**		**(273)**		**(268)**		**(280)**	
Mean (S.D.) Outcome Var	9.12 (1.28)								20,781 (23,171)							
Males / Females	8.79 (1.29)								15,518 (19,795)							
Age x Gender	yes		yes		yes		yes		yes		yes		yes		yes	
Education x Gender			yes		yes		yes				yes		yes		yes	
Race/Nativity x Gender					yes		yes						yes		yes	
CZone Fixed Effects							yes								yes	

Notes: N=243,071 (130,181 male and 112,890 female workers). 5% IPUMS 2000 Census, individuals age 18-39 w/positive wage and salary income and not self-employed, unpaid family members, or residing in institutional group quarters. Control vector in column 4 includes a gender dummy interacted with 22 indicators for age in years, 9 indicators for eduction levels, 3 indicators for race and ethnicity, and an indicator for foreign-born individuals. All models include 721 CZ indicators. Regressions weighted by the product of Census person weight and weighting factor that attributes individuals from Census PUMAs to CZs. Standard errors are clustered by state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

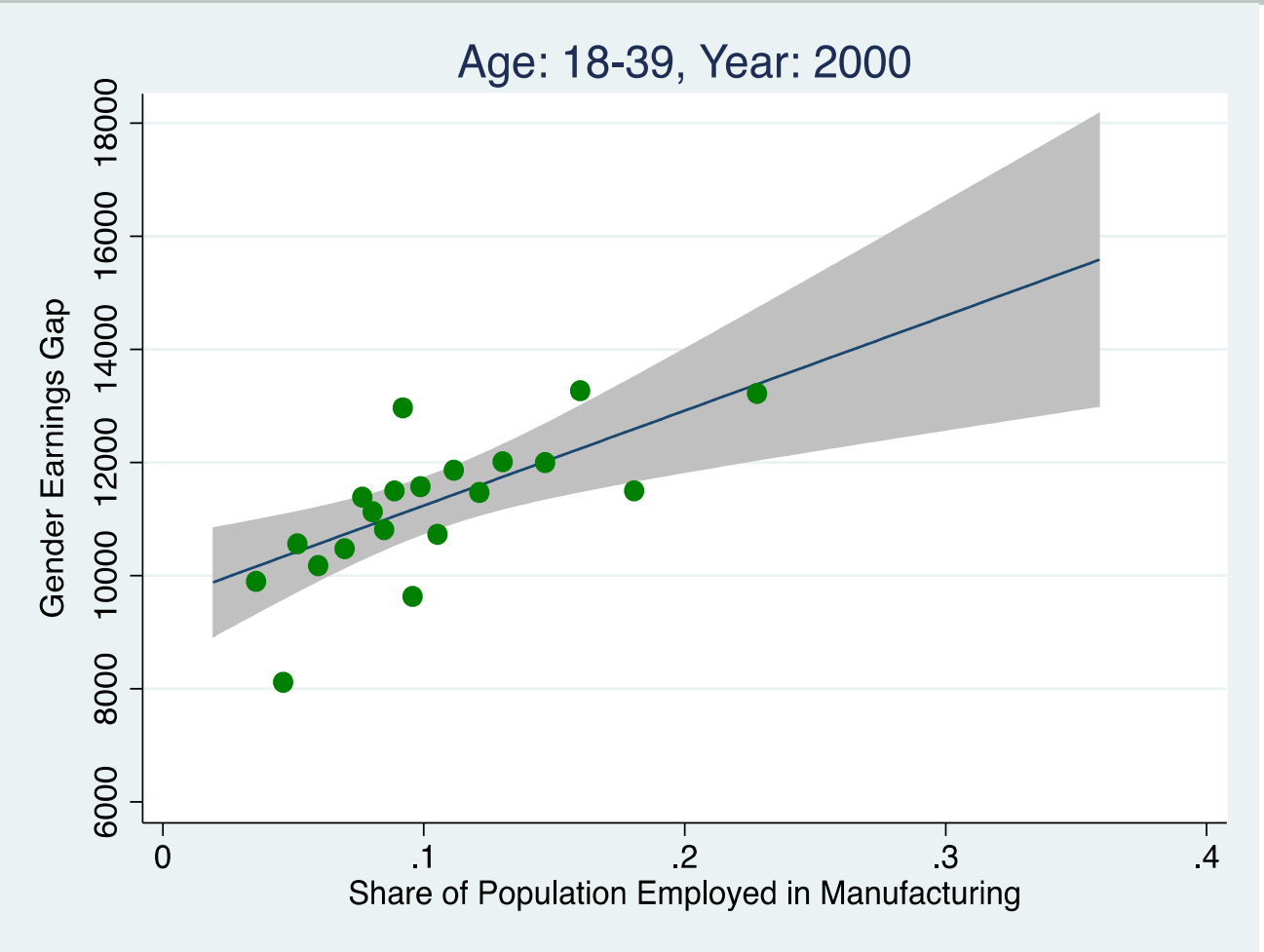
Manufacturing Provides 'Good' Jobs (Especially for Males)

Wage + Hour Regressions: 2000 Census IPUMS Data

	I. Log Hourly Wage				II. Log Annual Work Hours			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Male x Employed in Manufacturing	**0.05 ** (0.01)**	**0.06 ** (0.01)**	**0.06 ** (0.01)**	**0.08 ** (0.01)**	**0.13 ** (0.01)**	**0.13 ** (0.01)**	**0.13 ** (0.01)**	**0.12 ** (0.01)**
Female x Employed in Manufacturing	**0.02 (0.01)**	**0.06 ** (0.01)**	**0.06 (0.01)**	**0.07 ** (0.01)**	**0.12 ** (0.02)**	**0.14 ** (0.02)**	**0.14 (0.02)**	**0.13 ** (0.01)**
Mean (S.D.) Outcome Var	2.34 (0.76)				6.79 (0.99)			
Males / Females	2.19 (0.77)				6.60 (1.03)			
Age x Gender	yes	yes	yes	yes	yes	yes	yes	yes
Education x Gender		yes	yes	yes		yes	yes	yes
Race/Nativity x Gender			yes	yes			yes	yes
CZone Fixed Effects				yes				yes

Notes: N=243,071 (130,181 male and 112,890 female workers). 5% IPUMS 2000 Census, individuals age 18-39 w/positive wage and salary income and not self-employed, unpaid family members, or residing in institutional group quarters. Control vector in column 4 includes a gender dummy interacted with 22 indicators for age in years, 9 indicators for eduction levels, 3 indicators for race and ethnicity, and an indicator for foreign-born individuals. All models include 721 CZ indicators. Regressions weighted by the product of Census person weight and weighting factor that attributes individuals from Census PUMAs to CZs. Standard errors are clustered by state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

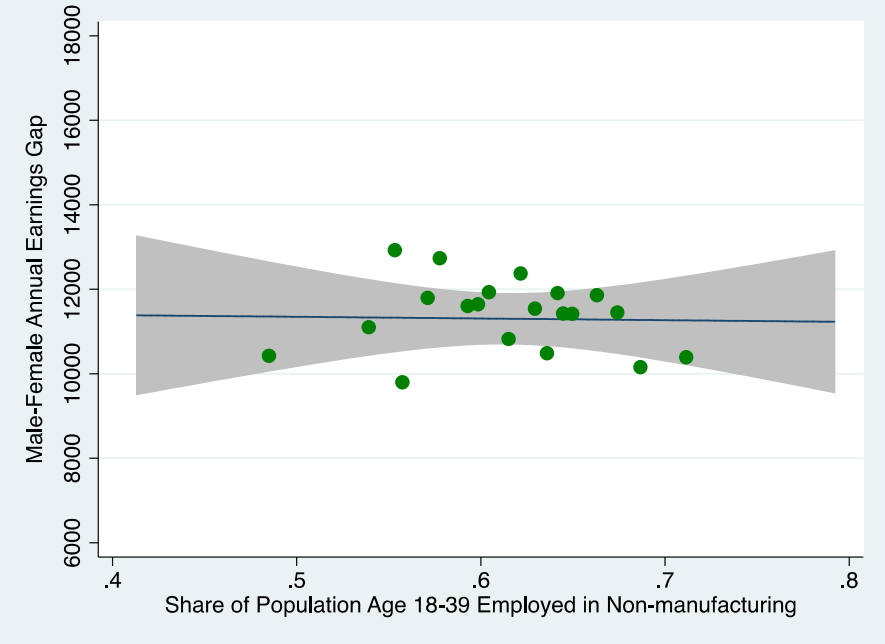
Gender Earnings Gap Positively Correlated with Manufacturing Employment as a Share of Pop

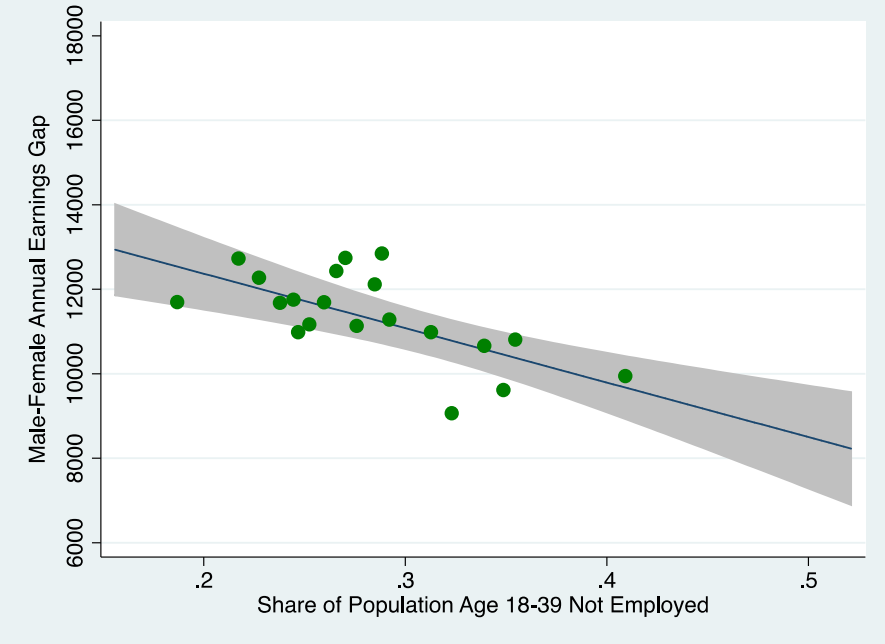


- 722 Commuting Zones (in 20 bins of equal population size)
- Fraction of population age 18-39 employed in manufacturing
- Gap between unconditional male and female median earnings in the CZ

→ ***Gender earnings gaps are greater in CZs with larger manufacturing share***

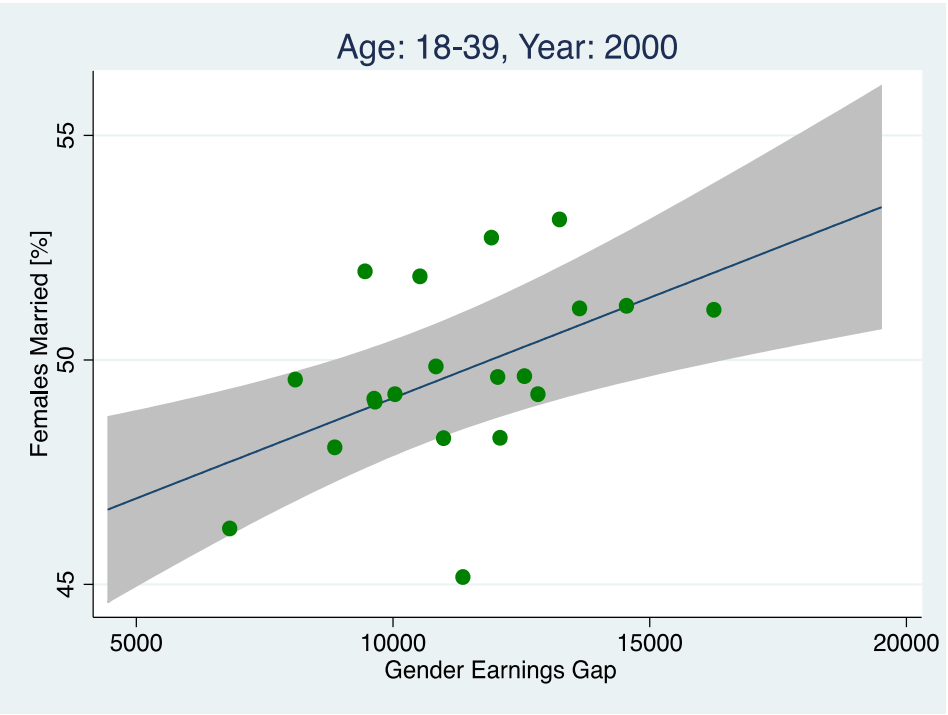
Gender Earnings Gap Uncorrelated w/Non-Manufacturing Employment, Correlated w/Non-Employment





- 722 Commuting Zones (in 20 bins of equal population size)
- Fraction of pop age 18-39 employed in non-manufacturing or not employed
- Gap between unconditional male and female median earnings in the CZ

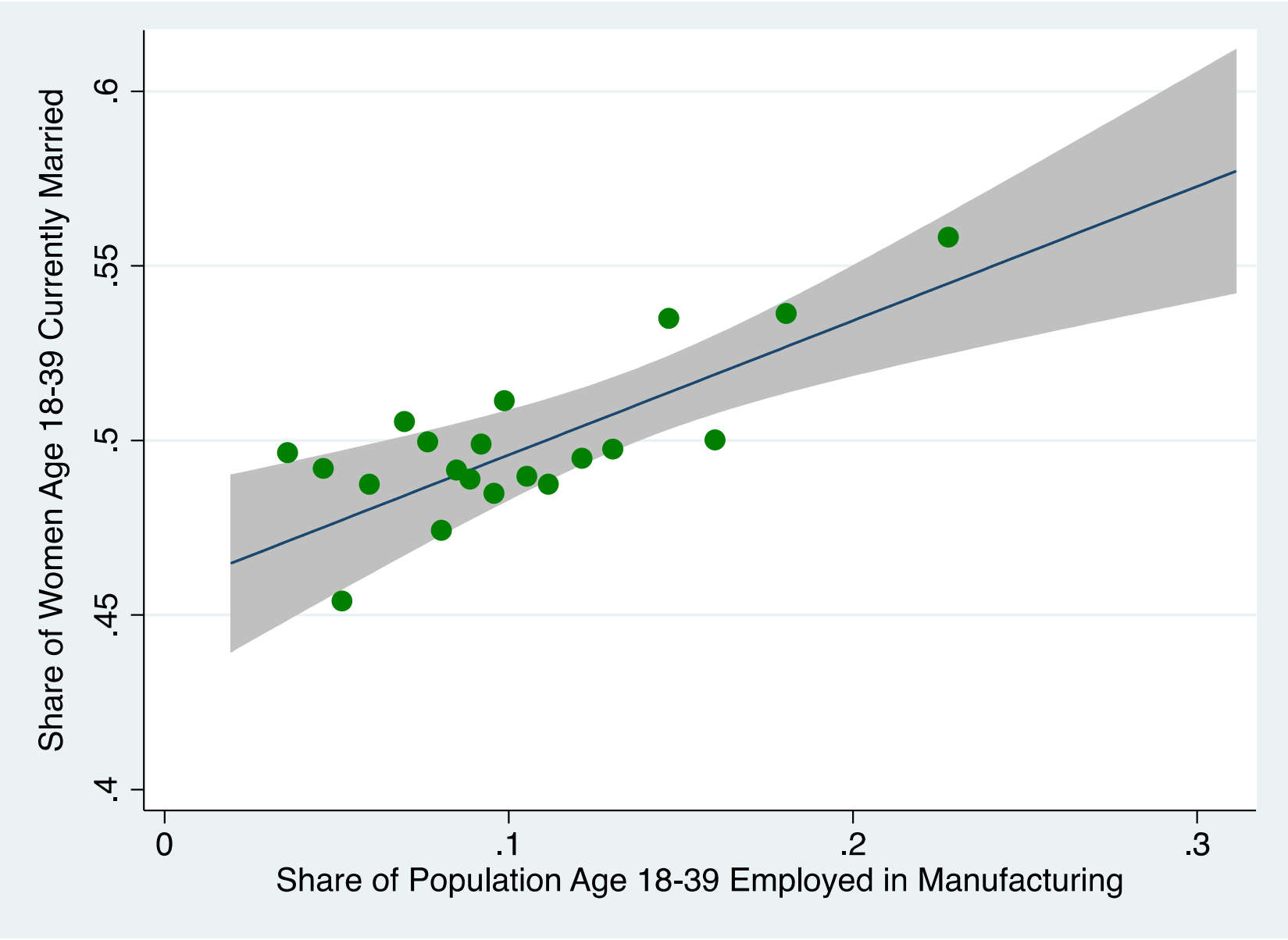
Marriage Rates Correlate with Gender Earnings Gap



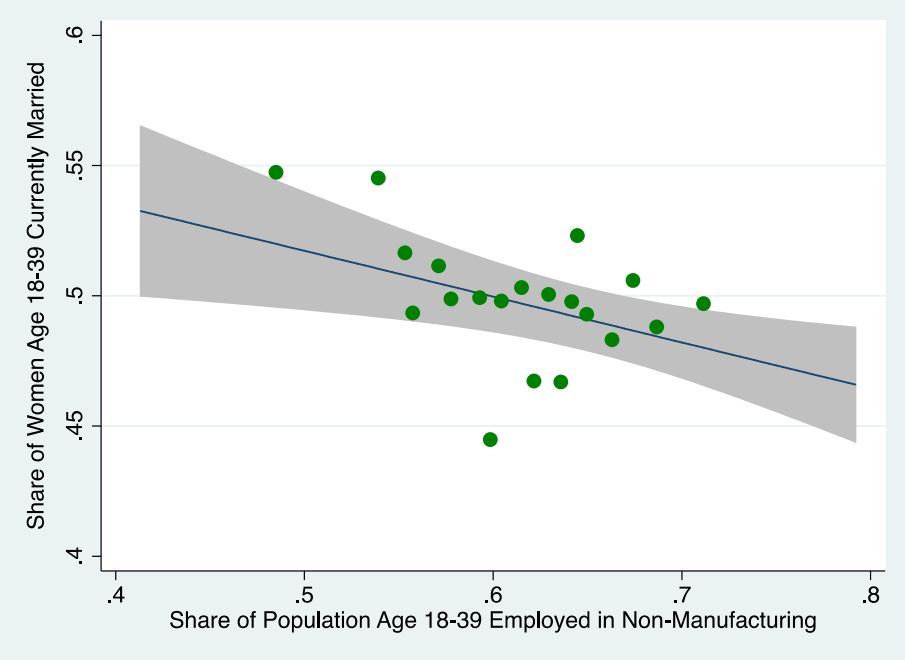
- 722 Commuting Zones (in 20 bins of equal population size)
- Fraction of women currently married (age 18-39 or 18-25)
- Gap between median male and median female unconditional earnings in the CZ

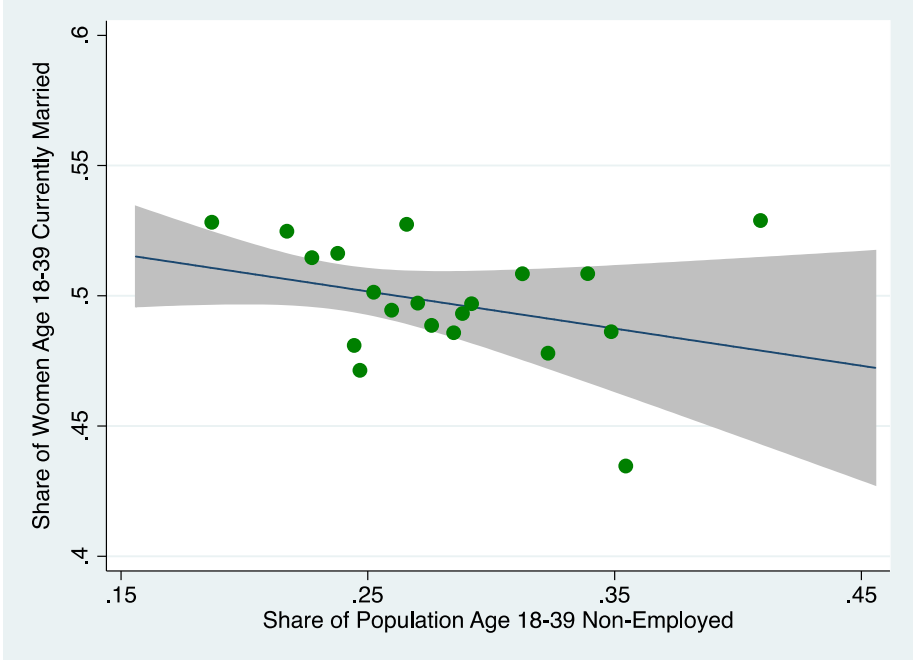
→ ***Strong correlation between marital status and gender earnings gap***

Marriage Rates Correlated with Manufacturing Employment



Marriage Rate Weakly or Negatively Correlated w/Non-Manufacturing Employment, Non-Employment





- 722 Commuting Zones (in 20 bins of equal population size)
- Fraction of pop age 18-39 employed in non-manufacturing or not employed
- Gap between unconditional male and female median earnings in the CZ

Manufacturing Decline and Marriage-Market Value of Men

1. Trade and manufacturing
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China's 2001 WTO Accession a Major Adverse Shock to U.S. Manufacturing Jobs (> 1mil lost)

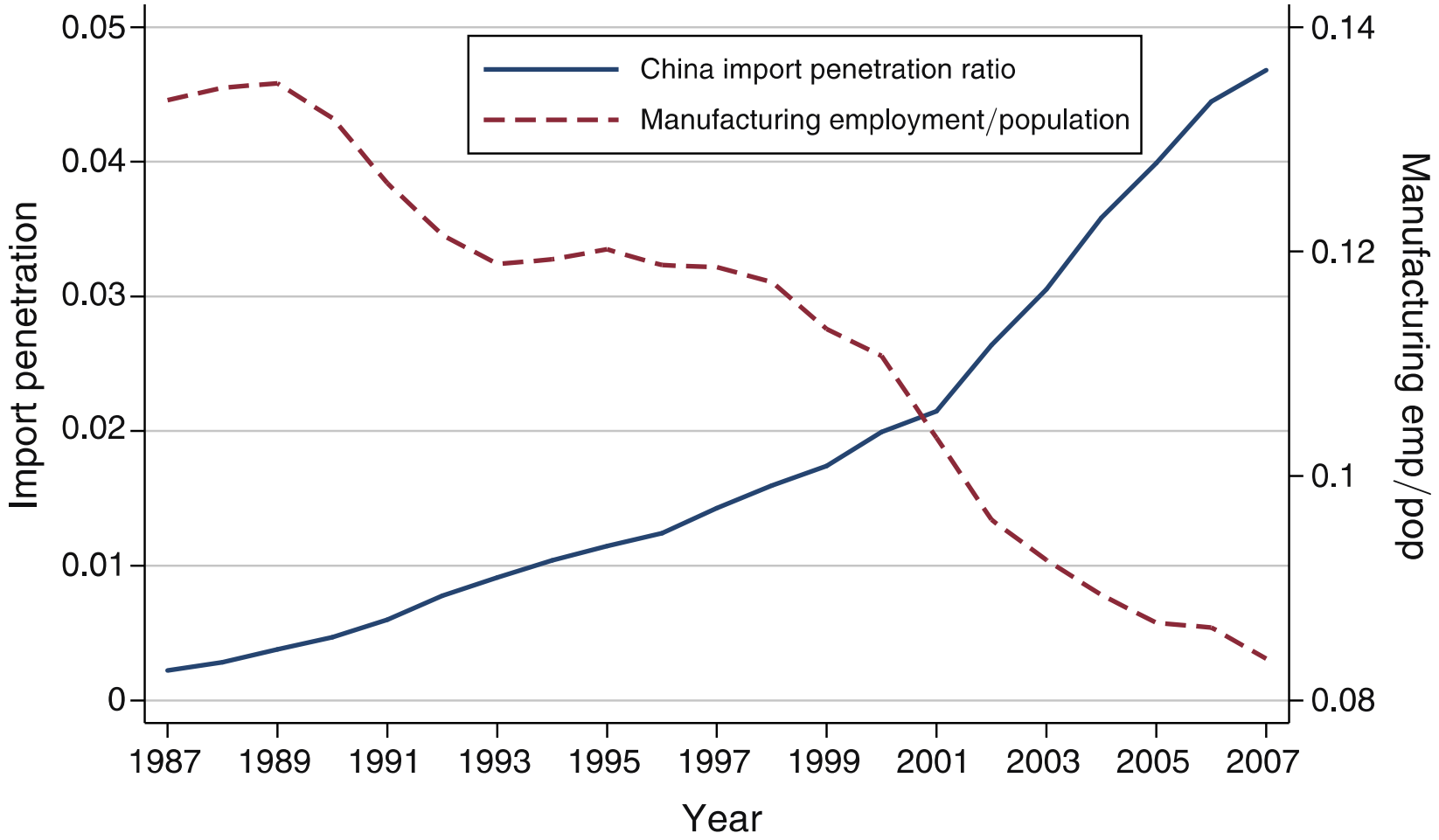


FIGURE 1. IMPORT PENETRATION RATIO FOR US IMPORTS FROM CHINA (*left scale*), AND SHARE OF US WORKING-AGE POPULATION EMPLOYED IN MANUFACTURING (*right scale*)

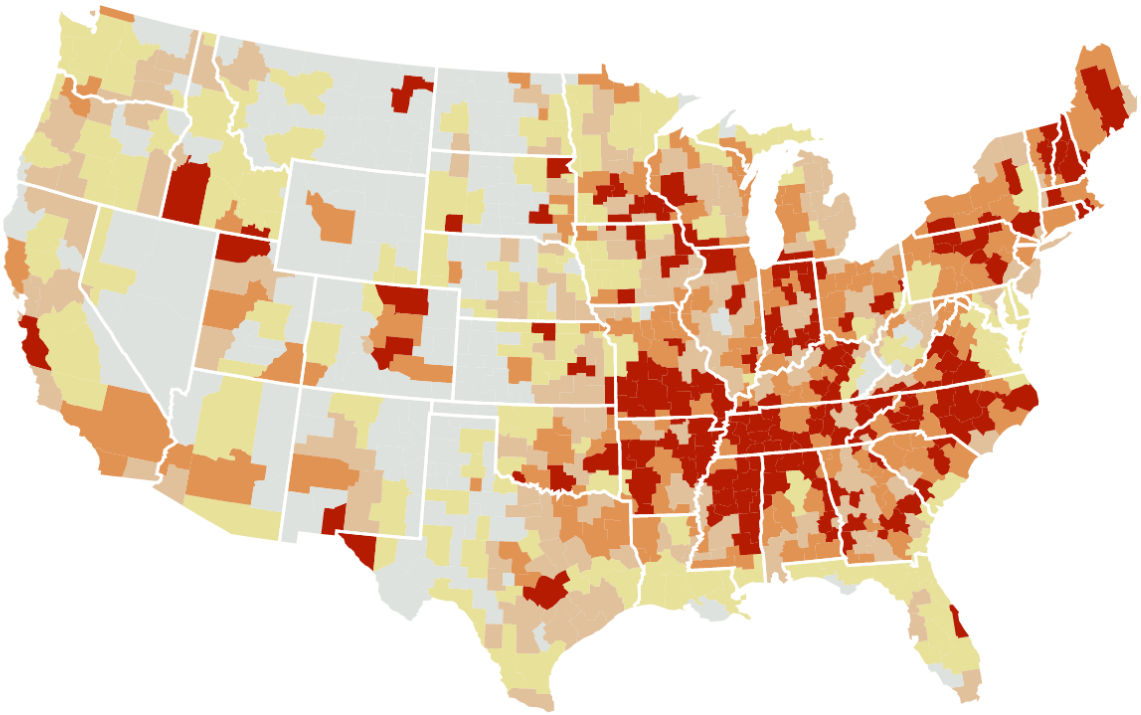
Autor, Dorn, Hanson 2013

Local Labor Market Import Exposure

Most-affected areas of the U.S.

Colors show which areas were most affected by China's rise, based on the increase in Chinese imports per worker in each area from 1990 to 2007. Hovering over each area on the map will show a demographic breakdown of that area, below, and its most-affected industries, at right.

Most-affected 20% | Second-highest 20% | Middle 20% | Second-lowest 20% | Least-affected 20%



Most-affected industries

*Most-affected industries, based on number of areas**	*Impact per worker†*
Furniture and fixtures — 196 areas	*$44k*
Games, toys, and children's vehicles — 114 areas	*$488k*
Sporting and athletic goods — 106 areas	*$82k*
Electronic components — 87 areas	*$65k*
Plastics products — 84 areas	*$11k*
Motor-vehicle parts and accessories — 79 areas	*$12k*
Electronic computers — 68 areas	*$207k*

Autor-Dorn-Hanson and *Wall Street Journal* '16

Labor Market Effects of Chinese Import Competition

- **Growing literature finds negative impacts of Chinese imports on U.S. employment and wages**
  - Bernard, Jensen, Schott ‘06; ADH ‘13; Ebenstein, Harrison, McMillan, Phillips ‘14; Autor, Dorn, Hanson, Song ‘14; Pierce, Schott ‘15; Caliendo, Dvorkin, Parro ’15; AADHP ’16
- **Impacts concentrated in**
  - Import-exposed manufacturing industries
  - Local labor markets specialized in these industries
  - Workers initially employed in these industries

Labor Market Effects of Chinese Import Competition

Empirical approach

1. Measure product-specific growth of U.S. imports from China
2. Link product-specific imports to industries
3. Link industries to local labor markets
4. Approximate gender-specific component of import competition using local male-female industry employment shares

Data Sources

1. **Trade shock**
   - UN Comtrade: Value of imports by detailed product code
   - Concorded to 397 4-digit manufacturing industries
2. **Industry/gender composition**
   - County Business Patterns 1980, 1990, 2000: Employment by CZ in 397 4-digit manufacturing industries
   - Census 1980, 1990, 2000: Gender composition by CZ in 76 3-digit manufacturing industries
3. **Outcomes**
   - Census 1990 and 2000, ACS 2006-08
   - Vital Statistics Birth and Mortality Records
   - Note: no comprehensive U.S. flow data on marriage and divorce

Local Labor Market Import Exposure

Two steps

1. Compute import penetration by industry *j*
2. Then compute average import penetration by Commuting Zone *i* based on *i*'s initial industry employment mix

$$\Delta IP_{j\tau} = \frac{\Delta M_{j\tau}^{ch,us}}{Y_{j91} + M_{j91} - X_{j91}}$$

$$\Delta IP_{i\tau} = \sum_{j} \frac{L_{ijt}}{L_{it}} \Delta IP_{j\tau}$$

Instrumental Variables Strategy

- **Source of endogeneity**
  - US imports from China not only affected by Chinese productivity growth and falling trade costs, but also by US demand shocks
- **Instrumental variable approach**
  - Instrument for US imports from China using other developed countries‘ imports from China (and lags of all other variables)

$$\Delta IP_{j\tau}^{oth} = \frac{\Delta M_{j\tau}^{ch,oth}}{Y_{j88} + M_{j88} - X_{j88}}$$

$$\Delta IP_{i\tau}^{oth} = \sum_{j} \frac{L_{ijt-10}}{L_{it-10}} \Delta IP_{j\tau}^{oth}$$

Correlations: Δ Chinese Imports to U.S. and Eight Other High Income Countries, 1991 – 2007 (385 Products)

Imports from China in the U.S. and Other Developed Economies 1991 - 2007 (in Billions of 2007$), and their Correlations with U.S.-China Imports

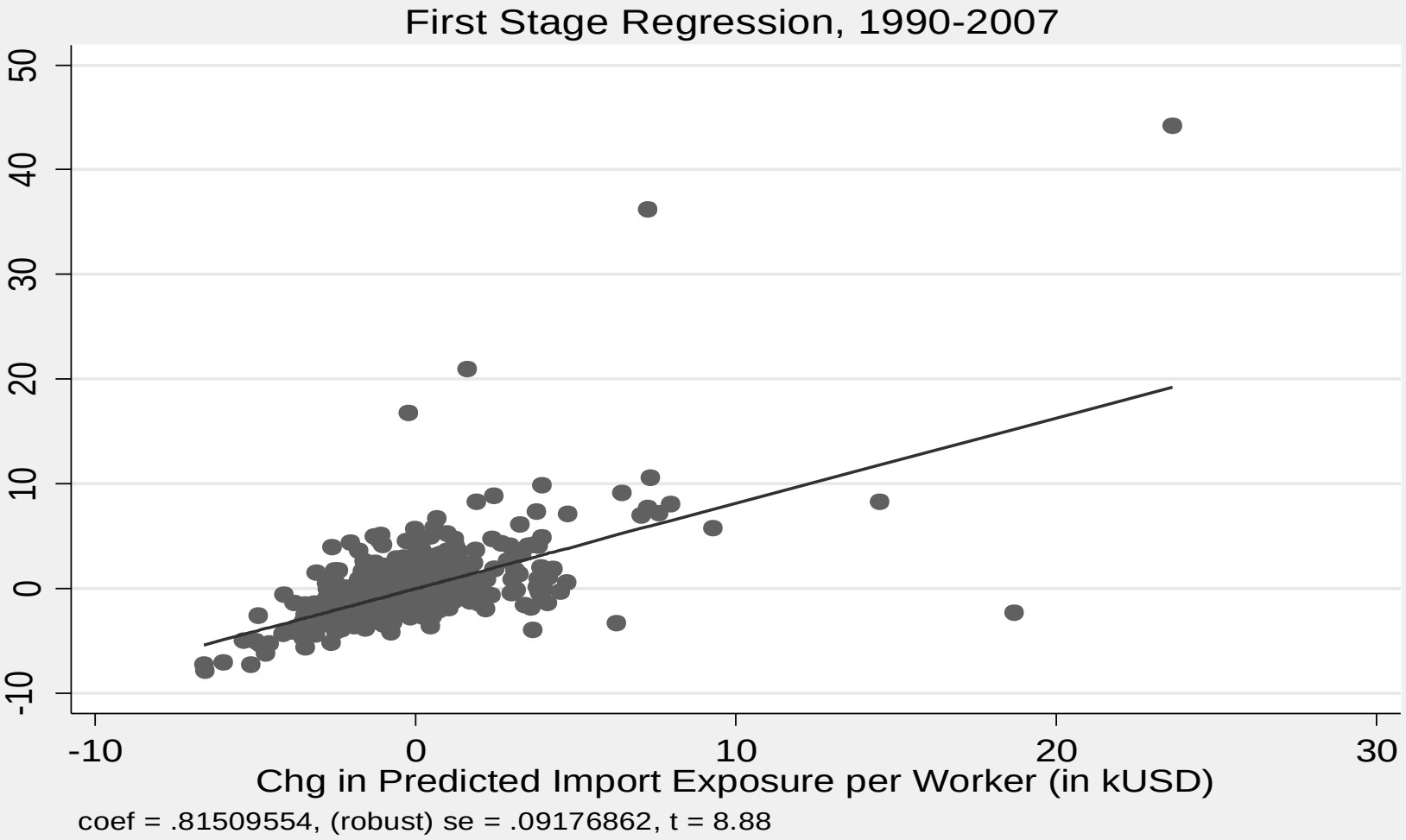
	United States	Japan	Germany	Spain	Australia
Δ Chinese Imports (Bil$)	303.8	108.1	64.3	23.2	21.5
No. Industries with Import Growth	385	368	371	377	378
Correlation w/ U.S.-China	**1.00**	**0.86**	**0.91**	**0.68**	**0.96**

	8 Non-US Countries	Finland	Denmark	New Zealand	Switzerland
Δ Chinese Imports (Bil$)	234.7	5.7	4.7	3.8	3.3
No. Industries with Import Growth	383	356	362	379	343
Correlation w/ U.S.-China	**0.92**	**0.58**	**0.62**	**0.92**	**0.55**

Correlations of imports across 397 4-digit industries are weighted using 1991 industry employment from the NBER Manufacturing database.

First Stage Regression: 722 Commuting Zones, 1990 – 2007

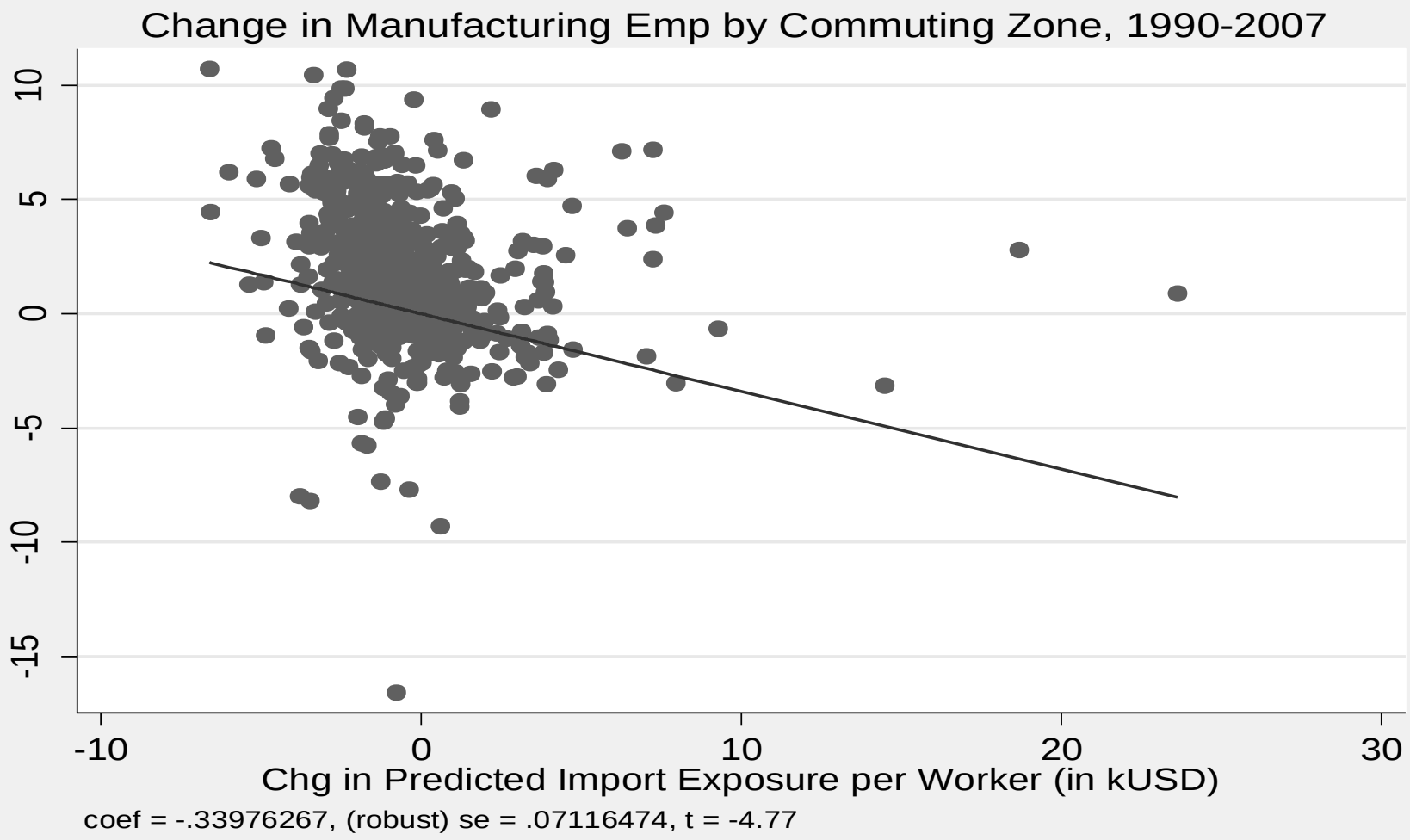
Panel A: 2SLS 1st Stage Regression, Full Sample



Autor-Dorn-Hanson '13

Reduced Form Regression: 722 Commuting Zones, 1990 – 2007

Panel B: OLS Reduced Form Regression, Full Sample



Autor-Dorn-Hanson '13

Accounting for Gender Differences

- Gender-specific trade shocks
  - Trade shocks differentially affect males or females *depending on industries exposed*
  - Multiply CZ-by-industry exposure measure by *initial period male or female share* of employment in each industry-CZ cell

$$\Delta IP_{i\tau}^{m} = \sum_{j} \frac{m_{ijt} L_{ijt}}{L_{it}} \Delta IP_{j\tau}$$

$$\Delta IP_{i\tau}^{f} = \sum_{j} \frac{(1 - m_{ijt}) L_{ijt}}{L_{it}} \Delta IP_{j\tau}$$

Main Estimating Equations

- Control vector includes

$$\Delta Y_{ij\tau} = \alpha_t + \beta_1 \Delta IP_{i\tau} + \mathbf{X}'_{jt}\delta_2 + e_{ijt}$$

$$\Delta Y_{ij\tau} = \alpha'_t + \beta'_1 \Delta IP^m_{i\tau} + \beta'_2 \Delta IP^f_{i\tau} + \mathbf{X}'_{jt}\delta'_2 + e'_{ijt}$$

  - Population shares in 5 race/ethnicity, 2 education, and 2 nativity groups
  - Share of employment in manufacturing, ‘routine-intensive’ occupations, ‘offshorable’ employment
  - Female employment share
  - Census division dummies

Measure of Trade Shocks: Employment-Weighted Change in CZ's Import Penetration (per Decade)

Mean and Percentiles of Decadal Growth in Chinese Import Penetration by Commuting Zone, 1990 - 2007

	I. Overall Shock			II. Male Industry Shock			III. Female Industry Shock		
	1990-'07	1990-'00	2000-'07	1990-'07	1990-'00	2000-'07	1990-'07	1990-'00	2000-'07
Mean	**1.13**	**0.94**	**1.33**	**0.71**	**0.56**	**0.86**	**0.42**	**0.39**	**0.46**
	(0.75)	(0.61)	(0.83)	(0.47)	(0.33)	(0.53)	(0.32)	(0.31)	(0.33)
P25	0.68	0.54	0.83	0.43	0.35	0.54	0.25	0.21	0.27
P50	0.95	0.88	1.14	0.60	0.53	0.77	0.37	0.34	0.39
P75	1.43	1.22	1.59	0.90	0.73	1.09	0.52	0.48	0.54
P75-P25	0.74	0.68	0.76	0.47	0.38	0.56	0.27	0.27	0.28

Notes: N=1444 (722 commuting zones x 2 time periods) in column 1, N=722 in columns 2 and 3. Observations are weighted by start of period commuting zone share of national population.

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Canonical Theory of Marriage: Becker ‘73

Market vs household specialization

1. Falling male earnings
2. Rising female earnings
3. Increasing public support for unmarried mothers

… reduce marriage rates, increases single-headedness

Literature

- Blau, Kahn, Waldfogel ‘2000, Ellwood-Jencks ’04, Murray ’12, Shenhav ‘16, Shaller ‘16

Bertrand, Kamenica, Pan ’15

- Asymmetries

Sequential Model of Fertility and Marriage (based on Kane-Staiger '96)

Core ideas of setting

(1) Woman has control of fertility

(2) Mother has control rights over child

(3) Mother has 'right of refusal' of marriage

Sequential decision-making process: *Pregnancy precedes decision about marriage*

1. Potential mother uncertain about quality of man who may serve as father and marital partner
2. Father quality revealed after conception
   - If male partner is 'high quality,' choose marriage
   - If male partner is 'low quality,' choose between *Marry low-quality father or raise child out-of-wedlock*

Formalization

Male partners either high or low-quality $Q \in \{0,1\}$

- $E[Q] = P_{ij}$, where i is mother, j is Commuting Zone
- P_{ij} is common knowledge
- Quality of individual male partner Q_i of mother i not known until woman i conceives child

- **What is male partner 'quality'?**
  - Capacity and commitment to provide economic and parental inputs
  - May also depend on male/female relative earnings (Bertrand Kamenica Pan '15)

Formalization

Women's preferences

- U[Married to high Q male + kid] = 1
- U[Unmarried + no kid] = 0

Women differ in disutility of marry low Q vs. single mom

- Disutility of marrying low Q male $= -M_i < 0$
- Disutility of single-motherhood $= -S_i < 0$

- **Convenient to think of two 'types' of women**

1. Traditional preference: $-S_i < -M_i$
   Marry man even if he is low-quality
2. Non-traditional preference: $-M_i < -S_i$
   Single-mother if man is low-quality

Formalization

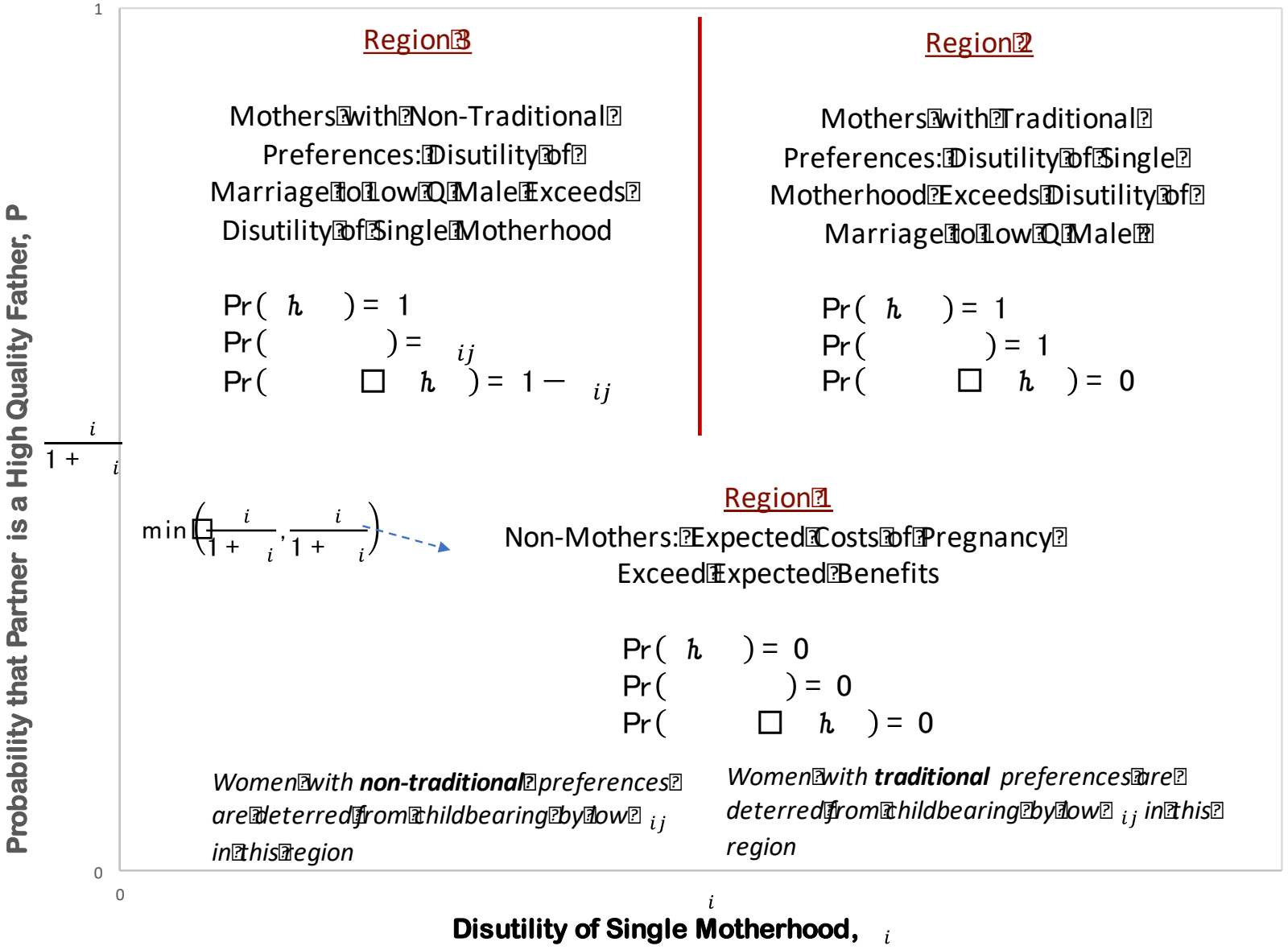
Now, backward induct to ***conception*** decision

- **Women will conceive a child only if**

$$\frac{P_{ij}}{1 - P_{ij}} > \min[M_i, S_i]$$

- **Either**
  a. Expected quality of fathers is sufficiently high *or*
  b. Option value of single-parenthood is sufficiently attractive

How Shocks to the Supply of 'High Quality' Males Affect Marriage and Fertility



Implications

Adverse shocks to male earnings capacity

a. Reduce overall fertility and the prevalence of marriage
b. Reduce marriages by more than births
c. Increase share of children born out-of-wedlock and raised in single-headed households

Adverse shocks to female earnings capacity

a. Increase overall fertility and prevalence of marriage
b. Reduce births by more than marriages
c. Decrease share of children born out-of-wedlock and raised in single-headed households

Is Sequential Decision-Making Realistic?

Non-marital births are modal among young mothers

- Among women > Age 24 in 2006 through 2008
- 53% were mothers by the age of 24
- 65% of those mothers unmarried at time of first birth (Edin and Tach ’12)

Most first births are to young mothers

- 76% of first births in 2007 were to mothers < age 30
- 46% were to women < age 25 (Martin et al. ’10)

Most U.S. Marriages Involve Children: Women Ages 18 – 39, 1990 and 2007

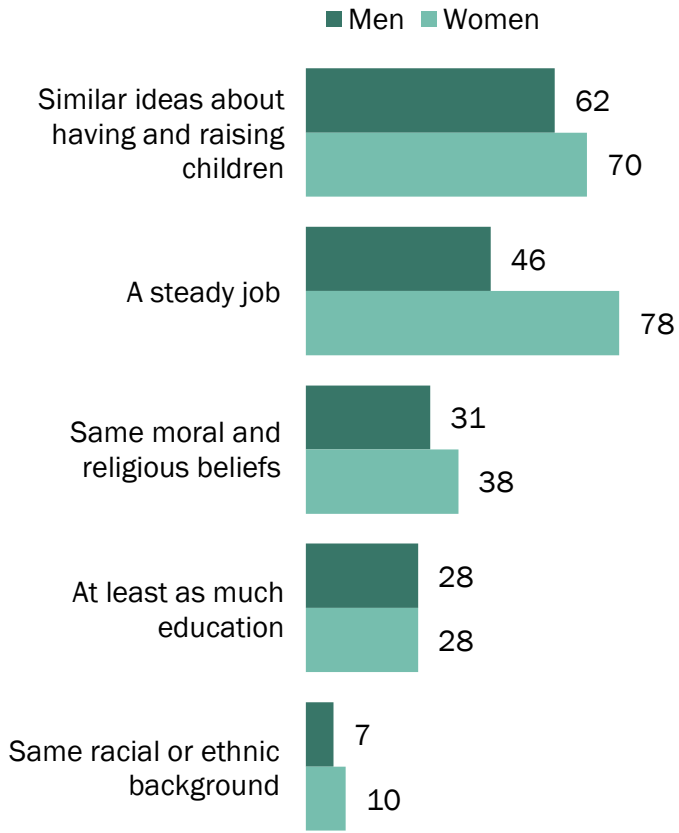
Marital/Maternal Status of U.S. Women Ages 18-39

	1990		2007
Married without children	12.5%	↓	10.2%
Married with children	40.6%	↓	31.9%
Unmarried without children	34.3%	↑	42.9%
Unmarried with children	12.7%	↑	15.0%

Census and ACS data, 1990 and 2007

“Never-Married Women Want a Spouse with a Steady Job,” *Pew Research Center* 2014

% of never-married adults who say … would be “very important” to them in choosing a spouse or partner



Note: Based on never-married adults who want to marry or are not sure (n=369).

Source: Pew Research Center survey, May 22-25 and May 29-June 1, 2014 (N=2,003)

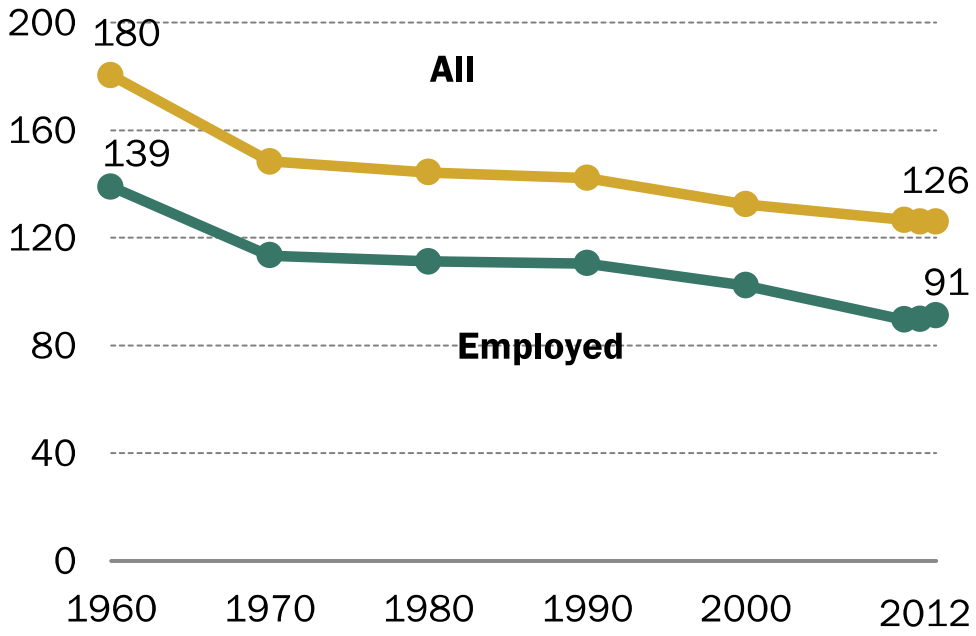
PEW RESEARCH CENTER **Q.SD.10a-e**

Pew Research Center 2014

Ratio of Employed Never-Married Men is Falling Relative to Never-Married Women (ages 25 – 34)

For Young Never-Married Women, the Pool of Employed Men Has Shrunk

of … men per 100 women, among never-married adults ages 25 to 34



Source: Pew Research Center analysis of the 1960-2000 decennial censuses and 2010-2012 American Community Survey, Integrated Public Use Microdata Series (IPUMS)

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Impact of a One-Unit Trade Shock on Manufacturing Emp/Pop Among M+F Ages 18 – 39, 1990 – 2007

	OLS 1990-'00		OLS 2000-'07		OLS 1990-'07		2SLS 1990-'00		2SLS 2000-'07	
	(1)		(2)		(3)		(4)		(5)	
Δ Chinese Import Penetration	**-0.65**	*	**-1.85**	**	**-1.44**	**	**-2.14**	**	**-2.54**	**
	(0.27)		**(0.14)**		**(0.17)**		**(0.43)**		**(0.18)**	
2SLS First Stage Estimate	n/a		n/a		n/a		0.73	**	0.86	**
							(0.06)		(0.06)	
R^2							0.33		0.62	

Notes: N=722 in columns 1-2 and 4-5, N=1444 (722 commuting zones x 2 time periods) in columns 3 and 6-10. All stacked first differences regressions in column 3 and 6-10 include a dummy for the 2000-2007 period. Occupational composition controls in columns 9-10 comprise the start-of-period indices of employment in routine occupations and of employment in offshorable occupations as defined in Autor and Dorn (2013). Population controls in column 10 comprise the start-of-period shares of commuting zone population that are Hispanic, black, Asian, other race, foreign born, and college educated, as well as the fraction of women who are employed. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period commuting zone share of national population. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Impact of a One-Unit Trade Shock on Manufacturing Emp/Pop Among M+F Ages 18 – 39, 1990 – 2007

	2SLS: 1990-'07				
	(6)	(7)	(8)	(9)	(10)
Δ Chinese Import Penetration	**-2.44** **	**-2.64** **	**-2.33** **	**-2.32** **	**-2.52** **
	(0.20)	**(0.35)**	**(0.34)**	**(0.36)**	**(0.40)**
Manufacturing Emp Share$_{-1}$		Yes	Yes	Yes	Yes
Census Division Dummies			Yes	Yes	Yes
Occupational Composition$_{-1}$				Yes	Yes
Population Composition$_{-1}$					Yes
2SLS First Stage Estimate	0.82 **	0.60 **	0.62 **	0.60 **	0.59 **
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)
R^2	0.55	0.60	0.61	0.63	0.63

Notes: N=722 in columns 1-2 and 4-5, N=1444 (722 commuting zones x 2 time periods) in columns 3 and 6-10. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period commuting zone share of national population. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Impact of a One-Unit Trade Shock on Employment Among Men and Women Ages 18 – 39, 1990 – 2007

	A. Share Pop Age 18-39 in Manufacturing			B. Male-Female Differential by Employment Status			
	All	Males	Females	Mfg	Non-Mfg	Unemp	NILF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Overall Trade Shock							
Δ Chinese Import Penetration	-2.52 **	-2.60 **	-2.40 **	-0.19	0.41	0.04	-0.26
	(0.40)	(0.47)	(0.36)	(0.29)	(0.34)	(0.17)	(0.34)
II. Male Industry vs Female Industry Shock							
Δ Chinese Imports × (Male Ind Emp Share)	-2.51 **	-5.03 **	0.02	-5.05 **	2.61 *	0.19	2.26 *
	(0.87)	(1.20)	(0.74)	(0.98)	(1.09)	(0.44)	(0.97)
Δ Chinese Imports × (Female Ind Emp	-2.54 *	0.94	-5.92 **	6.86 **	-2.77 *	-0.18	-3.91 **
	(1.10)	(1.39)	(1.16)	(1.37)	(1.31)	(0.58)	(1.32)
Mean Outcome Variable	-3.13	-3.86	-2.48	-1.38	-0.03	-0.06	1.46
Level in 1990	12.98	17.37	8.68	8.69	3.59	1.22	-13.50

Notes: N=1444 (722 CZ x 2 time periods). All regressions include the full vector of control variables from Table 1. Robust standard errors in parentheses are clustered on state. Models are weighted by start of period commuting zone share of national population. ~ p ≤ 0.10, * p ≤ 0.05, ** p ≤ 0.01. ~ p ≤ 0.10, * p ≤ 0.05, ** p ≤ 0.01.

Impact of a One-Unit Trade Shock on the CZ-Level Male-Female Earnings Gap at the P25, P50, P75

	Male-Female Earnings Differential in US$					
	P25		Median		P75	
	(1)		(2)		(3)	
	I. Overall Trade Shock					
Δ Chinese Import Penetration	**-1,325**	**	**-612**	**	**-695**	**
	(226)		**(238)**		**(235)**	
	II. Male Industry vs Female Industry Shock					
Δ Chinese Imports × (Male Ind Emp Share)	**-2,360**	**	**-2,860**	**	**-3,341**	**
	(669)		**(807)**		**(976)**	
Δ Chinese Imports × (Female Ind Emp Share)	**176**		**2,648**	*	**3,145**	*
	(940)		**(1,072)**		**(1,299)**	
Mean Outcome Variable	-1,169		-1,119		-1,696	
Level of Male Earnings 1990	7,226		23,452		41,285	
Level of Female Earnings 1990	979		11,387		25,510	

Notes: N=1444 (722 CZ x 2 time periods). Dependent variable is the change in the differential between the 25th, 50th and 75th percentile of the male earnings distribution in a CZ and the corresponding percentile of the female earnings distribution. The earnings measure is annual wage and salary income, and earnings distributions include individuals with zero earnings. . ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Impact of a One-Unit Trade Shock on the CZ-Level Male-Female Earnings Gap, Scaled by Baseline Male Earnings

	M-F Differential in % of Male Earnings					
	P25		Median		P75	
	(4)		(5)		(6)	
I. Overall Trade Shock						
Δ Chinese Import Penetration	-16.7	**	-2.2	*	-1.6	**
	(3.3)		(1.0)		(0.5)	
II. Male Industry vs Female Industry Shock						
Δ Chinese Imports × (Male Ind Emp Share)	-24.9	**	-12.0	**	-8.6	**
	(0.2)		(3.2)		(2.1)	
Δ Chinese Imports × (Female Ind Emp Share)	-4.8		11.9	**	8.5	**
	(13.0)		(4.4)		(2.9)	
Mean Outcome Variable	-13.5		-4.3		-3.9	

Notes: N=1444 (722 CZ x 2 time periods). Dependent variable is the change in the differential between the 25th, 50th and 75th percentile of the male earnings distribution in a CZ and the corresponding percentile of the female earnings distribution. The earnings measure is annual wage and salary income, and earnings distributions include individuals with zero earnings. . ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

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Measures of 'Marriageable Men:' (i) Probability Women's Earnings Exceeds Males; (ii) Ratio of Young Men to Women

	A. Δ Pr[Woman Age 22-43 Earnings > Earnings of Male Potential Partner]				B. Δ 100 x CZ Male/Female Ratio, Adults Ages 18-39			
	(1)		(2)		(1)		(2)	
Δ Chinese Import Penetration	**0.42**	*			**-1.65**	**		
	(0.17)				**(0.50)**			
Δ Chinese Import Penetration × (Male Ind Emp Share)			**1.93**	**			**-2.87**	**
			(0.60)				**(0.90)**	
Δ Chinese Import Penetration × (Female Ind Emp Share)			**-1.78**	~			**0.13**	
			(0.96)				**(1.35)**	
Mean Outcome Variable	1.88				1.70			
Level in 1990	27.3				98.6			

Notes: N=1444 (722 CZ x 2 time periods). Panel A: For women age 22-41, a potential marriage partner is defined as a man age 24-43 with the same CZ of residence, the same race/ethnicity (non-hispanic white, black, or hispanic), and the same education level (college or non-college). Panel B: Sample comprises all CZ residents ages 18-39 who are not in insitutionalized group quarters. All regressions include the full set of control variables from Table 1 and are weighted by start-of-period population. Standard errors are clustered on state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Missing Men: Differential M-F Mortality
Deaths per 100K Adults Ages 20 – 39

Male-Female Death Rate Differential by Cause of Death per 100k Population Age 20-39

	Total	Drug/ Alc Poisoning	Liver Diseases	Diabetes	Lung Cancer	Suicide	All Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Overall Trade Shock							
Δ Chinese Import Penetration	4.27	3.16 *	0.72 *	0.62 ~	0.40 *	0.01	0.08
	(3.54)	(1.35)	(0.32)	(0.32)	(0.17)	(0.99)	(3.08)
II. Male Industry vs Female Industry Shock							
Δ Chinese Imports × (Male Ind Emp Share)	18.84 ~	10.11 **	1.68 ~	1.38	0.30	1.12	3.13
	(11.28)	(2.80)	(0.91)	(0.91)	(1.00)	(3.22)	(9.89)
Δ Chinese Imports × (Female Ind Emp Share)	-16.79	-6.93 ~	-0.68	-0.49	0.54	-1.59	-4.34
	(17.46)	(3.61)	(1.33)	(1.69)	(1.53)	(5.17)	(17.94)
Mean Outcome Variable	-21.93	5.54	-0.73	0.20	-0.25	-1.28	-25.40
Male Death Rate in 1990	213.43	6.39	4.11	1.95	1.55	25.12	174.31
Female Death Rate in 1990	78.89	1.92	1.91	1.44	1.00	5.57	67.05

Notes: N=1444 (722 CZ x 2 time periods). All regressions include the full set of control variables from Table 1 and the start-of-period value of the outcome variable. Regressions are weighted by start-of-period population and standard errors are clustered on state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Fragile Males: Deaths per 100K Adult Men Ages 20 – 39

	I. Male Death Rates						
	Total	Drug/ Alc Poisoning	Liver Diseases	Diabetes	Lung Cancer	Suicide	All Other
	Overall Trade Shock						
Δ Chinese Penetration	3.67	4.28 *	0.64 *	0.31	0.33 **	0.72	-0.24
	(3.47)	(1.87)	(0.32)	(0.27)	(0.12)	(0.87)	(2.45)
	Male Industry vs Female Industry Shock						
Δ Chinese Penetration × (Male Ind Share)	16.61	11.33 **	1.12	1.83 **	0.28	-0.73	1.98
	(12.85)	(3.97)	(0.70)	(0.65)	(0.47)	(2.33)	(11.53)
Δ Chinese Penetration × (Female Emp Share)	-15.06	-5.96	-0.05	-1.88 ~	0.41	2.81	-3.44
	(15.28)	(4.99)	(1.04)	(1.11)	(0.69)	(3.74)	(16.55)
Mean of Outcome	-25.71	10.27	0.19	-1.26	-0.53	-1.42	-32.95
Level in 1990	213.43	6.39	4.11	1.95	1.55	25.12	174.31

Notes: N=1444 (722 CZ x 2 time periods). All regressions include the full set of control variables from Table 1 and the start-of-period value of the outcome variable. Regressions are weighted by start-of-period population and standard errors are clustered on state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Less Fragile Women: Deaths per 100K Adult Women Ages 20 – 39

	II. Female Death Rates						
	Total	Drug/ Alc Poisoning	Liver Diseases	Diabetes	Lung Cancer	Suicide	All Other
	Overall Trade Shock						
Δ Chinese Penetration	2.26	1.05	-0.12	-0.30	-0.07	0.81 *	1.69
	(2.51)	(0.78)	(0.20)	(0.22)	(0.15)	(0.37)	(2.05)
	Male Industry vs Female Industry Shock						
Δ Chinese Penetration × (Male Ind Share)	-3.97	0.46	-0.55	0.49	-0.05	-2.04	-1.86
	(7.72)	(2.23)	(0.64)	(0.63)	(0.69)	(1.43)	(6.23)
Δ Chinese Penetration × (Female Emp Share)	11.31	1.89	0.51	-1.43	-0.11	4.94 *	6.85
	(11.12)	(3.55)	(1.12)	(1.01)	(1.12)	(2.09)	(9.32)
Mean of Outcome	-3.79	4.73	-0.01	-0.53	-0.28	-0.14	-7.55
Level in 1990	78.89	1.92	1.91	1.44	1.00	5.57	67.05

Notes: N=1444 (722 CZ x 2 time periods). All regressions include the full set of control variables from Table 1 and the start-of-period value of the outcome variable. Regressions are weighted by start-of-period population and standard errors are clustered on state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Manufacturing Decline and Marriage-Market Value of Men

1. Trade and manufacturing
2. Empirical approach
3. A simple model
4. Results
   a) Employment and earnings by gender
   b) Marriageable men and missing men
   c) Marital status
   d) Birth outcomes
   e) Children's household structures, poverty

Impact of Trade Exposure on Women's Marital Status by Age Group (% Pts)

	A. Marital Status (% pts): Women Ages 18-39			B. Marital Status (% pts): Women Age 18-25			C. Pct of Mothers Currently Married	
	Never Married	Widowed Divorced Separated	Married	Never Married	Widowed Divorced Separated	Married	Age 18-39	Age 18-25
I. Overall Trade Shock								
Δ Chinese Penetration	0.44	0.28 ~	-0.72 *	1.03 ~	0.19 ~	-1.22 *	-0.76 *	-1.01
	(0.30)	(0.15)	(0.34)	(0.53)	(0.11)	(0.50)	(0.31)	(0.77)
II. Male Industry vs Female Industry Shock								
Δ Chinese Penetration × (Male Share)	1.77 ~	-0.22	-1.55 ~	3.90 **	-0.06	-3.84 **	-1.56 ~	-3.57 ~
	(0.91)	(0.41)	(0.88)	(1.25)	(0.43)	(1.18)	(0.81)	(2.04)
Δ Chinese Penetration × (Female Share)	-1.50	1.01 ~	0.49	-3.12 ~	0.55	2.57	0.39	2.70
	(1.35)	(0.58)	(1.39)	(1.60)	(0.59)	(1.66)	(1.32)	(3.53)
Mean Outcome Var	8.62	-1.49	-7.14	9.00	-1.32	-7.69	-5.14	9.59
Level in 1990	34.84	12.11	53.05	67.30	4.96	27.74	76.02	61.23

Notes: N=1444 (722 CZ x 2 time periods). Columns 3 and 6 refer to the percentage of women in the indicated age group who report to be married but not separated. All regressions include the full set of control variables from Table 1. Regressions are weighted by start-of-period CZ population and standard errors are clusterd by state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Manufacturing Decline and Marriage-Market Value of Men

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   c) Marital status
   d) **Birth outcomes**
   e) Children's household structures, poverty

Impact of Trade Shocks on Birth Outcomes, 1990 – 2007

	Births per 1,000 Women				Share of Births to			
	Adults Age 20-39		Teens Age 15 - 19		Teenage Mothers		Unmarried Mothers	
I. Overall Trade Shock								
Δ Chinese Import Penetration	**-3.30**	**	**-1.22**	~	**0.63**	**	**0.48**	
	(0.51)		**(0.72)**		**(0.17)**		**(0.40)**	
II. Male Industry vs Female Industry Shock								
Δ Chinese Import Penetration × (Male Ind Emp Share)	**-8.16**	**	**-5.30**	**	**1.92**	**	**3.41**	**
	(2.10)		**(1.98)**		**(0.53)**		**(1.02)**	
Δ Chinese Import Penetration × (Female Ind Emp Share)	**3.74**		**4.71**		**-1.25**	~	**-3.77**	**
	(3.00)		**(3.05)**		**(0.69)**		**(1.41)**	
Mean Outcome Variable	3.86		-11.08		-1.44		8.15	
Level in 1990	86.9		60.0		12.8		22.0	

Notes: N=1444 (722 CZ x 2 time periods). Regressions weighted by start-of-period CZ population. Standard errors clusterd on state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

Manufacturing Decline and Marriage-Market Value of Men

1. Trade and manufacturing
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   d) Birth outcomes
   e) **Children's household structures, poverty**

Impact of Trade Exposure 1990 – 2007 on Household Living Circumstances of Children Ages <18

	Income < Poverty Line		Parent Head, Spouse Present		Parent Head, Spouse Absent		Grand-Parent Headed		Any Other Person Headed
	(1)		(2)		(3)		(4)		(5)
I. Overall Trade Shock									
Δ Chinese Import Penetration	**2.17**	**	**-0.44**	~	**0.22**		**0.24**	~	**-0.01**
	(0.42)		**(0.25)**		**(0.23)**		**(0.13)**		**(0.13)**
II. Male Industry vs Female Industry Shock									
Δ Chinese Import Penetration × (Male Ind Share)	**3.99**	**	**-1.00**		**1.98**	**	**-0.77**	~	**-0.20**
	(0.85)		**(0.62)**		**(0.59)**		**(0.40)**		**(0.30)**
Δ Chinese Import Penetration × (Female Ind Share)	**-0.48**		**0.38**		**-2.34**	*	**1.70**	*	**0.26**
	(1.28)		**(1.01)**		**(1.06)**		**(0.67)**		**(0.42)**
Mean Outcome Variable	0.51		-4.98		3.91		0.56		0.50
Mean Level in 1990	0.17		71.43		19.59		5.43		3.55
Poverty Rate (%) in 1990	n/a		8.13		45.26		23.99		34.73

Notes: N=1444 (722 CZ x 2 time periods). The Census records every household member's relationship to the household head, who is the person that owns or rents the household's dwelling. All regressions include the full set of control variables from Table 1. Regressions are weighted by start-of-period CZ population and standard errors are clusterd by state. ~ $p \leq 0.10$, * $p \leq 0.05$, ** $p \leq 0.01$.

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5. Magnitudes

Implied Impacts of the `China Shock´ on Key Outcomes: Some Illustrative Calculations

	% Women 18-25 Married (1)	% Women 18-39 Married (2)	% Births to Teens (3)	% Births Out of Wedlock (4)	% Kids 0-17 in Poor HHs (5)	% Kids 0-17 in 2-Parent HHs (6)
			A. Summary Statistics			
1990 Level	27.74	53.05	12.77	21.98	17.99	71.43
D 90-07: Actual	-11.86	-11.02	-2.33	13.07	0.25	-8.25
			B. Implied Impact of `China Shock´			
D 90-07: Implied impact	-1.26	-0.74	0.64	0.49	2.23	-0.45
D 90-07: Counterfactual	-10.60	-10.28	-2.97	12.57	-1.98	-7.80
			C. Using Observed DMale-Female P50 Annual Earnings Gap as Explanatory Variable			
D 90-07: Implied impact	-3.63	-2.13	1.86	1.42	6.44	-1.30
D 90-07: Counterfactual	-8.22	-8.89	-4.18	11.65	-6.19	-6.96

Panel A reports the 1990 level and the 1990-2007 change in each outcome. Panel B reports the reduced form impact of the `China Shock´ on each outcome and the counterfactual change in that outcome while setting the China shock to zero. Panel C reports counterfactual calculations that treat the change in the male-female P50 annual earnings gap as the hypothetical forcing variable. This gap fell by $1,820 between 1990 and 2007. Table 3 implies that the exogenous component of the China trade shock reduced this gap by $631. Interpreting the reduced form estimates in panel B as the causal effect of a $631 fall in the male-female P50 gap, we rescale the panel B impact estimates by 1,820/631=2.88 to get the implied effect of the overall decline in the male-female P50.

Consequence of the Declining Marriage-Market Value of Men

- Trade shocks between 1990 and 2007
  - Reduced *male* + *female* employment, *male* relative earnings
- Broader consequences
  1. Reduced male/female ratio in non-institutional population
  2. Raised male mortality due to 'unhealthy behaviors'
  3. Reduced marriage rates and fertility
  4. Raised fraction of births due to teen and single mothers
  5. Raised fraction of kids living in poverty, single-headed HHs
- Mechanism appears robust, quantitatively important
  - China shock alone explains 5%-20% of the observed change in family structure outcomes
  - Total effect of manufacturing decline is likely to be larger

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Female Friends Spend Raucous Night Validating The Living Shit Out Of Each Other

The group of friends, in the midst of an absolute fucking blow-out affirmation fest.

Summary of Topics

1. **Context – Gains along four economic margins**
2. **The gender earnings gap**
3. **Gender norms and gender roles**
4. **Labor markets, marriage, children's HH structure**