

Skills, Technology and Labor Market Inequality

David Deming

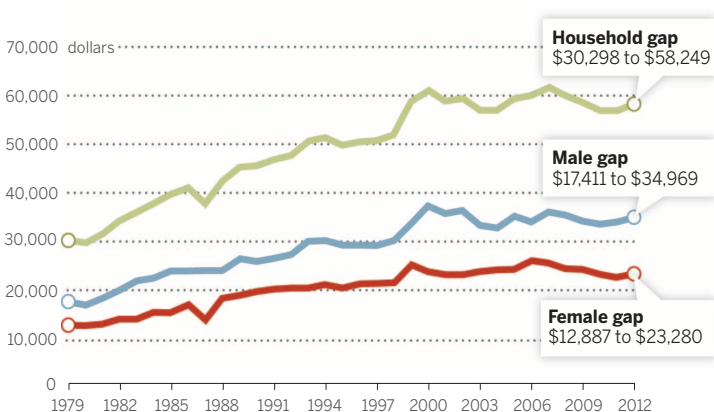
Harvard University and NBER

August 2016

Median Earnings Gap b/w College & High School Roughly Doubles between 1979 and 2012

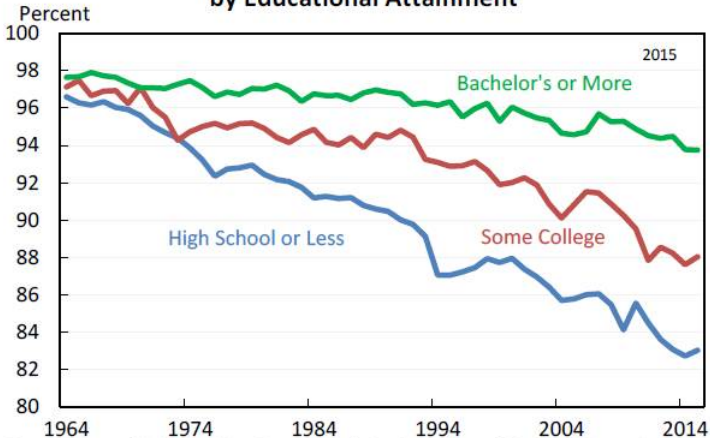
College/high school median annual earnings gap, 1979–2012

In constant 2012 dollars



Declines in low-skilled, male LFP....

Figure 9: Prime-Age Male Labor Force Participation by Educational Attainment



Source: Bureau of Labor Statistics, Current Population Survey (Annual Social and Economic Supplement); CEA calculations.

The Plan

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4. Conclusions and Policy Implications

Figure 5. Trend in NAEP reading percentile scores for 17-year-old students

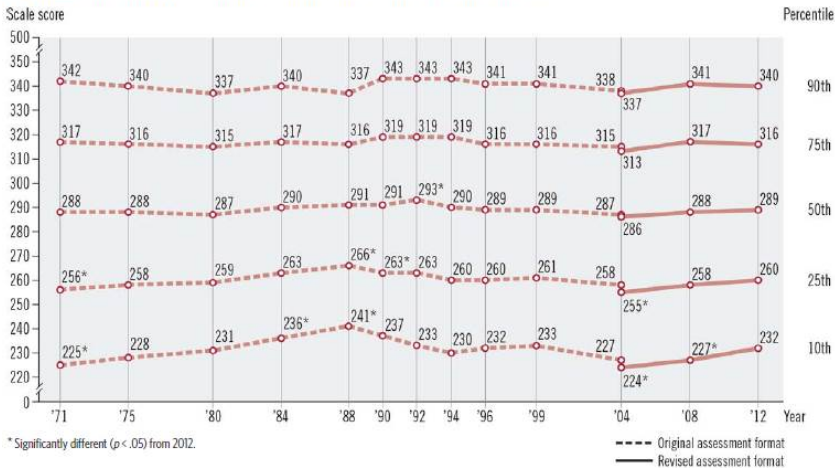
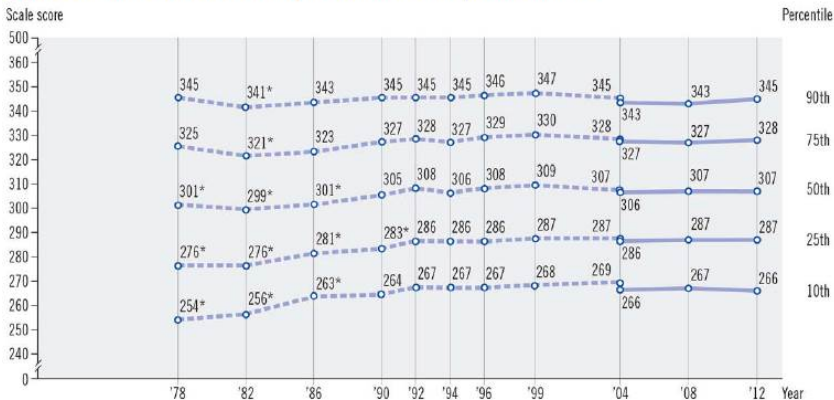


Figure 21. Trend in NAEP mathematics percentile scores for 17-year-old students

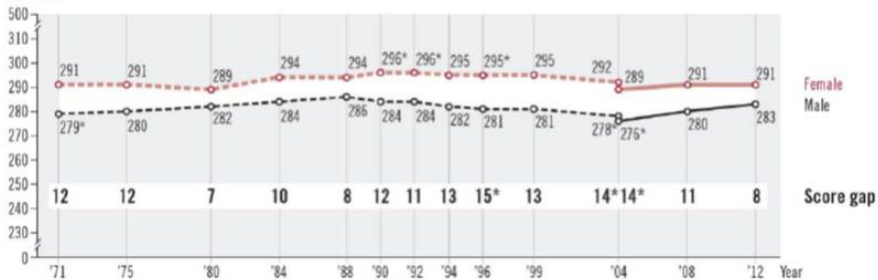


* Significantly different ($p < .05$) from 2012.

--- Original assessment format
 — Revised assessment format

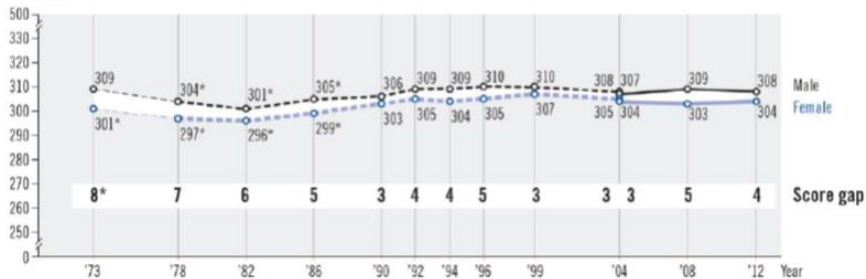
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Scale score



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- Small increase in skills across waves - driven by nonwhites
 - Narrowing of income-achievement gap (Nielsen 2016)

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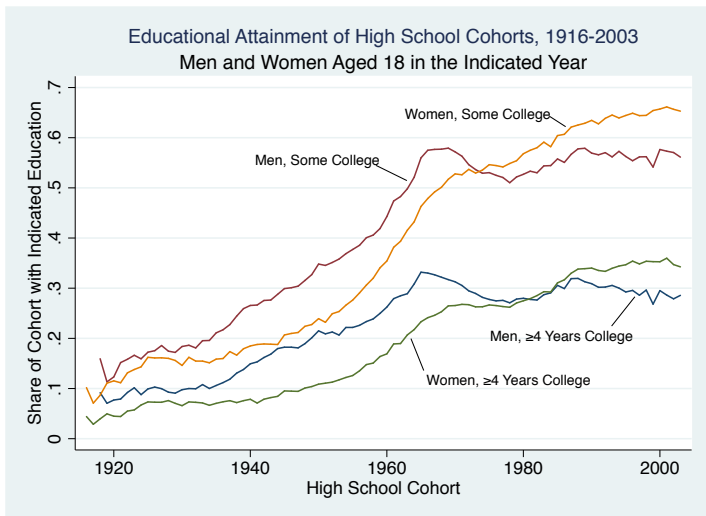
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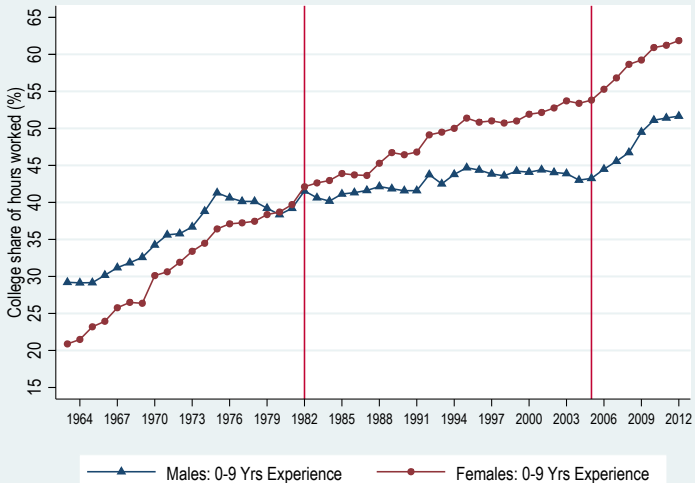
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 - Gaps exist, but tests of academic skills don't accurately measure them
- We know almost nothing about how to measure “non-cognitive” skills, much less trace out a time trend.
 - Circumstantial evidence - gender gaps in behavior, GPA, HS grad vs. GED (e.g. Jacob 2002; Bertrand and Pan 2013; Murphy and Topel 2016)

Educational Attainment by High School Graduates: Cohorts Completing High School 1916–2003



College Share of Hours Worked in the U.S. 1963- 2012: Males and Females with <10 Years of Potential Experience



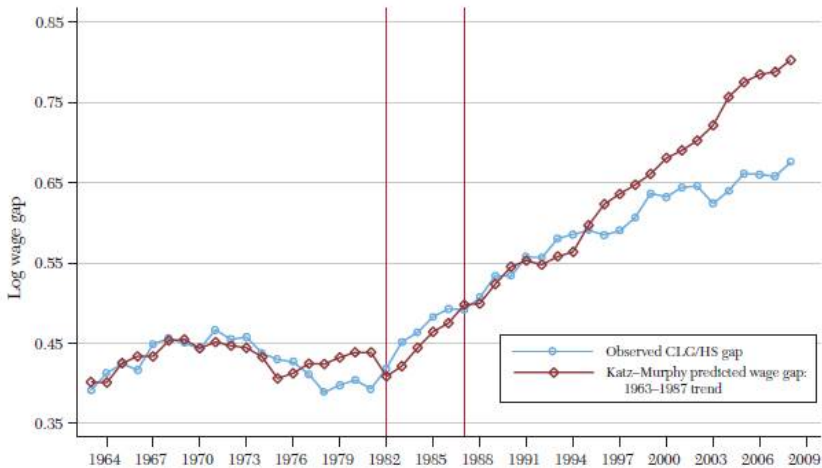
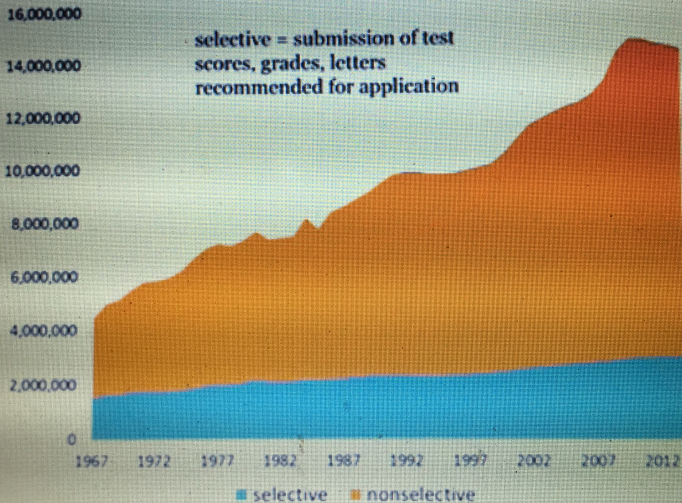


Figure 1. Katz-Murphy Prediction Model for the College-High School Wage Gap

Final DET MIN 17 ...

Growth of Enrollment in the Non-Selective Sector



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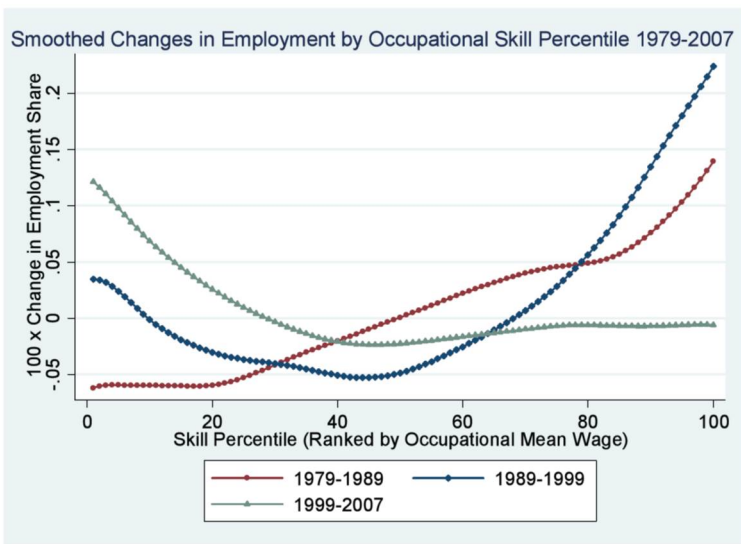
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 - Low returns to non-selective degrees and quality adjustment (Carneiro and Lee 2011; Deming et al 2016)
- Still, increasing college premium implies that *demand* for skills has grown faster than supply

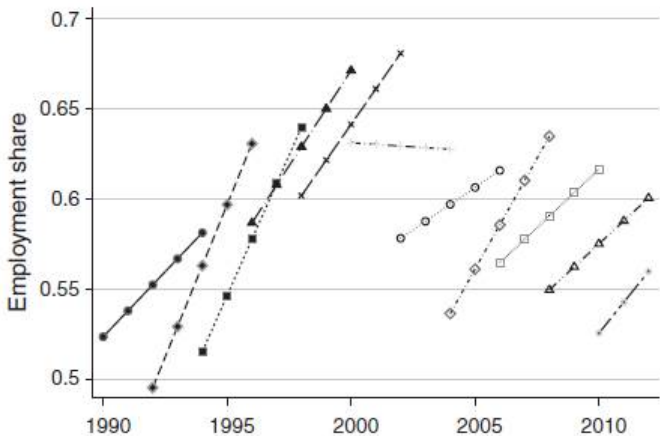
Why have high-skilled jobs stopped growing since 2000?



Source: Acemoglu and Autor (2011)

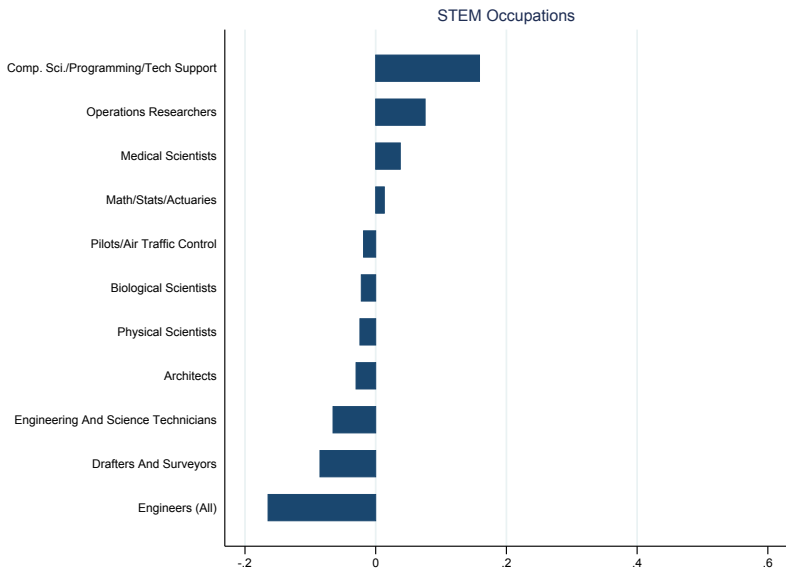
College grads - the leading edge of the labor market....

Panel A. Cognitive employment profiles

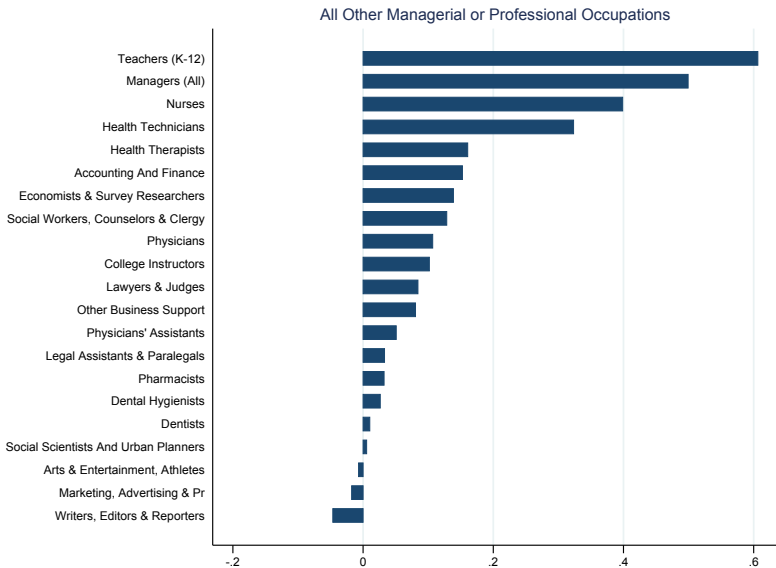


Source: Beaudry, Green and Sand (2014)

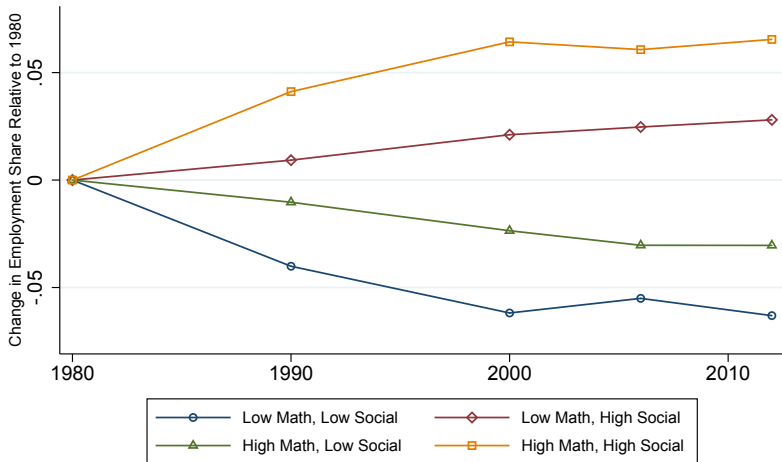
STEM employment growth, 2000-2012



And all other professional occupations....



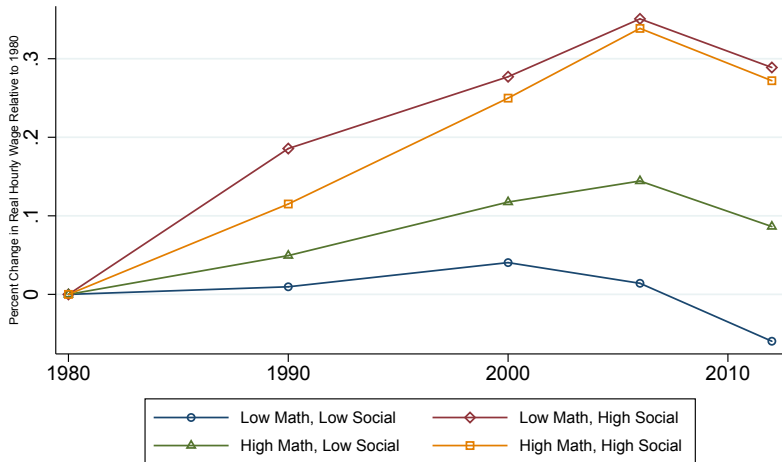
Relative Changes in Employment Share by Occupation Task Intensity 1980 to 2012



Occupational Task Intensity based on 1998 O*NET

Sources: 1980-2000 Census, 2005-2013 ACS

Relative Change in Real Hourly Wages by Occupation Task Intensity 1980 to 2012



Occupational Task Intensity based on 1998 O*NET

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Growing relative demand for “social skills”

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 - ages 25-33, consistent set of skill measures

Table 7 - Labor Market Returns to Skills Across NLSY Waves

	Full-Time Employment		Real Hourly Wage	
	(1)	(2)	(3)	(4)
Cognitive Skills (AQT, standardized)	0.069***	0.045***	3.256***	2.129***
	[0.003]	[0.003]	[0.098]	[0.113]
Cognitive Skills * NLSY97	0.006	0.004	-0.590***	-0.649***
	[0.004]	[0.004]	[0.200]	[0.197]
Social Skills (standardized)	0.007***	0.005**	0.379***	0.305***
	[0.002]	[0.002]	[0.087]	[0.087]
Social Skills * NLSY97	0.023***	0.021***	0.298	0.365*
	[0.004]	[0.004]	[0.197]	[0.193]
Demographics and Age / Year Fixed Effects	X	X	X	X
Years of completed education		X		X
R-squared	0.081	0.094	0.090	0.104
Observations	104,603	104,252	84,971	84,712

Source: Census and ACS

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 - Complementarity (“decline of the nerds”)

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 - Less direct instruction, more flexible and project-based learning

Thanks!

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