

Gender and Race Differences in the Labor Market

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- So far, we have looked at various sources of heterogeneity in the wage structure:
 - By characteristics of the job
 - By workers' levels of skills (human capital)
- But there are also differences by basic demographic characteristics: gender, race, ethnicity.
- What are the sources of these differences?
- Differences important, because the labor market is rapidly changing, and women and minorities represent an increasing share of the labor force.

Table 12.1: Shares of the Civilian Labor Force for Major Demographic Groups: 1984, 1994, 2004, 2014

	Year			
	1984	1994	2004	2014 (projected)
White (non-Hispanic)	80.4%	76.7%	70.0%	65.6%
Women (all races)	43.8%	46.0%	46.4%	46.8%
Blacks (both genders)	10.6%	11.1%	11.3%	12.0%
Asians and Native Americans (both genders) ^a	2.7%	4.2%	4.3%	5.1%
Hispanics (all races, both genders)	6.6%	9.1%	13.1%	15.9%

^aIncludes Alaskan Natives and Pacific Islanders.

Source: Mitra Toossi, "Labor Force Projections to 2014: Retiring Boomers," *Monthly Labor Review* 128 (November 2005): 25-44, Table 1.

TABLE 9-1 Gender and Racial Differences in Skills and Labor Market Outcomes, 2007

Sources: The data on educational attainment refer to persons aged 25 and over, and are drawn from the table “Table 10. Educational Attainment in the United States: March 2007,” www.census.gov/population/www/socdemo/education/cps2007.html. The data on labor force participation and unemployment rates refer to persons aged 20 and over and are available online at www.bls.gov/cps/cpsatabs.htm. The data on earnings refers to workers aged 25 and over, and are drawn from “Table PINC-03, Educational Attainment—People 25 Years Old and Over, by Total Money Earnings in 2006, Work Experience in 2006, Age, Race, Hispanic Origin and Sex,” www.census.gov/hhes/www/income/dinctabs.html.

	White		Black		Hispanic	
	Male	Female	Male	Female	Male	Female
Percent high school graduate or more	85.3	87.1	81.9	82.5	58.2	62.5
Percent bachelor’s degree or more	29.9	28.3	18.0	19.0	11.8	13.7
Labor force participation rate	76.3	60.1	71.2	64.0	84.7	58.8
Unemployment rate	3.7	3.6	7.9	6.7	4.6	5.5
Annual earnings (in \$1,000)	55.9	35.1	39.5	31.8	35.4	26.3
Annual earnings (among workers employed full-time, year-round) (in \$1,000)	65.8	43.6	44.5	37.6	38.8	32.1

By gender: large differences in participation rates and earnings, even for full-time, full-year.

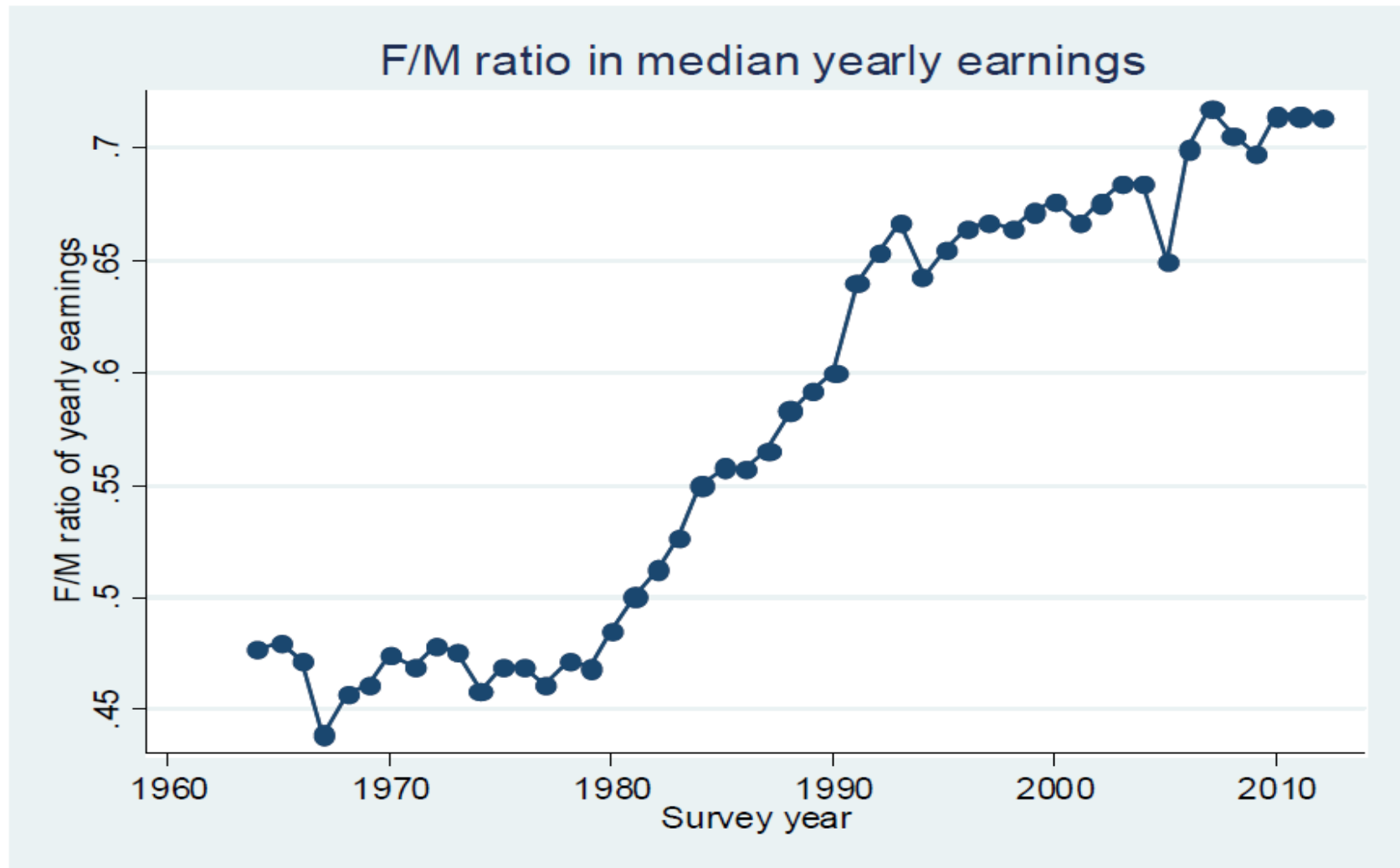
By race/ethnicity: large differences in schooling, participation rates, unemployment rates and earnings.

- Part of the differences accounted by differences in the amount of human capital.
- But part of the differences are unexplained: discrimination?
- General framework for thinking about the wage gap between groups 1 and 2:
 - Differences in skills
 - Differences in returns to skills (discrimination?)

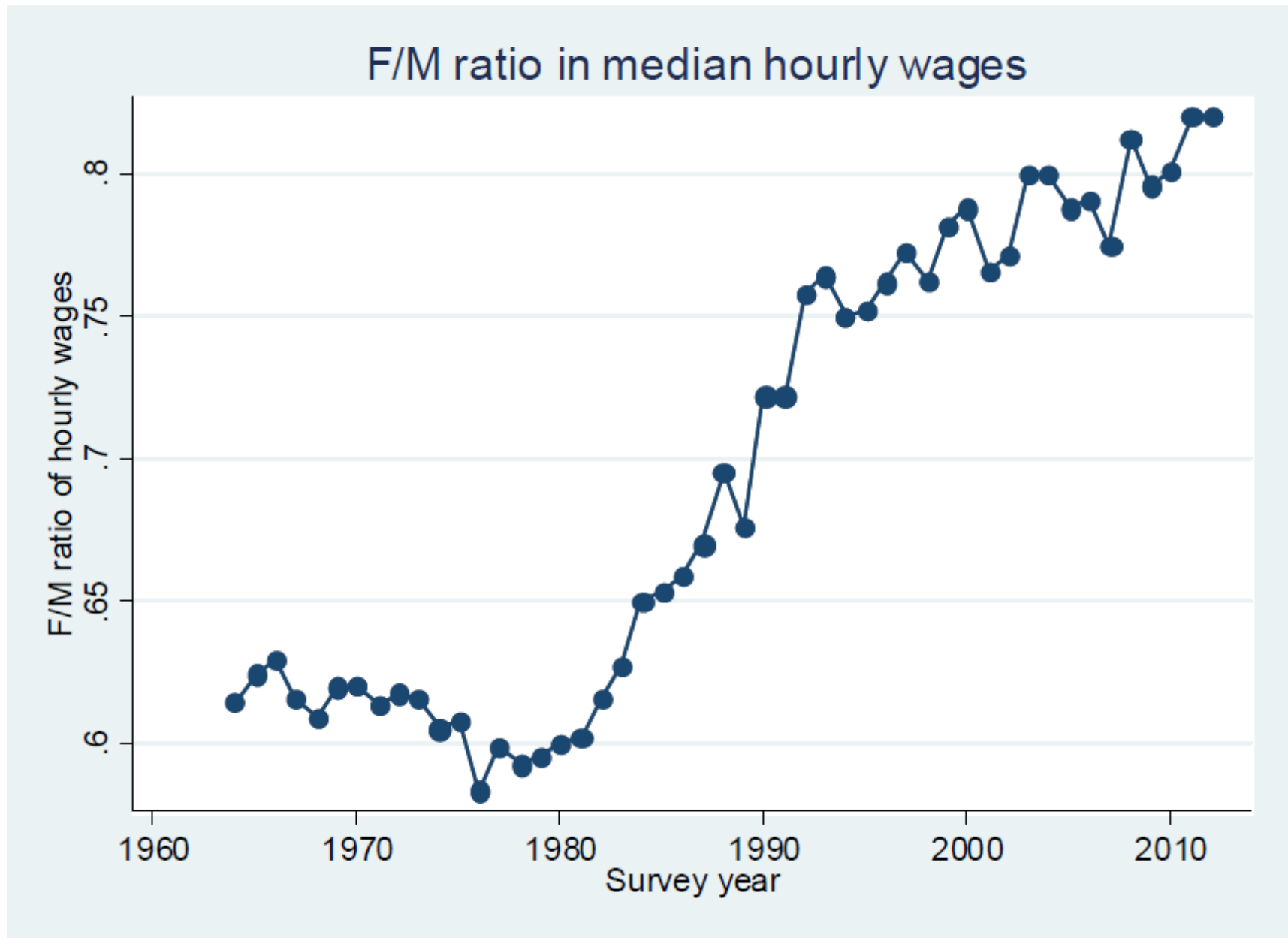
- But we need to be careful...
- What may appear as an unexplained difference, may actually be because of differences in unobserved skills.
 - If workers 1 and 2 are apparently identical, but worker 1 is paid more, is it because worker 2 is discriminated against, or is it because he/she is less productive in unobservable ways?
 - Motivation, leadership, cooperativeness, confidence, etc.

- On the other hand, differences in the amount of skill may also be the result of discrimination:
 - **Pre-market discrimination:** perhaps blacks have lower educational attainment because they are discriminated against in the housing market, and don't have access to high-quality schools.
 - Expected labor market discrimination also affects the accumulation of human capital: perhaps women don't go to engineering school because they expect to be discriminated against in the labor market, lower return on their investment.

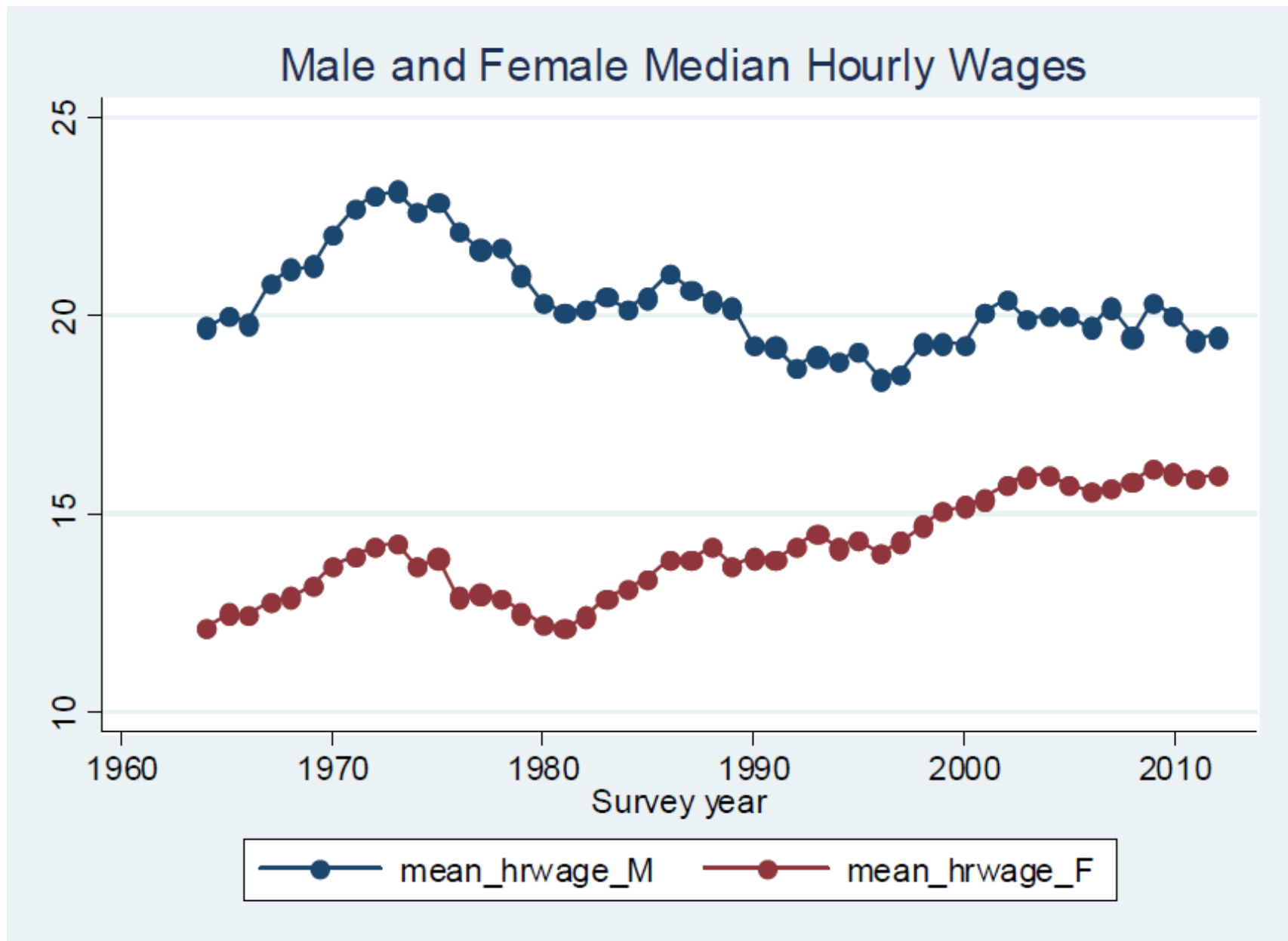
Gender differences



- Very rapid closing of the gender gap between 1979 and 1990, then additional gains made by women, but at a slower pace.



The gap in hourly wages is smaller than the gap in yearly earnings (women work shorter hours).



- Closing of the gap is because male median wages have stagnated, female median wages have continued to grow.

Table 12.2: Female Earnings as a Percentage of Male Earnings, by Age and Education, Full-Time Workers, 2005

Age	High School Graduate	Bachelor's Degree	Master's Degree
25–34	76%	73%	79%
35–44	70%	68%	66%
45–54	67%	62%	60%
55–64	67%	66%	60%

Source: Data in this table are from U.S. Bureau of the Census, Detailed Income Tabulations from the CPS, 2006 ASEC, Persons, Table PINC-03: “Educational Attainment—People 25 Years Old and Over, by Total Money Earnings in 2005, Work Experience in 2005, Age, Race, Hispanic Origin, and Sex,” at http://pubdb3.census.gov/macro/032006/perinc/new03_352.htm.

Gap larger for older workers (aging or cohort effect?), and for highly educated (except young workers).

- Simple controls for schooling and (potential) experience may overstate the extent of gender discrimination.
- Schooling: large differences in choice of major, especially for older cohorts.
 - Total years of education may not adequately control for “quality” of schooling for women.
- Potential experience ($\text{age} - \text{educ} - 6$) not the same as actual experience, especially for women.
 - Career interruptions
 - More part-time work
 - Lower hours of work, even conditional on full-time work

Table 9.3: Percentages of Women among College and University Graduates, by Degree and Field of Study, 1971 and 2004

Percentage of Women among:	Bachelor's Degree		Master's Degree	
	1971	2004	1971	2004
Total	43.4%	57.5%	40.1%	58.9%
Business majors	9.1	50.3	3.9	42.0
Computer science majors	13.6	25.1	10.3	31.2
Education majors	74.5	78.5	56.2	76.7
Engineering majors	0.8	18.8	1.1	21.4
English majors	66.7	68.9	61.0	69.1
Health professionals	77.1	86.5	55.9	78.5
First professional degree ^a			6.3	49.2

^aDegrees in this category are largely doctor's degrees in law, medicine, and dentistry.

Sources: U.S. National Center for Education Statistics, *Digest of Education Statistics 1993* (1993), Tables 235, 269, 271–273, 275, 278; *Digest of Education Statistics 2005* (2006), Tables 252, 257.

Table 9.2: Labor Force Participation Rates, Part-Time Employment Status, and Hours of Work in the United States, by Gender (2005)

	Women	Men
Labor force participation rate, age 20 and over	60.4%	75.8%
Percent of employed who worked full time ^a	68.9%	83.2%
Average weekly hours of work, by occupation:		
Management, business and financial	43.0	47.2
Professional specialty	41.2	44.4
Office/administrative support	39.9	42.0
Sales	41.2	45.7
Installation and repair	40.8	43.4

^aFor year 2006.

Sources: U.S. Bureau of Labor Statistics website: <http://data.bls.gov/PDQ/servlet/SurveyOutputServlet> (labor force participation rate); <ftp://ftp.bls.gov/pub/special.requests/lf/aat23.txt> (full-time employment); U.S. Bureau of Labor Statistics, *Employment and Earnings* 53 (January 2006), Table 23 (hours of work).

Occupational segregation

TABLE 9-7

**Female
Employment
in 2001, by
Occupation**

Sources: U.S. Department of Commerce, *Statistical Abstract of the United States, 2002*, Washington, DC: Government Printing Office, 2002, Table 588; and Barry T. Hirsch and David A. Macpherson, *Union Membership and Earnings Data Book: Compilations from the Current Population Survey (2003 Edition)*, Washington, DC: Bureau of National Affairs, 2003, Table 8a.

Occupation	Percent Female	Average Hourly Wage of Workers in Occupation
Carpenters	1.7%	\$15.33
Aircraft engine mechanics	4.1	21.07
Truck drivers	5.3	14.22
Police and detectives	10.3	19.65
Chemical engineers	11.4	31.77
Architects	23.5	25.17
Lawyers	29.3	38.82
Physicians	29.3	39.93
Guards	29.9	12.35
Cooks	42.5	8.67
Postal clerks	49.7	16.71
Financial managers	52.1	26.63
Real estate sales	52.2	24.37
Teachers: secondary school	58.5	21.44
Teachers: elementary school	82.5	19.93
Maids and housemen	84.8	8.52
Bank tellers	86.9	10.52
Child care workers	97.0	8.43
Receptionists	97.0	10.93
Teachers: kindergarten	97.8	13.43

Bertrand, Goldin and Katz: “Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors” (AEJ Applied, 2010)

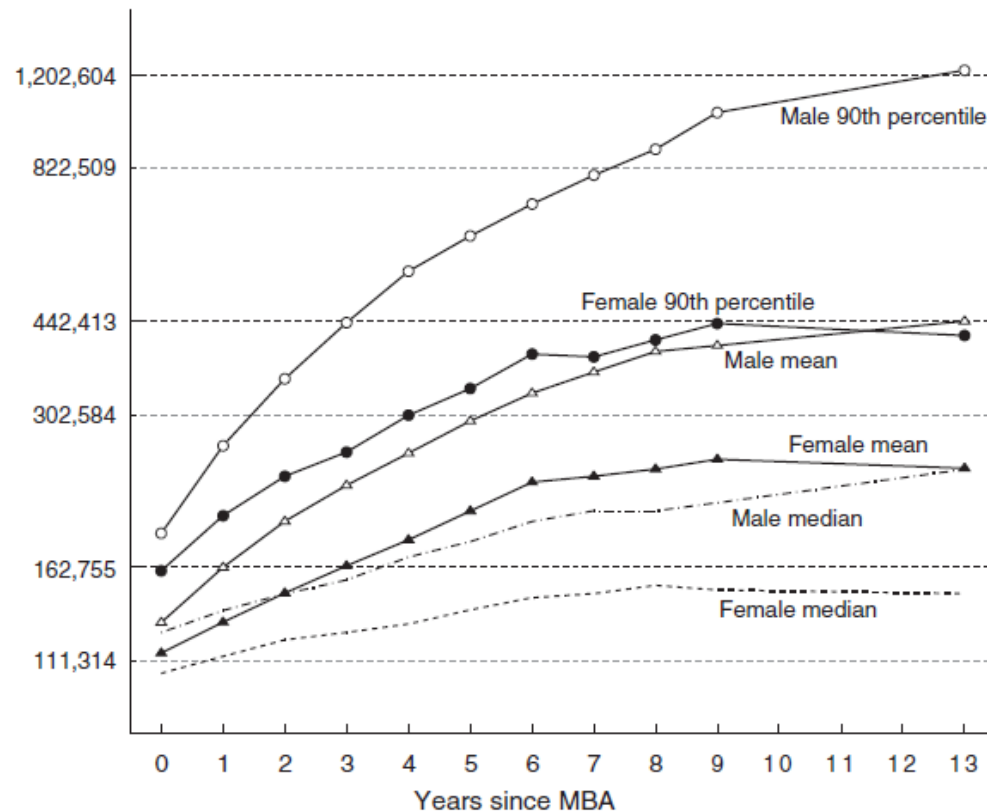


FIGURE 1. MALE AND FEMALE MEAN, MEDIAN, AND NINETIETH PERCENTILE ANNUAL SALARIES (2006 DOLLARS) BY YEARS SINCE MBA

Notes: Web Appendix Table A5 contains the data points for a selected group of years since MBA. Nominal earnings in each year are converted into real earnings in 2006 dollars using the Consumer Price Index for All Urban Consumers (CPI-U). The vertical axis uses a natural logarithm (ln) scale.

Sample: MBAs who graduated from Booth School of Business (U Chicago) between 1990 and 2006.

TABLE 3—WAGE REGRESSIONS FOR POOLED SAMPLE

	Dependent variable: Log (annual earnings)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	−0.287 [0.035]***	−0.190 [0.033]***	−0.146 [0.032]***	−0.173 [0.030]***	−0.094 [0.029]***	−0.064 [0.029]**	−0.054 [0.028]	−0.038 [0.025]
MBA GPA		0.429 [0.054]***	0.406 [0.053]***		0.369 [0.051]***	0.351 [0.051]***	0.367 [0.049]***	0.347 [0.043]***
Fraction finance classes		1.833 [0.211]***	1.807 [0.206]***		1.758 [0.199]***	1.737 [0.194]***	1.65 [0.193]***	0.430 [0.180]**
Actual post- MBA exp			0.046 [0.075]			0.085 [0.071]	0.056 [0.068]	0.029 [0.064]
Actual post- MBA exp ²			0.010 [0.004]***			0.005 [0.004]	0.008 [0.003]**	0.007 [0.003]**
Any no work spell			−0.290 [0.067]***			−0.228 [0.062]***	−0.218 [0.061]***	−0.173 [0.054]***
Dummy variables:								
Weekly hours worked	No	No	No	Yes	Yes	Yes	Yes	Yes
Pre-MBA characteristics	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Reason for choosing job	No	No	No	No	No	No	Yes	Yes
Job function	No	No	No	No	No	No	No	Yes
Employer type	No	No	No	No	No	No	No	Yes
Cohort × year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	12.156 [0.018]***	9.493 [0.585]***	8.809 [0.667]***	10.385 [0.151]***	8.08 [0.603]***	7.525 [0.694]***	8.229 [0.733]***	8.324 [0.547]***
Observations	18,272	18,272	18,272	18,272	18,272	18,272	18,272	18,272
R ²	0.15	0.31	0.34	0.26	0.40	0.41	0.43	0.54

Gender gap falls from 28.7 to 6.4 log points with the inclusion of: MBA GPA, finance classes, actual experience, and weekly hours worked.

- Interpretation: large costs to taking time off, career interruptions, lower hours and more flexible hours in corporate and financial sector.
- Comparison to physicians, lawyers and PhDs:
 - MBAs had lower labor force participation (especially for women with children), and shorter spells of non-employment.
 - Earnings penalty for career interruptions larger for MBAs.
- Flexible hours (more than short hours) matter a lot.

“The economic benefits of re-organizing work to reduce the productivity costs of career interruptions, and more flexible work options, may be greater in professions where there is a larger share (or critical mass) of women in the talent pool. A tipping point may have been reached in fields where women have become a majority (or nearly the majority) of the young talent (such as medicine, veterinary medicine, optometry, pharmacy, and accounting , but not yet for MBAs and the business and financial sectors.”

See also Azmat and Ferrer (2017)

Racial Differences

- Neal and Johnson (1996): most discrimination against blacks is pre-market.
- Once you control for AFQT, almost no racial gap at all.

TABLE 1
LOG WAGE REGRESSIONS BY SEX

	MEN (N = 1,593)			WOMEN (N = 1,446)		
	(1)	(2)	(3)	(4)	(5)	(6)
Black	-.244 (.026)	-.196 (.025)	-.072 (.027)	-.185 (.029)	-.155 (.027)	.035 (.031)
Hispanic	-.113 (.030)	-.045 (.029)	.005 (.030)	-.028 (.033)	.057 (.031)	.145 (.032)
Age	.048 (.014)	.046 (.013)	.040 (.013)	.010 (.015)	.009 (.014)	.023 (.015)
AFQT	...	...	.172 (.012)	...	...	.228 (.015)
AFQT ²	...	...	-.013 (.011)	...	...	.013 (.013)
High grade by 1991	...	.061 (.005)	...	...	.088 (.005)	...
R ²	.059	.155	.168	.029	.191	.165

NOTE.—The dependent variable is the log of hourly wages. The wage observations come from 1990 and 1991. All wages are measured in 1991 dollars. If a person works in both years, the wage is measured as the average of the two wage observations. Wage observations below \$1.00 per hour or above \$75 are eliminated from the data. The sample consists of the NLSY cross-section sample plus the supplemental samples of blacks and Hispanics. Respondents who did not take the ASVAB test are eliminated from the sample. Further, 163 respondents are eliminated because the records document a problem with their test. All respondents were born after 1961. Standard errors are in parentheses.

- Fryer and Levitt (RESTAT 2004): large test score gaps at kindergarten entry, but can be almost entirely explained by differences in socioeconomic status.
- But after two years, the racial gap reappears, even if you control for SES.
- See also Heckman et al. (2013)

TABLE 2.—THE ESTIMATED BLACK-WHITE TEST SCORE GAP IN FALL OF KINDERGARTEN

Variables	Math					Reading				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Black	-.638 (.022)	-.368 (.022)	-.238 (.023)	-.094 (.023)	-.102 (.026)	-.401 (.024)	-.134 (.025)	-.006 (.026)	.117 (.025)	.093 (.030)
Hispanic	-.722 (.022)	-.429 (.023)	-.302 (.024)	-.203 (.022)	-.171 (.028)	-.427 (.027)	-.223 (.026)	-.137 (.026)	-.064 (.025)	-.076 (.029)
Asian	.150 (.056)	.070 (.051)	.190 (.051)	.265 (.048)	.274 (.050)	.335 (.064)	.256 (.059)	.371 (.059)	.409 (.058)	.375 (.060)
Other race	-.503 (.041)	-.329 (.037)	-.253 (.036)	-.158 (.035)	-.113 (.035)	-.401 (.044)	-.230 (.040)	-.155 (.040)	-.072 (.038)	-.014 (.039)
Socioeconomic status composite measure		.456 (.014)	.389 (.014)	.302 (.014)	.072 (.024)		.451 (.014)	.393 (.015)	.299 (.015)	.092 (.023)
Number of children's books			.007 (.001)	.006 (.001)	.005 (.001)			.007 (.001)	.006 (.001)	.004 (.001)
(Number of children's books) ² (×1000)			-.023 (.003)	-.020 (.002)	-.027 (.016)			-.025 (.003)	-.021 (.003)	-.017 (.017)
Female				.010 (.015)	.00 (.015)				.159 (.017)	.153 (.016)
Age at kindergarten fall (in months)				.056 (.002)	-2.680 (.542)				.041 (.002)	-2.409 (.483)
Birth weight (ounces) (× 10)				.029 (.004)	.030 (.004)				.019 (.004)	.022 (.004)
Teenage mother at time of first birth				-.109 (.018)	-.029 (.021)				-.144 (.020)	-.069 (.022)
Mother at least 30 at time of first birth				.182 (.025)	.11 (.028)				.226 (.027)	.155 (.030)
WIC participant				-.211 (.019)	-.120 (.020)				-.184 (.021)	-.104 (.021)
R ²	0.108	0.223	0.239	0.317	0.354	0.045	0.16	0.175	0.233	0.279
Number of observations	13,290					12,601				
Full set of covariates included in regression?	N	N	N	N	Y	N	N	N	N	Y

NOTES: The dependent variable is the math or reading test score in the fall of kindergarten. Test scores are IRT scores, normalized to have a mean of 0 and a standard deviation of 1 in the full, unweighted sample. Non-Hispanic whites are the omitted race category, so all of the race coefficients are gaps relative to that group. The unit of observation is a student. Standard errors in parentheses. Estimation is done using weighted least squares, using sample weights provided in the data set. In addition to the variables included in the table, indicator variables for students with missing values on each covariate are also included in the regressions. In addition, columns 5 and 10 report only a subset of the coefficients from regressions with 98 covariates included in the specification. The full results for columns 5 and 10 are reported in appendix table A1. Note that the specifications in columns 5 and 10 include age and age squared; that is why the coefficient on age changes so dramatically relative to other columns in the table.

TABLE 5.—THE EVOLUTION OF TEST SCORE GAPS BY RACE AS CHILDREN AGE

Variable	Math			Reading		
	Fall Kindergarten	Spring Kindergarten	Spring First Grade	Fall Kindergarten	Spring Kindergarten	Spring First Grade
Black	-.094 (.023)	-.201 (.025)	-.250 (.028)	.117 (.025)	-.009 (.027)	-.071 (.029)
Hispanic	-.203 (.022)	-.187 (.024)	-.120 (.026)	-.064 (.025)	-.005 (.027)	.001 (.029)
Asian	.265 (.048)	.221 (.049)	.115 (.044)	.409 (.058)	.434 (.054)	.345 (.045)
Other race	-.158 (.035)	-.166 (.039)	-.195 (.042)	-.072 (.038)	-.099 (.039)	-.163 (.042)
SES composite measure	.302 (.014)	.284 (.014)	.263 (.014)	.299 (.015)	.280 (.015)	.284 (.014)
Number of books	.006 (.001)	.006 (.001)	.005 (.001)	.006 (.001)	.005 (.001)	.006 (.001)
(Number of books) ² × 1000	.020 (.002)	-.019 (.003)	-.019 (.003)	-.021 (.003)	-.020 (.003)	-.022 (.003)
Female	.010 (.015)	.003 (.016)	-.033 (.017)	.159 (.017)	.195 (.017)	.216 (.017)
Age at kindergarten fall (in months)	.056 (.002)	.051 (.002)	.036 (.002)	.041 (.002)	.034 (.002)	.021 (.002)
Birth weight (ounces) × 100	.029 (.004)	.003 (.000)	.029 (.004)	.019 (.004)	.002 (.000)	.024 (.005)
Teenage mother at time of first birth	-.109 (.018)	-.112 (.021)	-.111 (.022)	-.144 (.020)	-.138 (.021)	-.131 (.024)
Mother in 30s at time of first birth	.182 (.025)	.127 (.024)	.093 (.022)	.226 (.027)	.158 (.025)	.085 (.024)
WIC participant	-.211 (.019)	-.195 (.020)	-.201 (.021)	-.184 (.021)	-.152 (.02)	-.182 (.022)
R ²	0.317	0.282	0.240	0.233	0.197	0.194
Number of obs.	13,290	13,290	13,290	12,601	12,601	12,601

NOTES: The dependent variable is fall kindergarten test scores in columns 1 and 3 and spring first grade test scores in columns 2 and 4. All specifications include the parsimonious set of controls corresponding to columns 4 and 9 of table 2. Test scores are IRT scores, normalized to have a mean of 0 and a standard deviation of 1 in the full, unweighted sample. Non-Hispanic whites are the omitted race category, so all of the race coefficients are gaps relative to that group. The unit of observation is a student. Standard errors in parentheses. Estimation is done using weighted least squares, using sample weights provided in the data set. In addition to the variables included in the table, indicator variables for students with missing values on each covariate are also included in the regressions.

FIGURE 9-7 Trend in Black-White Earnings Ratio, 1967–2005

Sources: U.S. Bureau of the Census, “Historical Income Tables—People,” Table 38. “Full-Time Year-Round Black and White Workers by Median Earnings and Sex,” www.census.gov/hhes/www/income/histinc/incpertoc.html. The earnings refer to the median earnings of full-time, full-year workers aged 15 or above.

