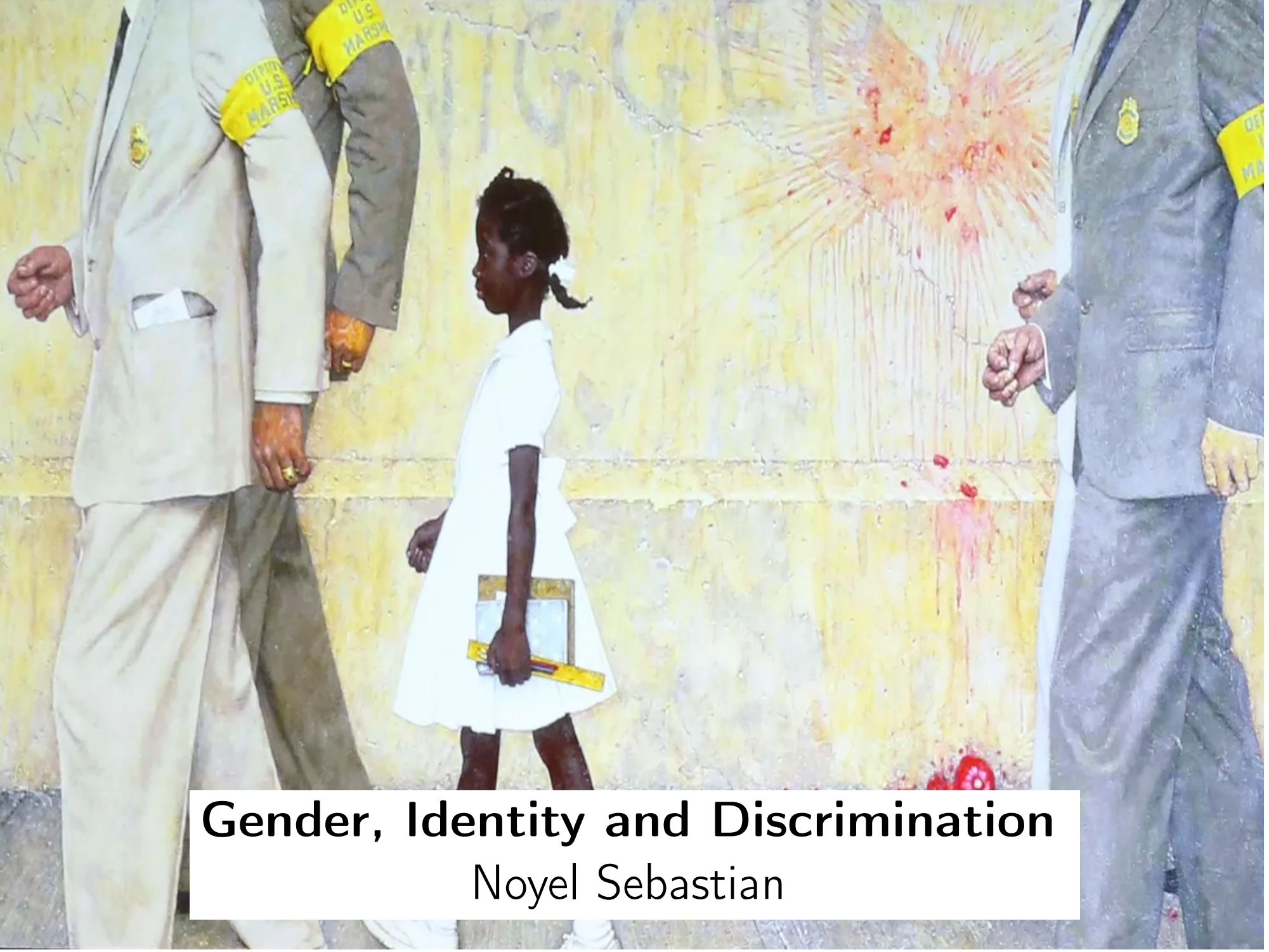


Gender, Identity and Discrimination

Noyel Sebastian

What's In

1. Overview
2. Discrimination
3. Beliefs
4. Identity
5. Conclusion

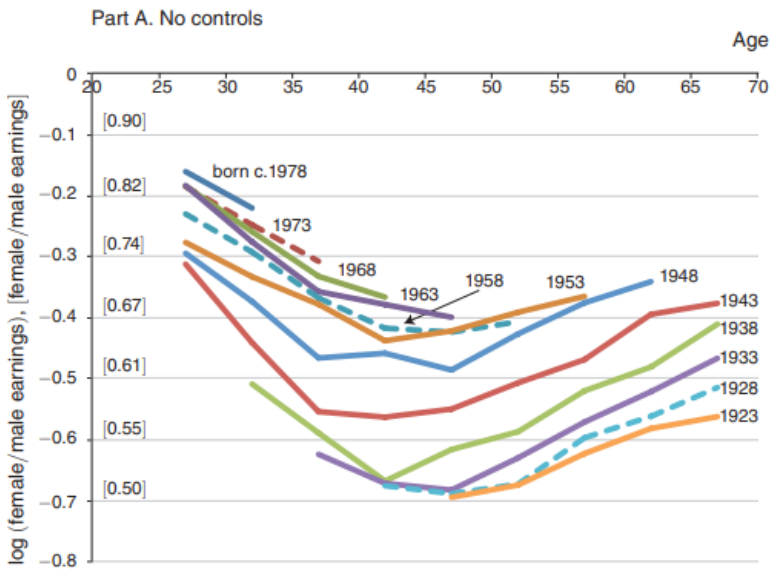
Dealings

- Overview on Gender differences
- Discrimination - Technological Solutions
  - Goldin and Rouse (2000) - Orchestra
  - Goldin and Katz (2002) - 'The Pill'
- Beliefs
  - Sarsons (2017) - Medical referrals
  - Vesturlund et al. (2015) - No is a No?
- Identity
  - Atkinson et al. (2005) - Gendered Resource Theory and IPV

Why study Gender Gap? (Marianne, 2011)

- Equity/Fairness/Justice
  - equal pay for the same output
    - labour income India - Men 82% and women 18% (World Inequality Report 2022)
  - equality of opportunities
- Efficiency
  - 2.5% to 4% increase in agri output in developing nations on equal access to productive resources (FAO)
- Formation of preferences and personality
  - Risk and Social Preferences
  - Competitiveness, negotiation skills
  - Identity, aspirations and confidence
- Natural or nurtured?

The Gender Gap (Goldin, 2014)



- The ratio of (mean) annual earnings between male and female workers (full-time, full-year, 25 to 69 years) was 0.72 in 2010 and that of the medians was 0.77. Sticky ratios for the last decade or so.
- The Gender pay gap has narrowed within almost all age groups but the aggregate has not budged
- Why? The ratio of female to male earnings greatly decreases for some time as cohorts age.

Labour market gains

- Main explanatory factors:
  - Reduction in the gender gap in education
  - Technological innovations
  - Labor demand shifts
  - Lower Discrimination (at least on statuettes)
  - Increased Market Competitiveness
- In detail: Tech innovations.

Blind Auditions-(Goldin and Rouse, 2000)

- Sex-biased hiring - alleged by many, difficult to prove
- Members (mostly men) of prominent symphony orchestras of the US were handpicked by the music directors
- How do they overcome this?
  - Openings advertised
  - Restructured audition committees with members of the orchestra
  - Democratized the process.
- Did democratization do any better? No!
- What next? BLIND AUDITIONS.

Blind Auditions

- But why? Patriarchal mindset of music conductors.
- Orchestral audition process
- Are they truly blind?
  - Candidates play predetermined and brief excerpts; no time to express individuality nor to detect that.
  - Guesses mostly go wrong.
  - The whole committee speculating correctly the identity - rare?? weird??
  - democratized selection process - the whole committee votes to determine the outcome.
- Is the adoption of the screen endogenous?

Audition

- The Question is whether the hiring process became more impartial through blind auditions.
- Treatment - Screen in various rounds, allowing us to:
  - Test whether bias exists in its absence.
- Data sources: Rosters and audition records.
- Findings?
  - Increased probability of women to advance out of a preliminary round when there is no SF.
  - Enhances the likelihood of women being the eventual winner
  - Explains one-third of the increase in the new hires.
- Results mostly statistically insignificant but 'economically significant'

Sex Composition of Orchestras

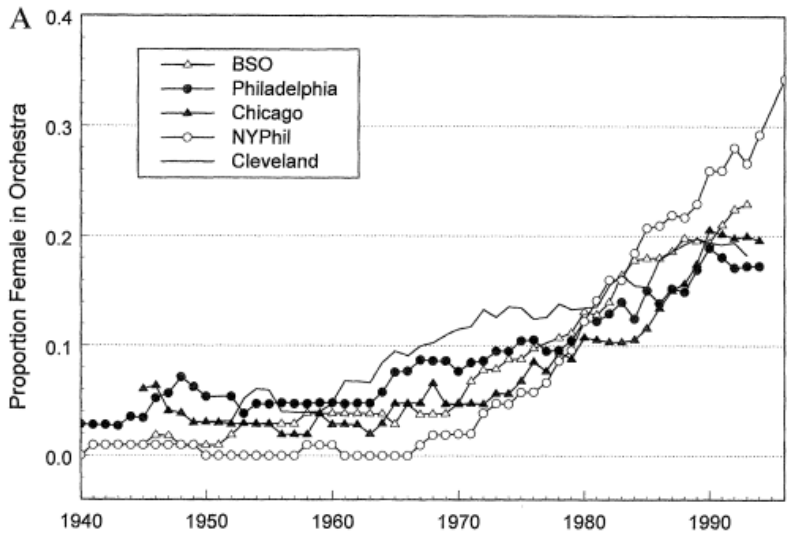


Figure: Big Five

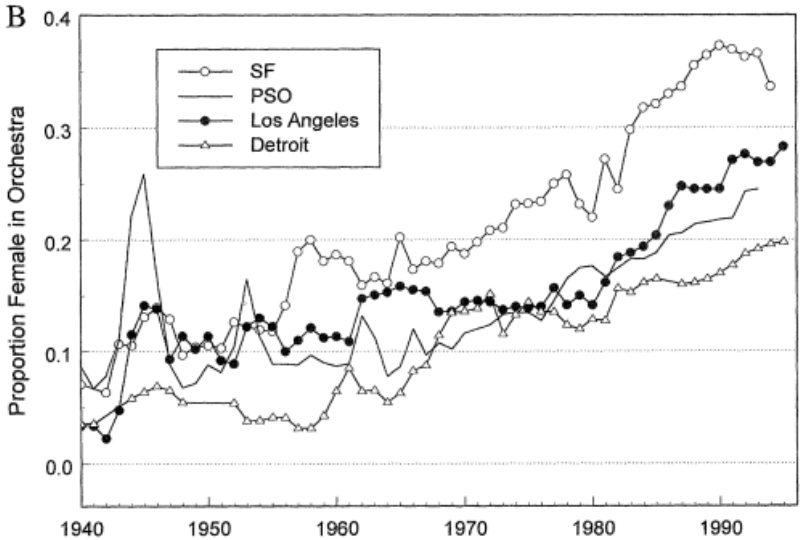


Figure: Other Four

Sex Composition of Orchestras

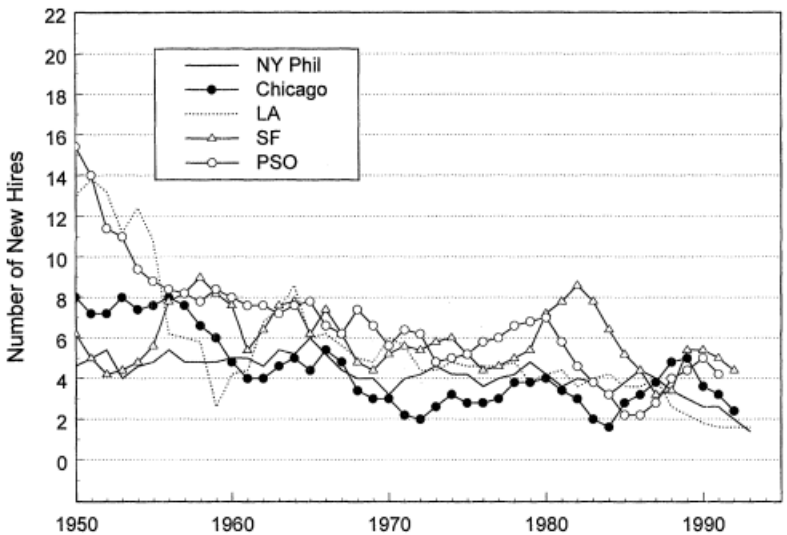


Figure: New Hires-1950 to 1990's

- Unusual power of music directors increased per year hires in the pre-1960s, but change in trend later.
- The only way to increase the women proportion $\rightarrow$ hire more women.

Increasing Proportion of Women

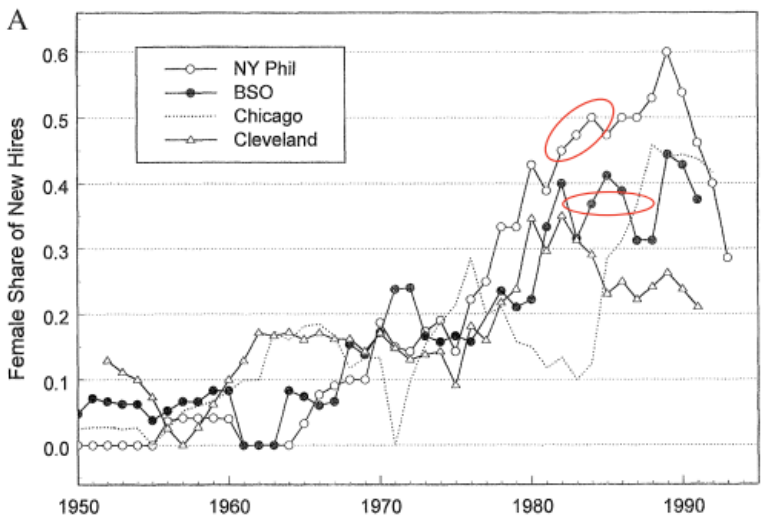


Figure: Share of women hires in Big 5, 1950 to 1990s

- Increased women's share in the new hires has been sizable to increase the proportion of women in the orchestras.
- Steeper rate of hiring for the more prestigious orchestras
- Discernible increase in the late 1970s-1980s - trend of WLFP increase across the world.

Audition Results

Year	Number of auditions	Proportion female	Number of musicians	Number of auditions	Proportion female	Number of musicians	Number of auditions	Proportion female
			Completely blind auditions			Not completely blind auditions		
All	254	0.367	43.4	60	0.393	38.1	194	0.359
		(0.013)	(3.13)		(0.029)	(1.74)		(0.015)
Pre-1970	10	0.187				16.3	10	0.187
		(0.042)				(2.27)		(0.042)
1970–1979	69	0.329				31.4	69	0.329
		(0.026)				(2.10)		(0.026)
1980–1989	102	0.394	42.5	33	0.375	39.6	69	0.403
		(0.019)	(4.29)		(0.034)	(2.73)		(0.022)
1990+	73	0.390	44.6	27	0.415	50.6	46	0.375
		(0.027)	(4.64)		(0.049)	(4.52)		(0.033)
Round				Blind rounds			Not-blind rounds	
Preliminaries, without semifinals	170	0.357	34.3	125	0.367	24.7	45	0.327
		(0.015)	(1.87)		(0.017)	(2.33)		(0.029)
Preliminaries, with semifinals	137	0.396	45.5	134	0.395	49.3	3	0.425
		(0.019)	(2.54)		(0.019)	(17.0)		(0.205)
Semifinals	114	0.415	12.3	89	0.404	10.4	25	0.455
		(0.019)	(0.649)		(0.022)	(1.21)		(0.043)
Finals	167	0.430	4.93	28	0.472	7.12	130	0.422
		(0.016)	(0.448)		(0.040)	(0.310)		(0.017)

Table: Descriptive stats about Auditions

- Blind Preliminaries - 40 candidates on average
- Women - 37% of prelims candidates, 43% finalist
- Percentage women among candidates - 33% in 1970 to 39% in the post 1990s

Econometric Framework

$$P_{ijtr} = f(X_{it}, F_i, B_{jtr}, Z_{jtr})$$

- The probability that individual i is advanced (or hired) from an audition at orchestra j, in year t, from round r, is a function of:
  - individual's sex (F),
  - screen is used (B), and
  - other individual (X) and
  - orchestral (Z) factors
- In linear form:

$$P_{ijtr} = \alpha + \beta F_i + \gamma B_{jtr} + \delta(F_i * B_{jtr}) + X_{it}\theta_1 + Z_{jtr}\theta_2 + \epsilon_i jtr$$

- Parameter of interest? δ measures the change in the probability that a woman will be advanced if a screen is used.

Likelihood of being Advanced

	Blind		Not blind	
	Proportion advanced	Number of person-rounds	Proportion advanced	Number of person-rounds
	Preliminaries without semifinals			
Women	0.286 (0.043)	112	0.193 (0.041)	93
Men	0.202 (0.026)	247	0.225 (0.031)	187

Table: Advancing from Prelims

	Finals			
Women	0.235 (0.106)	17	0.087 (0.060)	23
Men	0.000 (0.000)	12	0.133 (0.091)	15
	"Hired"			
Women	0.027 (0.008)	445	0.017 (0.005)	599
Men	0.026 (0.005)	816	0.027 (0.005)	1102

Table: Advancing from Finals and being hired

- 9.3% increased success rate for women in a blind preliminary.
- For the finals, 14.8% increased chance of success
- 1.6x higher women's success rate in blind auditions to be hired.

Likelihood of being Advanced

	Preliminaries							
	Without semifinals		With semifinals		Semifinals		Finals	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Blind	−0.017	0.003	0.109	0.224	0.026	0.102	−0.154	−0.060
	(0.039)	(0.046)	(0.172)	(0.242)	(0.089)	(0.096)	(0.150)	(0.149)
Female × Blind	0.125	0.111	0.013	−0.025	−0.179	−0.235	0.308	0.331
	(0.068)	(0.067)	(0.215)	(0.251)	(0.126)	(0.133)	(0.196)	(0.181)
Number of auditions attended		−0.020		0.010		0.015		0.126
		(0.014)		(0.010)		(0.030)		(0.028)
Years since last audition		−0.005		−0.006		−0.005		0.016
		(0.007)		(0.005)		(0.013)		(0.015)
Automatic placement						−0.096		−0.069
						(0.064)		(0.073)
"Big Five" orchestra		−0.154		−0.059		0.006		−0.059
		(0.035)		(0.024)		(0.081)		(0.084)
Total number of auditioners in round (÷100)		−0.003		0.014		−0.371		−0.262
		(0.081)		(0.031)		(0.521)		(0.756)
Proportion female at the audition round		0.118		0.312		0.104		0.067
		(0.139)		(0.134)		(0.218)		(0.159)
Principal		−0.079		−0.078		−0.082		−0.185
		(0.037)		(0.019)		(0.066)		(0.076)
Substitute		0.165		0.123		0.167		0.079
		(0.081)		(0.093)		(0.183)		(0.217)
p-value of H_0: Blind + (Female × Blind) = 0	0.053	0.063	0.342	0.285	0.089	0.170	0.222	0.042
Year fixed effects?	No	Yes	No	Yes	No	Yes	No	Yes
R^2	0.748	0.775	0.687	0.697	0.774	0.794	0.811	0.878
Number of observations	5,395	5,395	6,239	6,239	1,360	1,360	1,127	1,127

Table: Linear probability estimates of the likelihood of being advanced with Individual Fixed Effects

- The coefficient of interest is the interaction between "Female" and "Blind"
- Prelims without SF $\rightarrow$ 11% points increased likelihood.
- Enter the finals, 33% increased likelihood of their winning.
- In short, the screen has a positive effect on the likelihood that a woman is advanced from the preliminary round (when there is no semifinal) and from the finals

Potential Biases

- Women musicians who are improving $\rightarrow$ shifts from not blind to blind auditions.
  - Individual covariates » little effect on the estimated coefficient
- Candidates who get hired in the very first audition
  - Hardly a few win their very first audition
  - Data had candidates who sat for at least two auditions
  - Empirical evidence
    - Controlled for past auditions $\rightarrow$ no change in results
- Bias from sex classification
  - Used census tabulation of the top 90% of all names.
  - Screened auditions » more women advanced.

Potential Bias

- Less discriminating orchestras used screens → More women sitting for Blind auditions
  - Analysis using orchestra fixed effects along with Individual effects.

	Include individual fixed effects		Exclude individual fixed effects
	(1)	(2)	(3)
Blind	0.404	0.399	0.103
	(0.027)	(0.027)	(0.018)
Female × Blind	0.044	0.041	−0.069
	(0.039)	(0.039)	(0.022)

Table: Linear probability estimates of the likelihood of being advanced with Individual and Orchestra Fixed Effects

- Results - individual FE matter; orchestral not much concern.

Likelihood of being Hired

- Redefining blind auditions - a blind audition contains all rounds that use the screen.
  - we compare auditions that are completely blind with those that do not use the screen at all or use it for the early rounds only
- Using Audition Sample
  - No semifinals, impact of screen $\rightarrow$ +ve (5% more likely/ nil in case of semis included)
  - The impact for all rounds is about 1% points.
- Using Roster data
  - To interpret the Probit coefficient, predict a base probability assuming that each orchestra does not use a screen
  - New probability is predicted, assuming the orchestra uses a screen
  - Blind auditions increase the likelihood of women getting hired $\rightarrow$ 7.5% points
- The average effect for both types of auditions is closer to 1% point

Audition and Roster Sample Data

	Without semifinals		With semifinals		All	
	(1)	(2)	(3)	(4)	(5)	(6)
Completely blind audition	−0.024	0.047	0.001	0.006	0.001	0.005
	(0.028)	(0.041)	(0.009)	(0.011)	(0.008)	(0.009)
Completely blind audition × female	0.051	0.036	0.001	−0.004	0.011	0.006
	(0.046)	(0.048)	(0.016)	(0.016)	(0.013)	(0.013)
Year effects?	No	Yes	No	Yes	No	Yes
Other covariates?	No	Yes	No	Yes	No	Yes
R^2	0.855	0.868	0.692	0.707	0.678	0.691
Number of observations	4,108	4,108	5,883	5,883	9,991	9,991

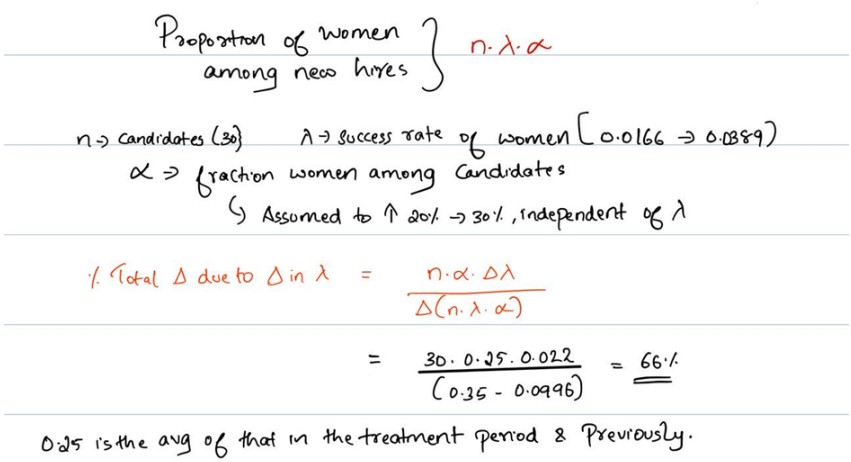
Table: Audition data results

	Any blind auditions	Only blind preliminaries and/or semifinals vs. completely blind auditions
	(1)	(2)
Any blind auditions	0.238	
	(0.183)	
	[0.075]	
Only blind preliminaries and/or semifinals		0.232
		(0.184)
		[0.074]
Completely blind auditions		0.361
		(0.438)
		[0.127]

Table: Roster data results

- An example from the data:
  - Half of the increase was the result of the effect of the screened audition process
  - Other half $\rightarrow$ greater acceptance of female musicians by music directors
  - Remainder $\rightarrow$ the increased percentage of women among audition candidates; due to the increase in the fraction of women among music school graduates
- Calculations follow.

Calculations



- Two regimes: Blind (30%) and Not Blind (20%) » Women candidates
- Initial discussions showed 10% (0.0996) of new hires were women in pre-1970 era
- Assume 30 candidates enter the audition regardless of the regime, and one is hired.
- Success rate of Not Blind regime: Women: 0.016; Men: 0.0375
- Success rate of Blind regime: Women: 0.038; Men: 0.0310. Now, New hires $\rightarrow$ 35% is women

Conclusion

- Why disparate treatment of women musicians?
  - Roster sample says from 1960-96 women took 0.067 leaves/year while men had 0.061 (not a stat.sig result)
  - Substantial amounts of specific human capital are acquired on the job, and tenure differences by sex, therefore, could influence hiring decisions
  - Tenure differences were also small, and some specifications show that women accumulated more years with an orchestra, given their starting year and orchestra
  - Turnover and leaves of absence do not appear to differ by sex and thus should not have rationally influenced hiring decisions
- Some insights on SF results: though the sample size is large, the coefficients of interest are identified from a much smaller sample.
- The impact of a blind procedure is toward impartiality, and the costs to the orchestra are relatively small

The Pill - (Goldin and Katz, 2002)

- Career and age at first marriage changed significantly in the US for women born around the 1950s.
- Did the birth control pills and the legal environment changes lead to the change? Yes.
- History.
  - Comstock Law
  - Vietnam War
  - FDA approves Norethynodrel - "The Pill"
- We explore
  - Diffusion of pill among single women and legal reasons
  - Formal modelling of effects of the pill on marriage and career
  - Descriptive TS and Formal econometric analysis
  - Alternative explanations.

Diffusion of Pill among Single Women

- Concentration on college graduate women as our interest is in professional career choice.
- Legal and Social factors were responsible for the delayed dissemination of the pill among unmarried women.
  - Until the late 1960s, single women below the age of majority and without parental consent were denied access to the pill.
  - Illegal for a physician in any state to prescribe an oral contraceptive to an unmarried minor without parental consent
  - 1972 - Twenty-Sixth Amendment.
- Two data sets available:
  - National Health Interview Study (NHIS) - 1987 STUDY
  - National Survey of Family Growth, Cycle III, 1982

Access to the pill

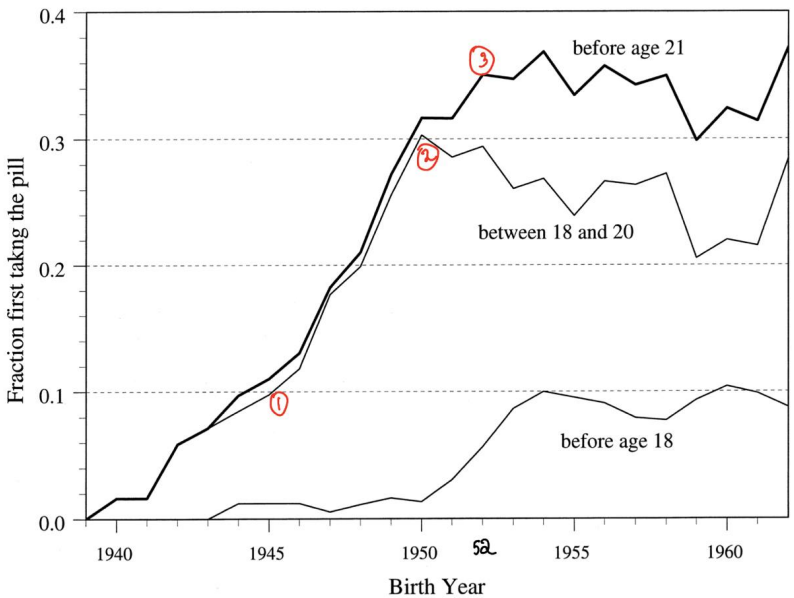


Figure: Fraction of college graduate women first taking the pill at various ages (those who with no births before age 23)

1. Fraction of women taking the pill after age 18 but before 20, that is, during college but before the usual age of majority, reached about 10% for cohorts born in 1945
2. First pill use in the age 18-20 interval reached 30% by the cohort born in 1950
3. Cohorts born in 1952, pill usage before age 21 was about 35%

Access to the pill

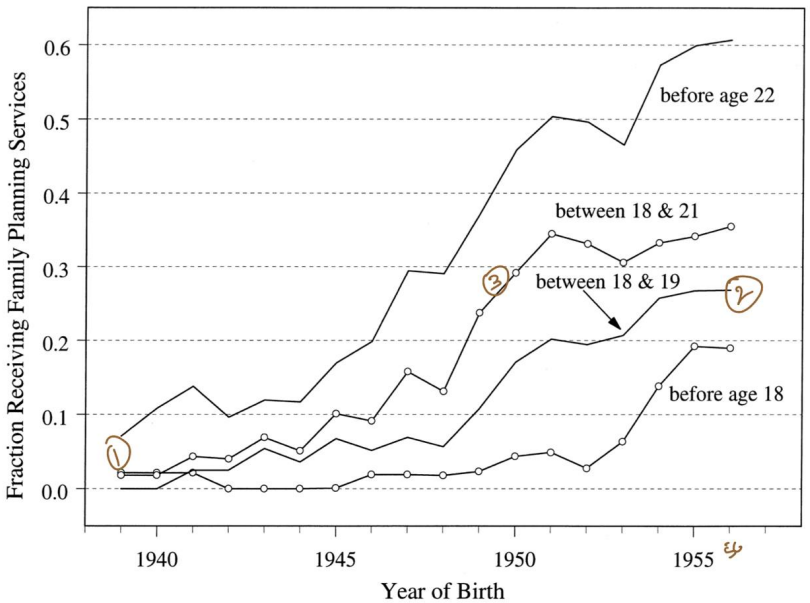


Figure: Fraction of college graduate women receiving first family planning services at various ages

1. The fraction receiving services between ages 18 and 19 was 5% for the 1943–48 cohorts
2. Rose to 27% by the 1956 cohort
3. The fraction between ages 18 and 20 rose gradually before the 1948 cohort but then rose steeply for the 1951 cohort

Recall Bias?

- Do women reliably recall the year they first took the pill? Yes, they do.
- Comparing the retrospective answers in the NHIS with the contemporaneous responses of women 15–19 years old in the NSYW 1971 and NSAF 1976.
- Compared all 19-year-olds in the NSYW71 born in 1951 with all women in the NHIS born in 1952.
  - NHIS $\rightarrow$ 33% reported having the pill before the age of 20
  - NSYW71 $\rightarrow$ 34% claimed to have ever used the pill.
- NSAF76 v/s NHIS
  - NHIS $\rightarrow$ among born in 1957, 48.2% took the pill prior to the age 20
  - NSAF76 $\rightarrow$ among born in 1957, 51.2% had ever taken the pill

Access to the pill

- Summary:
  - Pill use by unmarried, college-educated women between 18 and 21 years old accelerated with cohorts born around 1948.
  - For those younger than 18 years, pill use increased greatly with cohorts born around 1952
  - Peak usage among married women occurred about a decade before rapid diffusion began for single women. Reason? difference in state laws.
  - The period of most rapid increase for unmarried women occurred when state laws changed
- Variation in state laws
  - More lenient the regulations regarding the minor, the greater the pill use by unmarried women. In less restrictive states:
  - For 15–19-year-olds, pill use was 33–35% greater
  - For the 17–19-year-olds, it was 36–40% greater
  - Largest increase among college women - impact of university health services.

Effect of Pill on Marriage and Career

- Direct Effect
  - Marriage delay and career investment become cheaper. The greater the "Career ability", the better matches.
  - No penalty of abstinence or coping with considerable uncertainty regarding pregnancy
- Indirect Effect
  - Lowering the cost of a career through the marriage market.
  - Thickening the marriage market for career women.
- Social Multiplier Effect
  - When marriage is delayed, mismatch in the marriage market, a potential career cost, is reduced.
  - Careers will be fostered indirectly through a thicker marriage market and will be fostered even for women who do not take the pill
  - The improvement in the quality of marriage matches from delay in marriage and better information at the time of marriage $\rightarrow$ reduction in the divorce rate.

Model

- There are n men and n women. Man brings in Y_i(income) and woman N_j (nurturing). She also adds α_j through career.
- Career investment is impossible in period I if she gets married.
- λ is the impatience factor. Marriage delay reduces λ. $\lambda = \lambda_0$ for both man and woman before the pill.
- Now matching happens. Say a man (i) and a woman (j) get married in period 1.
  - Man gets N_j and woman gets Y_i.
- What if they delay it to period II? Women can invest in career
  - Man gets $N_j + \alpha_j - \lambda_0$
  - Woman gets $Y_i + \alpha_j - \lambda_0$

Model

- $\alpha_j > \lambda_0 \rightarrow$ Both benefit from delay and woman I in career in P1
- $\alpha_j < \lambda_0 \rightarrow$ No career for woman, gets married in P1
- Men's attractiveness to women is shown by Y_i
- Women's $\rightarrow F_j = Max(N_j, (N_j + \alpha_j - \lambda_0))$
- Marriage market operates in P1 by matching man and woman by their ranking based on Y_i and F_j
- Highest $Y_i \xrightarrow{matcheswith}$ highest F_j

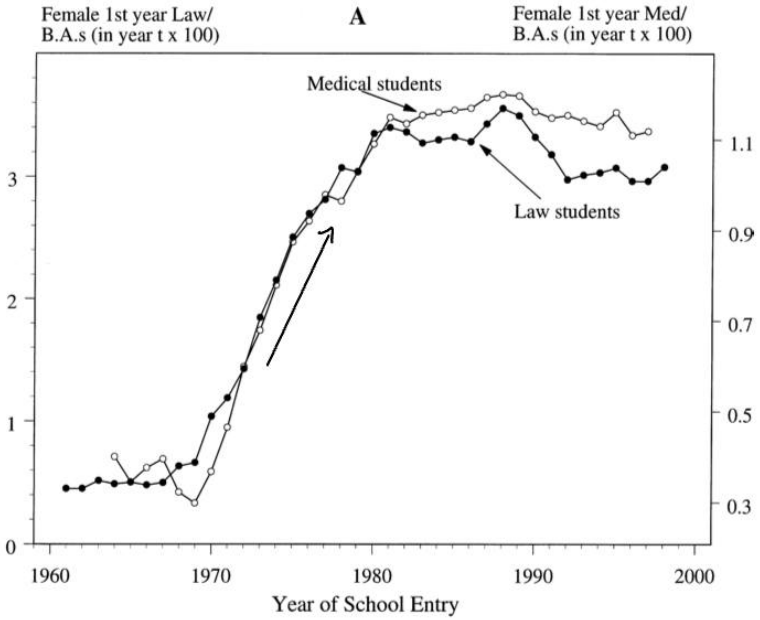
Model

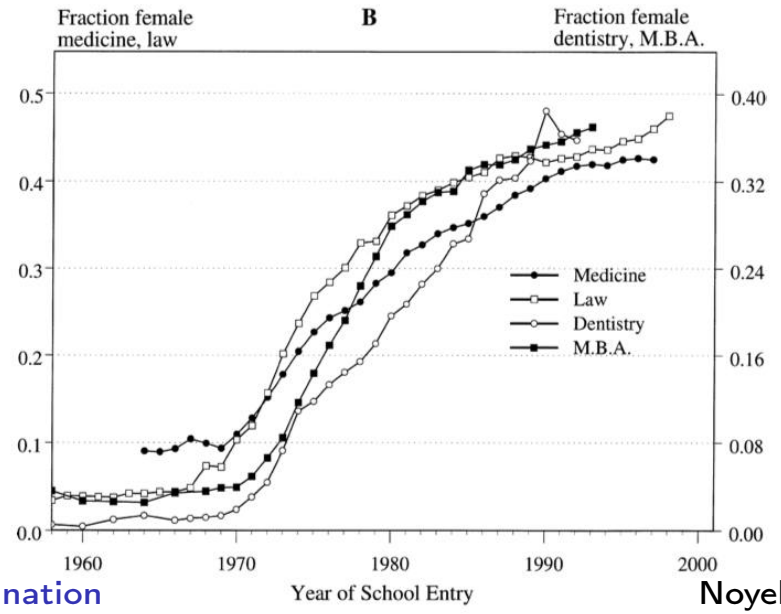
- Pill reduces λ; $\lambda_0 \rightarrow \lambda_p$. Shift down the cut-off point in the distribution for career.
- Fraction of women with careers and delaying marriage increased by the same proportion
- Now, change in the matching process.
  - Pill enhances the relative attractiveness of women with high career values
- Three groups of women.
  1. $\alpha_j > \lambda_0 \rightarrow \Delta F_j = \lambda_0 - \lambda_p$
  2. $\lambda_0 > \alpha_j > \lambda_p \rightarrow \Delta F_j = \alpha_j - \lambda_p$
  3. $\alpha_j < \lambda_p$
- Men » unambiguous winners from the pill.
- Women » on average wins, but those in group 3 lose.

Summary

- The pill enabled young men and women to put off marriage while not having to put off sex.
- Sex no longer had to be packaged with commitment devices, many of which encouraged early marriage.
- Empirical predictions are associated with an increase in professional careers for women, age at first marriage and the age at first birth
- Positive assortative mating on earnings capacity and compatibility among partners increased.
- But, it is not a complete "win-win" situation.
  - Women with poorer labour market prospects suffer a decrease in their rankings as marriage partners and lose.
  - No unambiguous predictions for divorce
    - increased career prospects for women outside marriage, decreased DoL, potentially fewer children $\rightarrow$ may increase divorce.

Descriptive Time Series evidence





- As a fraction of B.A.'s, women entrants to law and medical schools began a steep climb around 1970 (Panel A).
- By 1980, it was 0.3 in medicine, 0.36 in law, 0.19 in dentistry, and 0.28 in business (Panel B).
- In general, women's share in professional occupations rose.

Descriptive Time Series evidence

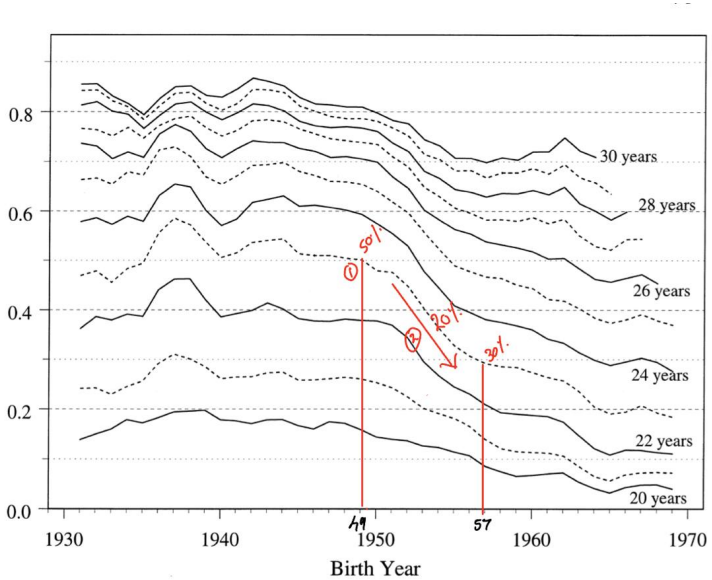


Fig A: Fraction of college graduate women married before various ages

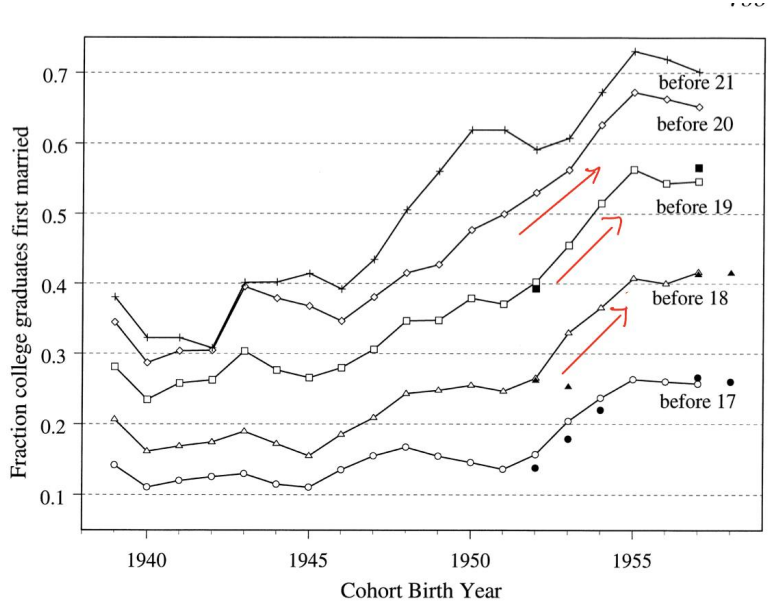


Fig B: Fraction of never-married women having sex before various ages

- Pill loosened constraints and lowered the impatience factor.
- Couples could engage in sex without commitments; marriage could be delayed.
- But did it happen? Yes.

Formal Econometric Analysis

- Relationship between pill access and the age at first marriage for college women by exploiting the cross-state variation in the timing of minors having access to birth control services without parental consent.

$$M_{isy} = \alpha_s + \delta_y + X_{isy}\beta + P_{sy}\gamma + A_{sy}\pi + \epsilon_{isy}$$

- Results:
  - Adoption of a nonrestrictive birth control law for minors $\rightarrow$ 2% decline in the probability that a college graduate women were married before the age of 23
  - Similar effect of both access to birth control and legalization of abortion.
  - Changes in access to abortion explain a 2.6% decrease in the marriages from the pre-1949-57 birth cohorts
- Impact of access to birth control is robust to including controls for the state of birth linear trends. (Included to address possible endogeneity)

Formal Econometric Analysis

	College Graduates							Some College or More	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Mean of dependent variable	.41	.41	.41	.41	.41	.41	.41	.53	.53
Nonrestrictive birth control law at age 18*	−.0196	−.0162	−.0207	−.00986	−.0227			−.0124	
	(.00737)	(.00762)	(.00920)	(.00791)	(.00917)			(.00600)	
	[.0109]	[.0105]	[.00941]	[.0107]	[.00995]			[.0100]	
Pill access by age 17†						−.0262	−.0324		−.0240
						(.0115)	(.0131)		(.00872)
						[.0163]	[.0143]		[.00143]
Pill access by ages 18–20‡						−.00894	−.0126		−.0132
						(.00822)	(.00821)		(.00593)
						[.00922]	[.00920]		[.00676]
Legalized abortion at age 18§		−.0236	−.0114					−.00974	−.00904
		(.00992)	(.00956)					(.00777)	(.00761)
		[.0103]	[.0103]					[.00727]	[.00705]
Average abortion rate at ages 18–21‖				−.0653	.00523		.00280		
				(.0164)	(.0267)		(.0267)		
				[.0146]	[.0260]		[.0258]		
Race dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
State of birth dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year of birth dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
State-specific linear trends	no	no	yes	no	yes	no	yes	no	no
Observations	60,714	60,714	60,714	60,714	60,714	60,714	60,714	130,335	130,335
R^2	.0458	.0458	.0469	.0459	.0469	.0459	.0469	.0434	.0434

Table: Results

Formal Econometric Analysis

- Examining how changes in long-run career and marital status outcomes relate to the access to the pill.

$$Y_{at} = \alpha_a + \delta_i + X_{at}\beta + P_{at}\gamma + A_{at}\pi + \epsilon_{at}$$

- Results:
  - Growth in pill usage accounts for a 1.7% point increase in the share of women working in professional occupations for the cohorts born in pre-1940-mid-1950s out of an overall increase of 5% points for the same age group from 1970 to 1990.
  - Access to birth control is associated with an increase in the share never married

Alternate Explanations

- Major Supply-driven explanation is proved
- Related Supply-side explanations:
  - Abortion reform - But, the case for the pill is it had a far wider impact than abortion
  - Changes in the "sex-ratio"
  - Resurgence of feminism in America - quite difficult to explain.
- Demand Side explanations:
  - Change in employers and educational institutions' relative demand for women.
  - Legal measures - Civil Rights Act 1964, The Equal Employment Opportunity Commission (EEOC) (little effect until early 1970s)
  - Title IX, providing women equal access to federally funded colleges and universities - but no effect until 1975.

Conclusion

- Other factors had complementary effects to the pill, but their timing appears too late to spark the change.
- The direct effect of pill decreased the cost to women of remaining unmarried while investing in a professional career
- Reduced the cost of career investment for women by serving to increase the age at first marriage.
- But, still gender gap remains.

Gender gap remains.

- Substantially reduced the gender gap in labour force participation and earnings
- But women's labour force participation has plateaued since the early-mid 1990s.
- Remaining gender gaps led researchers to consider less traditional (within economics) factors
  - Risk attitudes
  - Negotiation skills, taste for competition
  - Beliefs
  - Social norms and identity

Do beliefs matter?

- Quite cumbersome to distinguish statistical from taste-based discrimination.
  1. Preferences: Do employers prefer certain people (controlling for performance)?
  2. Beliefs: Do employers *think* some people will perform worse (ceteris paribus)?
- Holzer and Ihlanfeldt(1998) $\rightarrow$ DiD estimate of the impact of customer discrimination - 14.6%.
- Bertrand and Mullainathan (2004) randomized names in job applications $\rightarrow$ call back rates for white-sounding names 50% higher than for African-American-sounding names.
- Now, does someone's gender influence the way we interpret information about him/her? His/her peers?

Medical Referrals - (Sarsons et al., 2017)

- Interpretations have implications for gender inequality in labour markets.
- Often subjective or imprecise information is used to evaluate individuals, thus influencing hiring, wage, and promotion.
- Medical field offers some insights:
  - Physician's referrals depend on patients' surgical outcomes differing upon performing surgeon's gender.
  - Physician's experience in one instance has spillover effects.
- Two asymmetries:
  1. Physician update asymmetrically about individual male and female surgeons.
  2. Asymmetry exists in how physicians treat groups.

Medical referrals

- Key Variables:
  - Patient risk, Surgeon Ability; both constructed and matched on a measure.
  - Events:
    - Bad signals: patient death occurs within 7 days of the procedure.
    - Good signals: the patient does not die and is not readmitted within 30 days of the procedure.
  - Quarter in which the event occurs - Q_0. Summed the referrals received 4 quarters prior and 6 quarters after the event.
  - "Placebo" surgeons - who experienced expected outcomes.

Medical referrals

- Drop in referrals to women is not because women turning down it. Evidence says,
  - Physicians change their beliefs about women surgeons
  - Women surgeons are not becoming risk-averse and refusing to perform surgeries in the future.
- Career implications?
  - Receives less risky procedures; affects skill accumulation.
  - Surgeon pay. Procedure risk is correlated with pay. Women lose 60% of their Medicare billings per quarter while men lose 30%.

Results

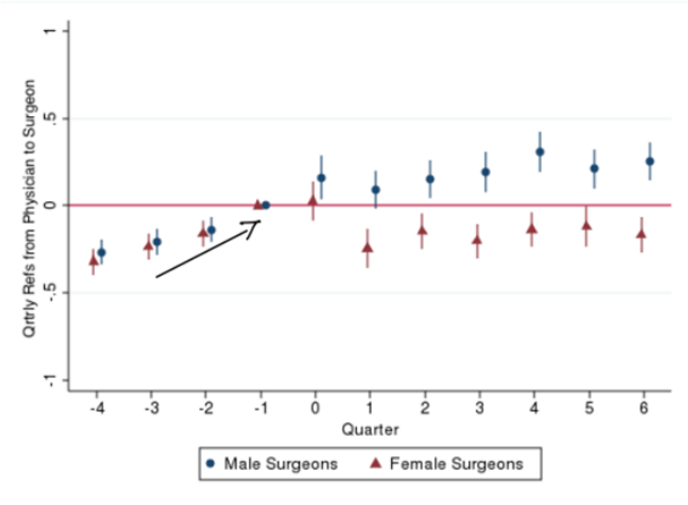


Figure: Physician's reaction to death

- After the death in Q_0, a marked drop in referrals to women surgeons.
- A male surgeon would have to have three patient deaths to be seen on equal footing with women!

Results

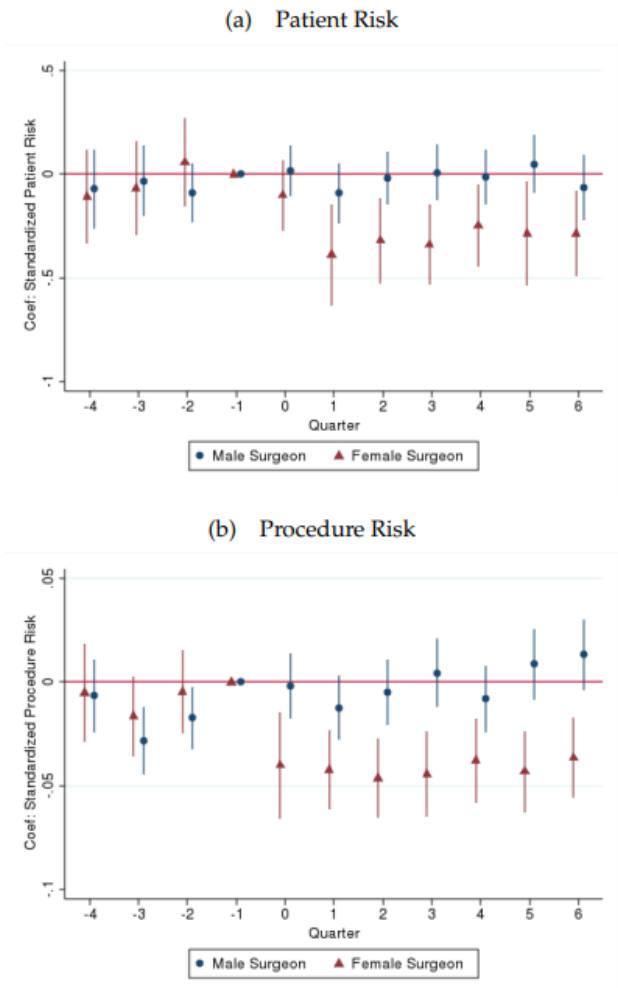


Figure: Riskiness of future procedures and patients

- No Δ in the riskiness referred to men
- Women receive 0.28SD less risky patients after death
- Career implications follow.

Results

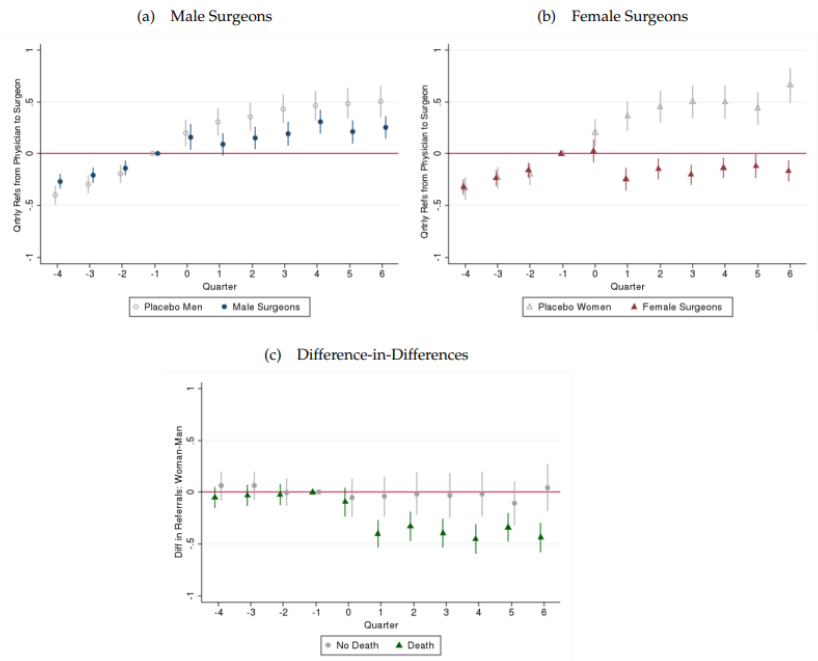


Figure: Comparison with Placebo surgeons

- Panel A and B, estimated referrals to surgeons of both genders grow at a similar rate, had the patient not died.
- Men - 0.22 fewer referrals in each quarter.
- Women - 0.6 fewer referrals in each quarter.
- DiD estimates in Panel C show no difference in the referral path b/w man and woman surgeons who do not experience a patient death.

Results

	Referrals		Medicare Pay ($)	
	(1)	(2)	(3)	(4)
Event	Bad	Good	Bad	Good
Post	0.006	0.509***	-80.05***	145.29***
	(0.058)	(0.069)	(25.09)	(45.21)
Female × Post	-0.291***	-0.222**	-138.97***	-22.88
	(0.087)	(0.100)	(32.54)	(64.14)
Time Trend	0.099***	0.073***	31.84***	27.58***
	(0.011)	(0.011)	(5.84)	(8.07)
Female × Time Trend	-0.009	-0.010	13.67***	-6.08
	(0.013)	(0.015)	(4.65)	(8.59)
Post × Time Trend	-0.072***	-0.046***	-35.51***	-41.83***
	(0.012)	(0.012)	(6.00)	(8.82)
Average Post Effect On:				
Male Surgeons	0.101	0.604	-92.90	95.42
Female Surgeons	-0.222	0.346	-184.02	51.26
Mean of Outcome Var.	0.65	0.48	309.17	264.86
Observations	34,053	29,214	34,053	29,214
Clusters	3,425	2,948	3,425	2,948
R-Squared	0.265	0.325	0.237	0.249

Table: Physicians react to good outcomes.

- Men receive 0.6 more referrals after a good outcome.
- Women receive 0.35 more referrals only.

Results

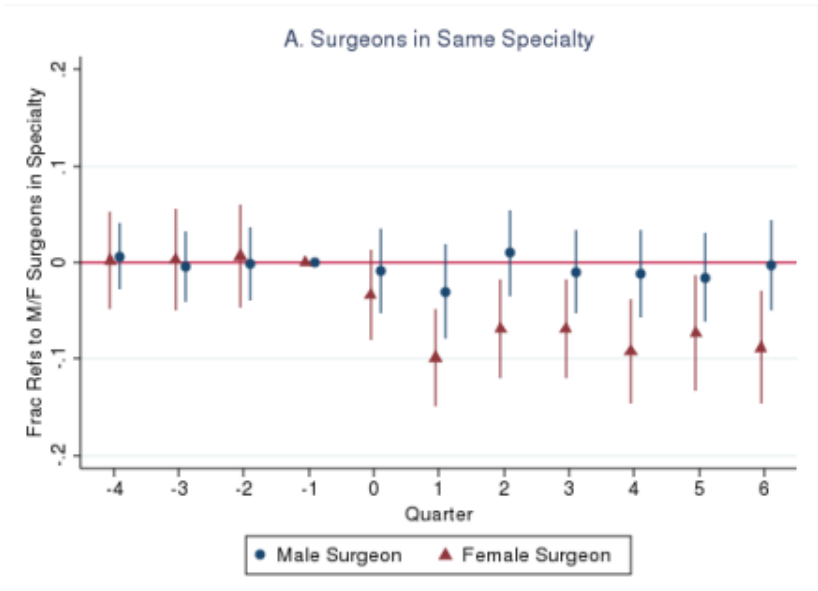


Figure: Updating about other surgeons

- Death leads to fewer referrals to other woman surgeons
- Men appear to be treated as individuals.
- Information about one woman affects the physician's beliefs about other women in the same speciality.
- Slight reduction in Physicians' referrals to women surgeons in other specialities, but insignificant results.

Results

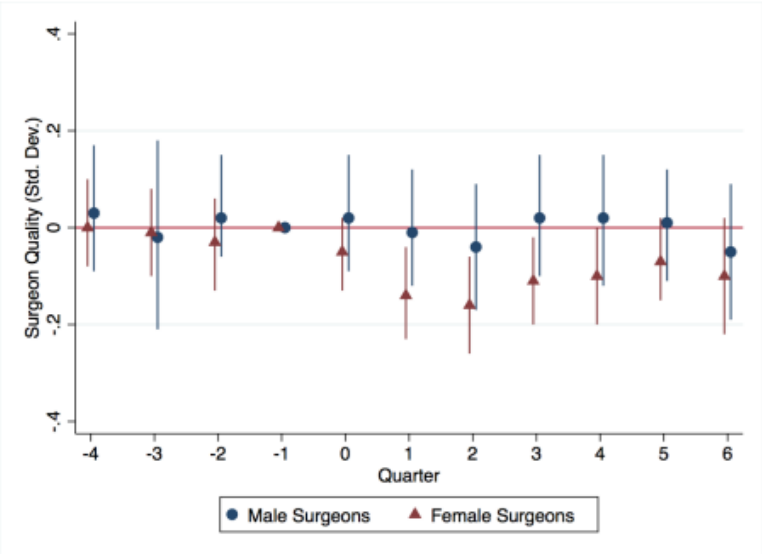


Figure: Career effects on surgeon ability

- No significant change in the quality of surgeons when it is a man, but a marginally significant fall in surgeon quality when it is a woman.
- **Surgeons pay**: A gap of $140 per quarter emerges. Approx lose - women (60%), men - (30%) from the referring surgeon of their Medicare billings.
- Effect of good event: men(36%) and women (9%) increase in billings (though, stat. insignificant)

Summary

- Findings in short:
  - Bad outcome $\rightarrow$ 34% less referrals to women surgeons
  - Less likely to refer to other women surgeons.
  - Good outcome (unanticipated survival) $\rightarrow$ doubling referrals to men, while 70% increase to women.
  - No spillovers to other women surgeons.
- Why do asymmetries matter?
  - More the signals physicians have received from a surgeon in the past, the weaker the reactions. Treatment on an equal footing.
  - Less asymmetric updating by physicians with a high propensity to refer to women before the event

Let's Discuss

- Why do asymmetries matter?
  - Learn from mistakes. But, fewer chances to make mistakes!
  - 10,000 hour rule - Lower skill accumulation chances now
  - Updates more after bad outcomes, updates about all women
  - Quicker to let women go and less likely to hire more
  - Ultimately woman drops out.
- Can algorithms be biased?
- Hopefully could be fixed more easily.
- Watch Sendhil Mullainathan's talk on discrimination by algorithm.

Low Promotability tasks and Gender differences - (Babcock et al., 2017)

- To better understand how men and women advance in the workplace:
  - Does the tasks they perform at work vary?
  - Impact of such differences in career advancement.
- Relative to men, women invest in:
  - Less time on high-promotability tasks.
  - More time on tasks that benefit the organisation.
- The standard explanations for gender differences in labour market experiences can help explain differences in task allocations.
  - Discrimination
  - Reluctance to negotiate and compete

Saying enough No?

- We examine:
  - Response difference of men and women to low promotability tasks - differences in their "supply".
  - Differences in frequency of facing such requests - "demand" differences by gender.
  - What factors likely contribute to such potential differences
- Our interest is in low-promotability tasks for which the worker has some discretion and can decide whether or not to perform the task.
- Three experiments. Results:
  - Women volunteer 50% more than men when paired in mixed groups
  - No difference in responses when paired in same-sex groups.
  - Women are more asked to volunteer.

Experiment I

- Examining whether women more than men volunteer to perform low-promotability tasks.
- Lab experiment. 10 rounds; random and anonymous assignment of members to groups of three.
- Two minutes for each group member to make an investment (volunteer) decision
- Individual earnings:
  - \$1 » if no one invests
  - \$1.25 » the one who invests. Round ends then and there. Others make \$2.

Results

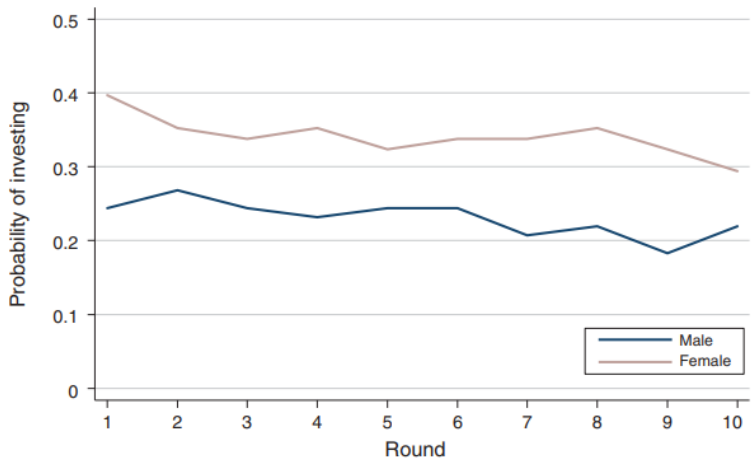


Figure: Probability of Investing

- From R1, the investment rate by women surpasses men.
- Over the 10 rounds, women invested 3.4 times while men invested 2.3 times.
- This 48% difference in total investment is stat. significant.

Results

- Why Does the Rate of Investment Differ by Gender?
  - Gender may be a proxy for individual preferences, causing women to invest more.
    - Example: women are more likely to agree to requests to perform non-promotable tasks; more concerned for the welfare of others.
  - Differences in beliefs about whether others will invest cause women to invest to more than men.
    - Example: Belief by both that women are more likely to invest.
- Does the response to requests depend on the Gender Composition of the Group?

Experiment II

- Single-sex version of experiment I.
- To determine whether gender differences in investments are robust to the group's gender composition or if they are influenced by beliefs.
- If gender differences in investing are caused by women being more conforming, more altruistic, and more risk averse, expect higher investment rates in all-women sessions than in all-men sessions.
- If behaviour is influenced by a belief that women more frequently invest than men, then we would expect the individual rate of investments to change in single-sex groups.

Results

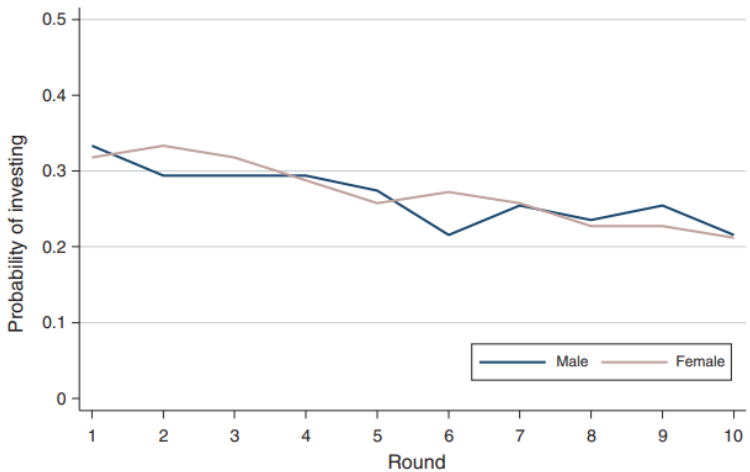


Figure: Probability of Investing

- No finding that women are more likely to invest than men.
- Average investment over the ten rounds is for men = 2.67, women = 2.71.
- The changes in investment rates between Experiment 1 and 2 suggest that the individual's behaviour is not caused by fixed preferences but instead depends upon the population from which group members are drawn.

Experiment III

- Are women asked to volunteer more than men?
- This demand side examination is done using an outside requestor who, after seeing pictures of the three group members, just asks one of them to invest.
- Requestor has his/her own incentives. We expect that participants will be more likely to ask a woman than a man to volunteer.
- Group of 4. One of the four is 'Red' - the requestor, while the other three - 'Green'.

Results

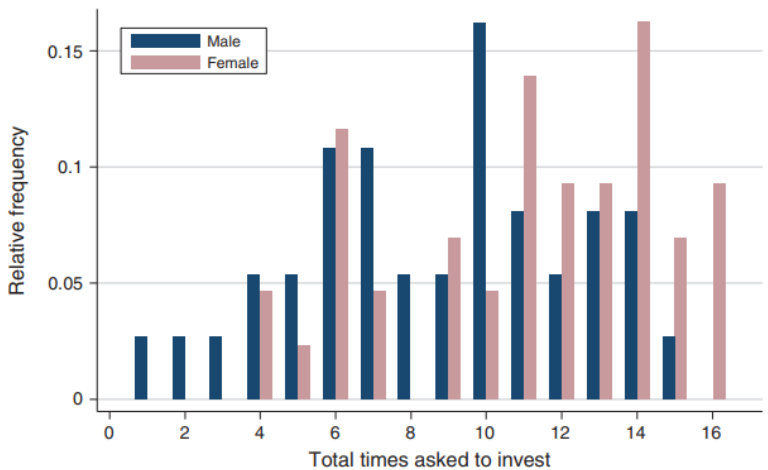


Figure: Distribution of requests per individual

- Mean request for men = 8.7, while women = 11.1.
- The finding that women are asked to invest more than men is consistent with the belief that they are more likely to accept such requests.
- If 'Red' is a man/woman - 39% a woman 'green' is asked.

Summary

- Further analysis found that gender difference in Experiments I and II is not driven by women being more altruistic than men, nor by participants being more generous toward men than women.
- Thus, gender differences in volunteering are amplified not by preferences but rather by the belief that women more than men will volunteer.
- Read here a guest blog by Radhika Nagpal on her academic journey.

Gender Identity Norms

- Identity considerations in economics owe credit to Akerlof and Kranton (2000).
- Two social categories: "Men" and "Women".
- Certain prescriptive norms change 'payoffs' from different actions.
  - "Men should not do household work"
  - "Men should earn more than their wives"
  - Toxic masculinity, in short.
- Husband may lose identity and reduction in utility if the norms are violated.
- Atkinson *et.al.* (2005) explains this in terms of Gendered Resource Theory and Intimate Partner Violence.

Identity and IPV.

- Some theories of IPV:
  - Male Backlash Model
  - Household Bargaining Model
  - Economic sabotage model
  - Resource and Relative Resource Theories.
- Women's LFP lowers risks of spousal abuse when their male partners are also employed (Macmillan and Gartner, 1999)
- Low and Middle-Income nations, women's HH contributions are undervalued $\rightarrow$ either as it yields no monetary value or simply because it is carried out by women (Vyas et al., 2015).

Identity

- Women's ability to translate paid work into bargaining power faces several constraints that are governed by social norms (Agarwal, 1997):
  - What can be bargained about?
  - Constraints to bargaining.
  - How bargaining is conducted.
- Gender ideologies are how one identifies oneself with regard to marital and family roles traditionally linked to gender.
- Gender theorists suggest that domestic violence provides a mechanism by which men construct masculinities.

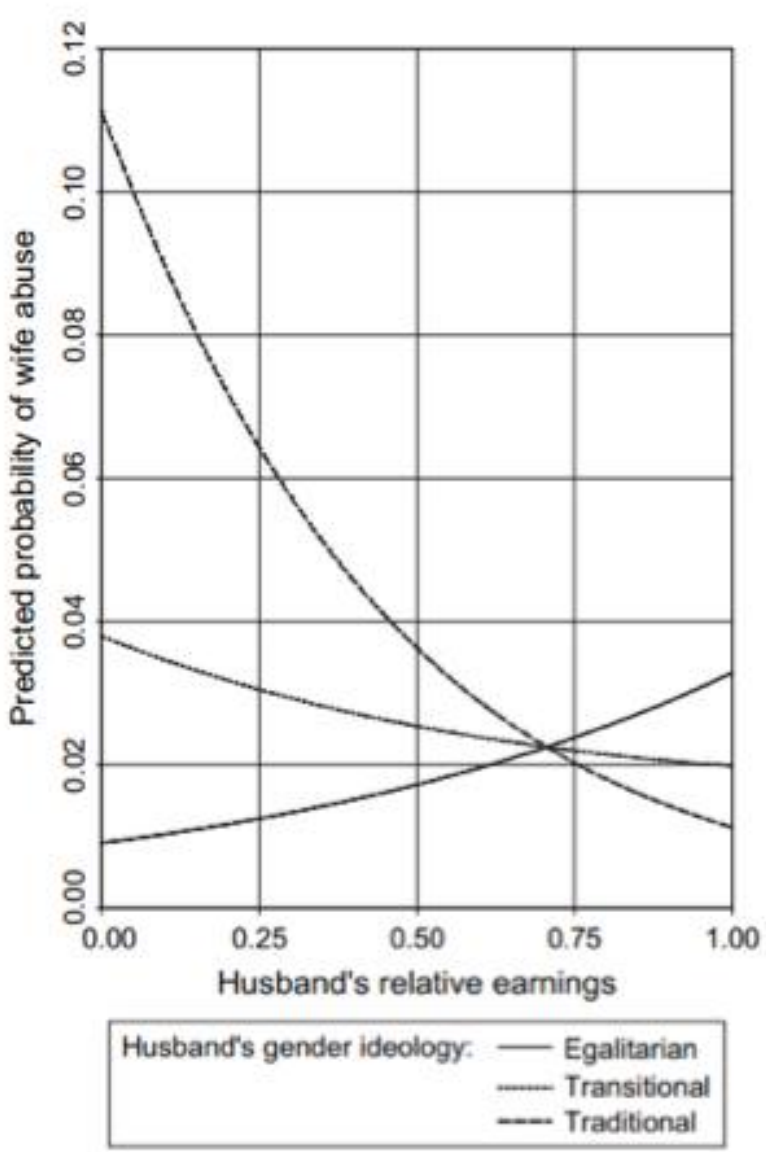
Gendered Resource Theory - (Atkinson et al., 2005)

- Gendered Resource Theory (GRT).
  - Egalitarian husbands $\rightarrow$ equal share of responsibility for both market and non-market production. Relative income does not matter.
  - Traditional husbands $\rightarrow$ Husband should be the primary breadwinner. Relative resources matter.
- Wives who are primary breadwinners + have a traditional husband suffers, says GRT.
- Data: National Survey of Families and Households, wave I (NSFH1), The USA.

Methodology

- Dependent Variable: Dichotomous outcome variable - Wife has ever been a victim of physical non-sexual abuse by her husband.
- Predictor variables:
  - Absolute resources (husband's income)
  - Relative income
  - Traditionalism - summated index constructed out of specific queries.
- Control Variables: Age, education, Marital duration etc..
- Logistic regression to estimate five models. The fifth model is a product-term interaction model of relative income and traditionalism.

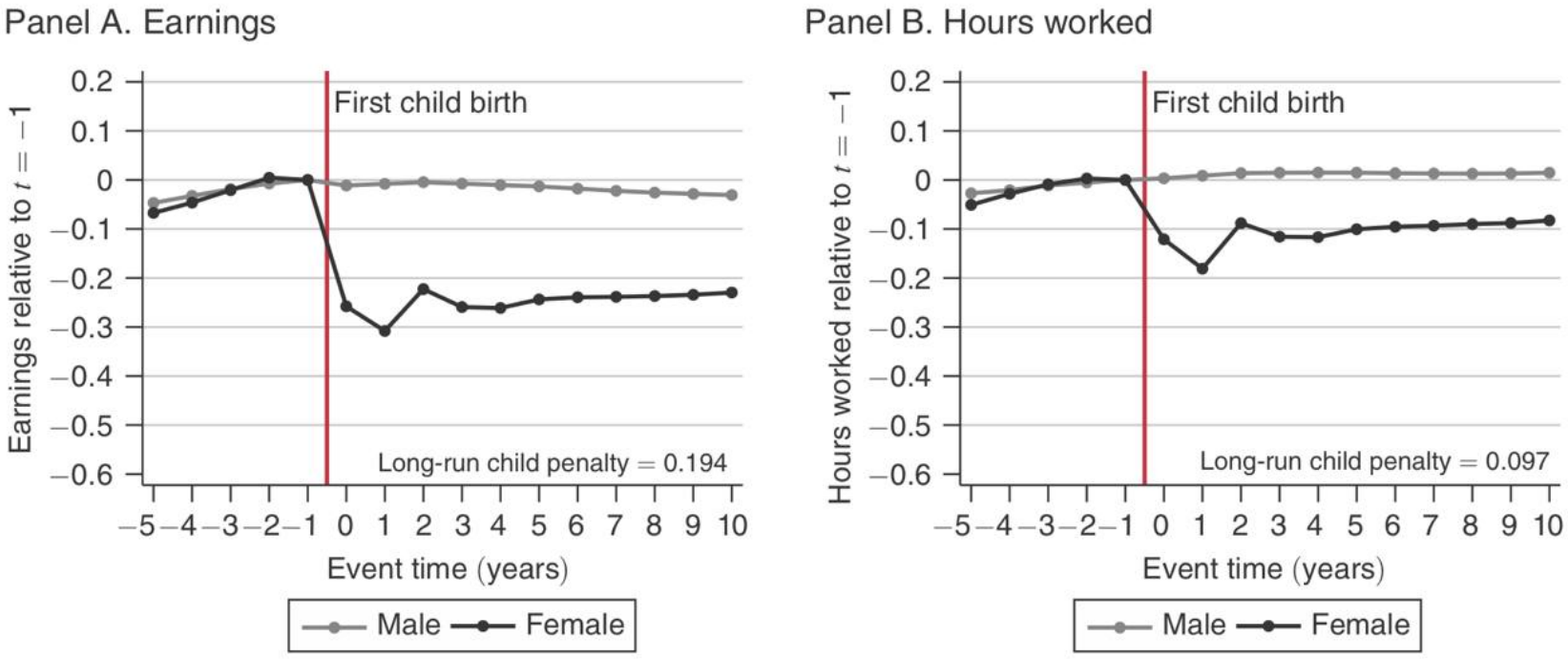
Major Result



- Three hypothetical husbands.
- Predicted probabilities are calculated based on the log odds.
- Husband with egalitarian or a transitional gender ideology - rel. earnings not a concern, but a strong negative effect of a husband's relative earnings for traditional husbands.

Other Identity constraints

- Arrival of a child creates a long-run gender gap in earning of around 20% driven by hours worked, participation, and wage rates in Denmark (Kleven et al., 2019).



- Do women avoid career-enhancing actions because these actions signal undesirable traits, like ambition, to the marriage market? (Bursztyn et al. (2017))

Gender, Identity and Discrimination: Summary

- Large gender wage and earnings gaps
- Substantial progress made due to technological advances and other improvements but persistent gender differences
- Biased beliefs and identity concerns play a major role
- Feedback mechanisms: Demand and supply of non-promotable tasks matter
- Better understanding these issues can help us mitigate the gender gap

Agarwal, B. (1997)."bargaining"and gender relations: Within and beyond the household. *Feminist economics*, *3*(1), 1–51.

Atkinson, M. P., Greenstein, T. N., & Lang, M. M. (2005).For women, breadwinning can be dangerous: Gendered resource theory and wife abuse. *Journal of marriage and family*, *67*(5), 1137–1148.

Babcock, L., Recalde, M. P., Vesterlund, L., & Weingart, L. (2017).Gender differences in accepting and receiving requests for tasks with low promotability. *American Economic Review*, *107*(3), 714–747.

Goldin, C. (2014).A grand gender convergence: Its last chapter. *American economic review*, *104*(4), 1091–1119.

Goldin, C., & Katz, L. F. (2002).The power of the pill: Oral contraceptives and women's career and marriage decisions. *Journal of political Economy*, *110*(4), 730–770.

Goldin, C., & Rouse, C. (2000).Orchestrating impartiality: The impact of "blind" auditions on female musicians. *American economic review*, *90*(4), 715–741.


Kleven, H., Landais, C., & Søgaard, J. E. (2019).Children and gender inequality: Evidence from denmark. *American Economic Journal: Applied Economics*, *11*(4), 181–209.


Macmillan, R., & Gartner, R. (1999).When she brings home the bacon: Labor-force participation and the risk of spousal violence against women. *Journal of Marriage and the Family*, 947–958.


Marianne, B. (2011). New perspectives on gender. In *Handbook of labor economics* (pp. 1543–1590, Vol. 4). Elsevier.


Sarsons, H., Akhtari, M., Barron, K., et al. (2017).Interpreting signals in the labor market: Evidence from medical referrals, 2017. *Harvard University.[Google Scholar]*.


Vyas, S., Mbwambo, J., & Heise, L. (2015).Women's paid work and intimate partner violence: Insights from tanzania. *Feminist Economics*, *21*(1), 35–58.