

Population Aging, Labor Demand, and the Structure of Wages

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Assessing the Impact of New England's Demographics
November 13, 2009

Background

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What effect will population aging have on wages?

- ▶ Will cohort crowding reduce the relative wages of baby boomer in late career?
- ▶ Potentially important implications for Social Security and for the living standards of baby boomers in retirement.

Previous Research

- ▶ Easterlin(1961)
- ▶ Freeman (1979), Welch (1979)
- ▶ Berger (1985)
- ▶ Card and Lemieux (2001)

Outline

Background

Empirical Patterns

Econometric Specification

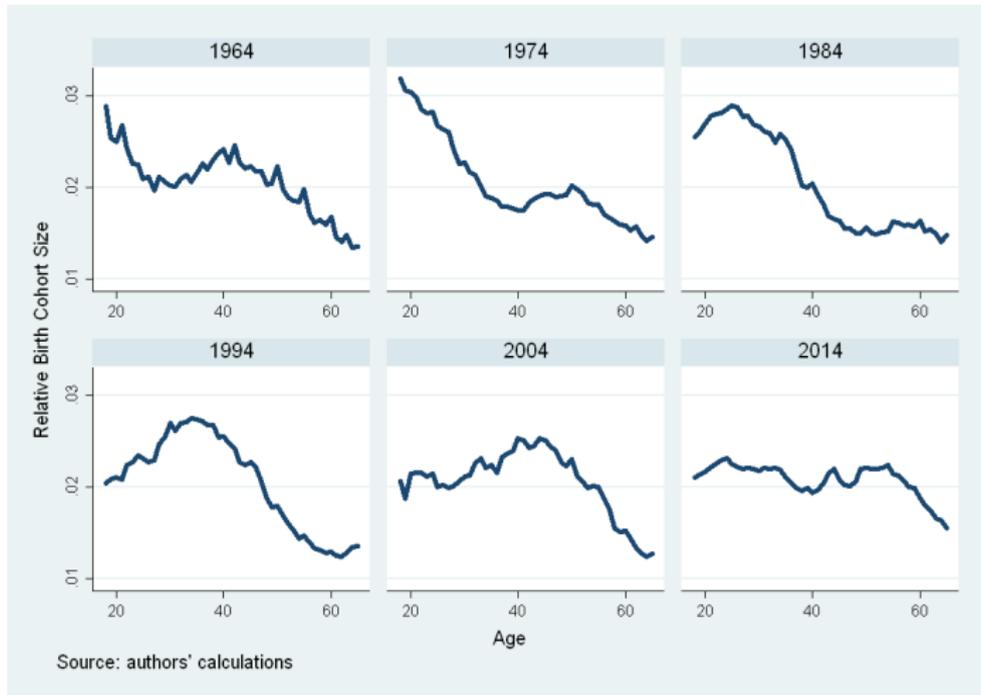
Regression Results

Conclusion

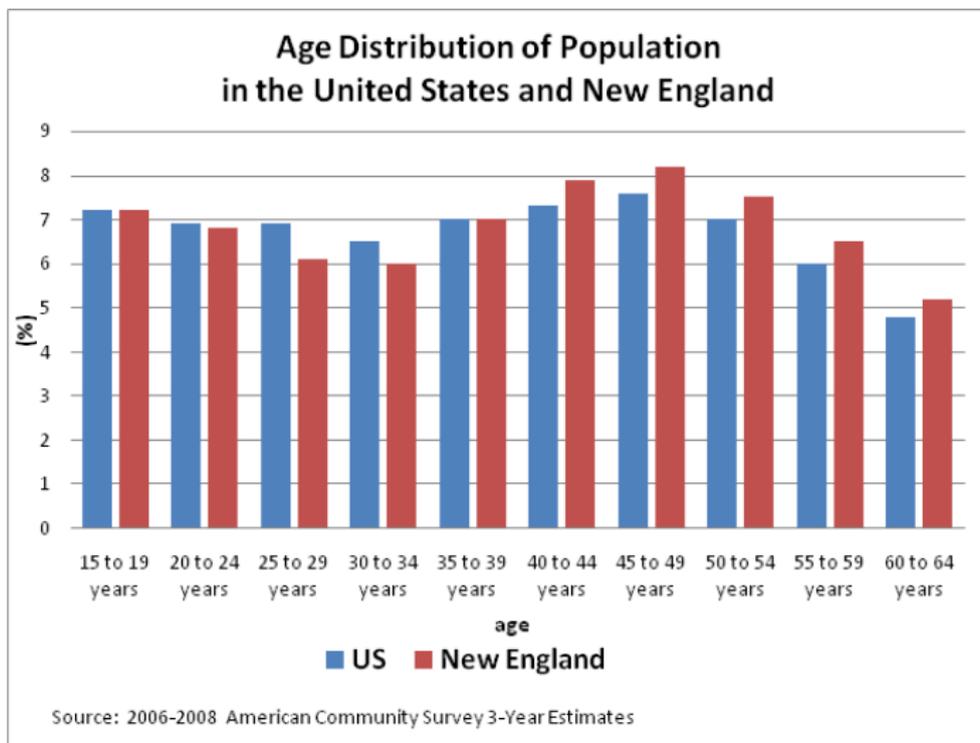
Data

- ▶ March CPS data, 1964-2004, grouped into cells defined by
 - ▶ 5 educational attainment groups
 - ▶ single years of potential labor market experience
 - ▶ calendar years
 - ▶ gender
- ▶ Median average hourly earnings within cells used as wage measure.
- ▶ Labor market experience imputed using synthetic labor force participation histories constructed from decennial census data for each birth cohort.

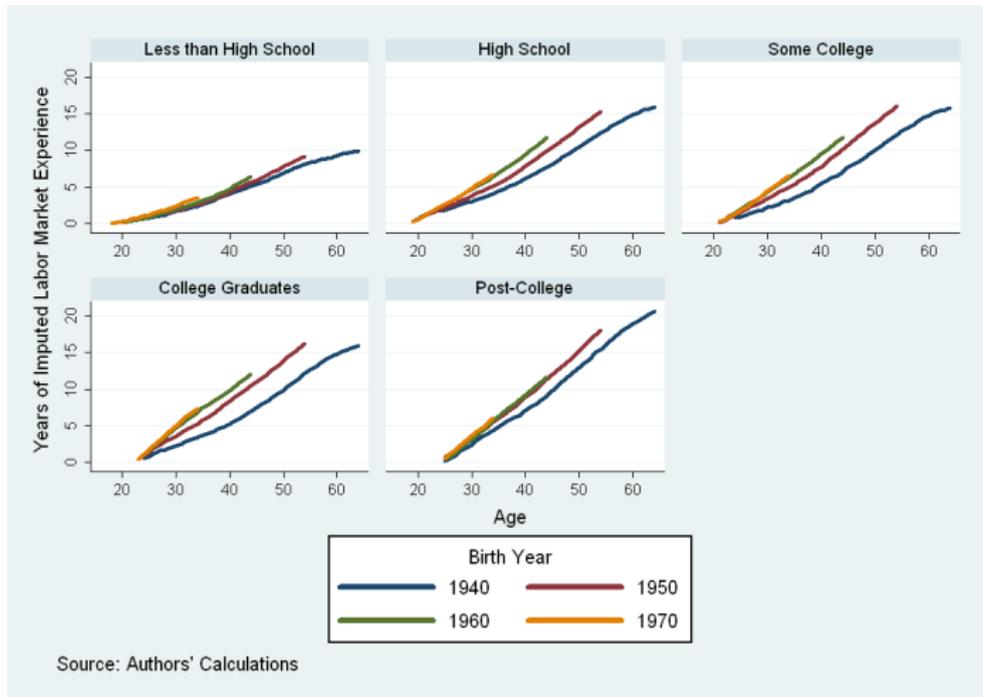
Changes in the Age Distribution



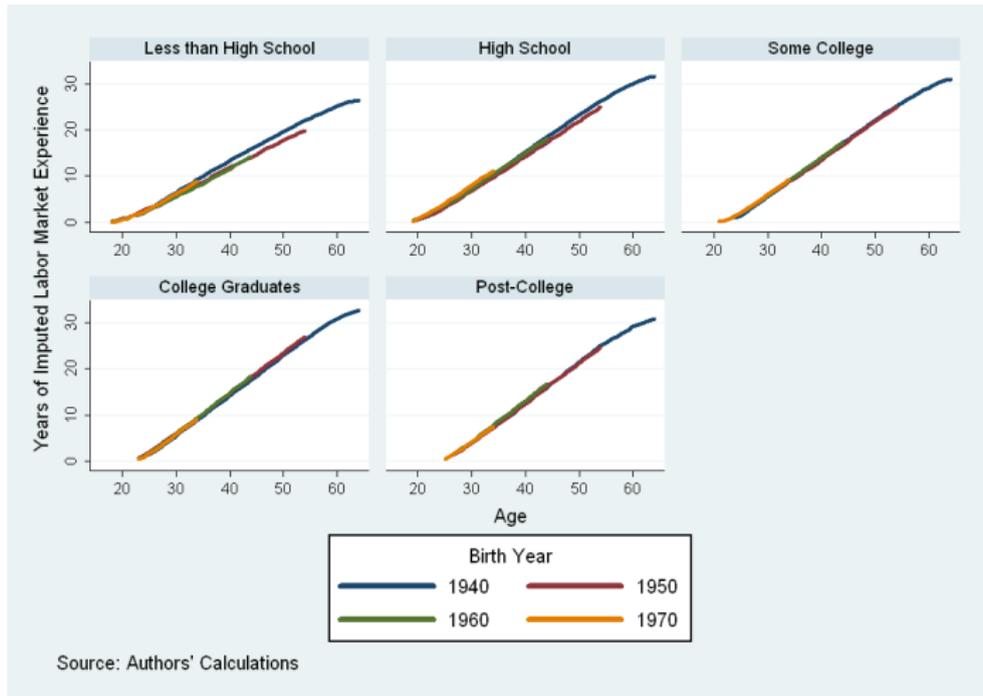
New England compared to the U.S.



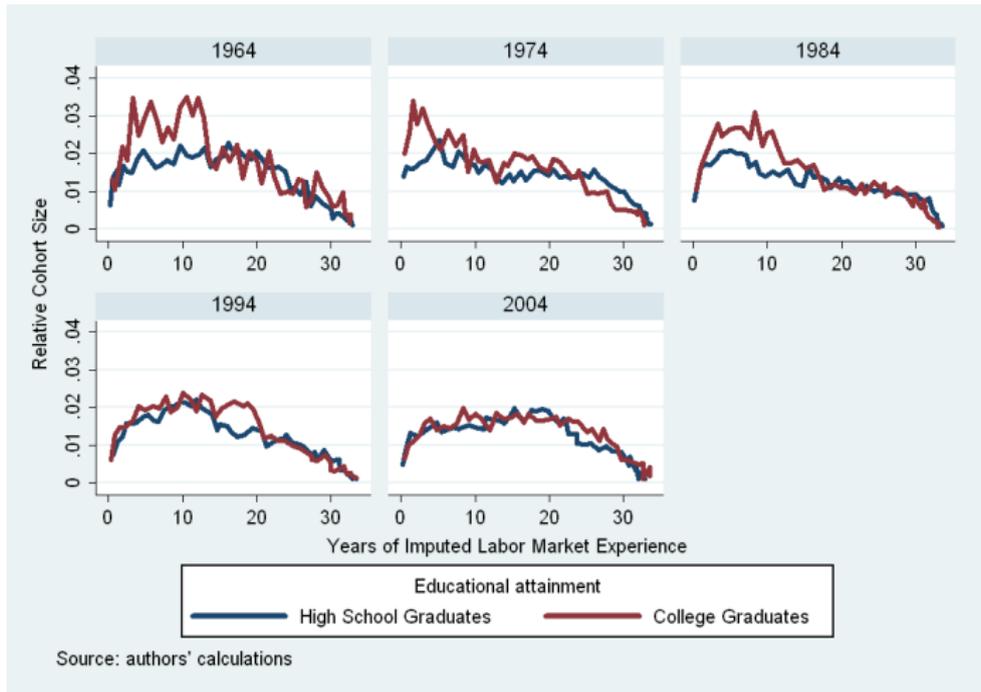
The Evolution of Labor Market Experience for Women



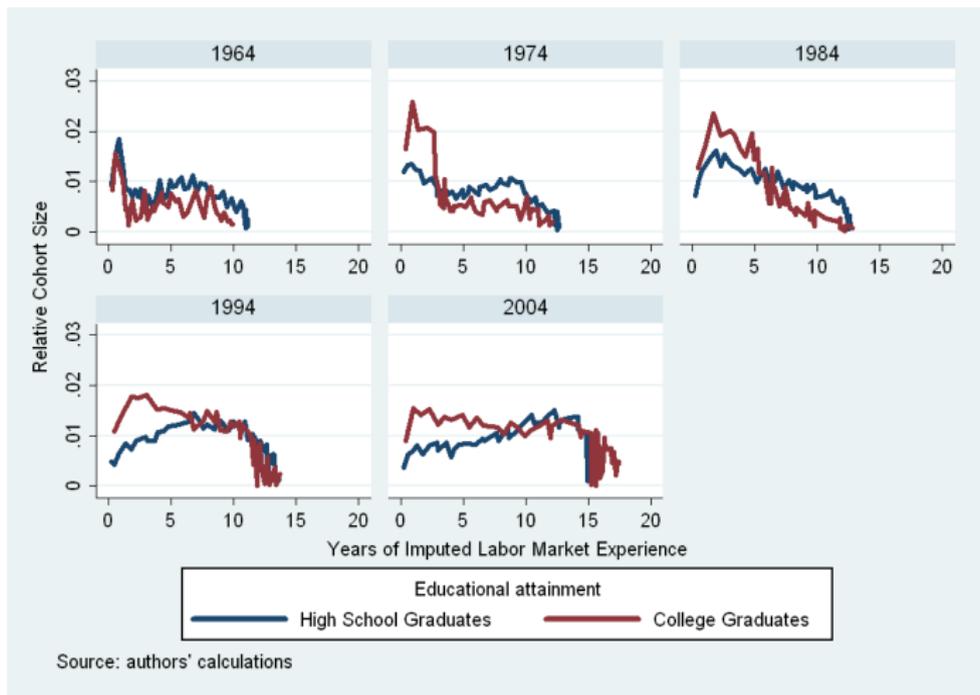
The Evolution of Labor Market Experience for Men



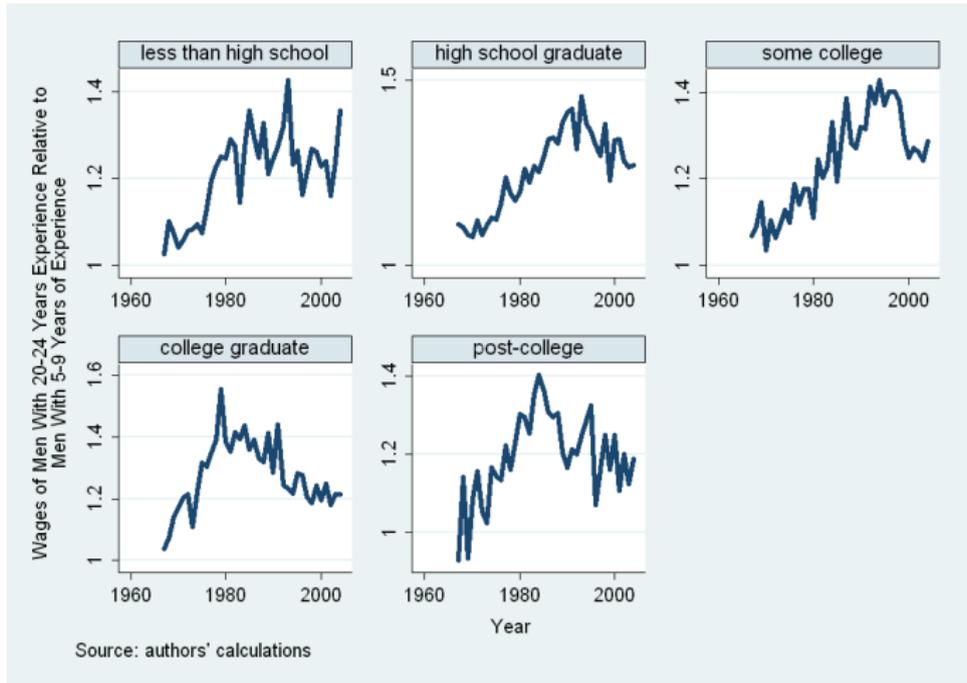
Changes in the Distribution of Male Experience



Changes in the Distribution of Female Experience



Changes in the Experience Premium



Specification of Production

$$Y_t = \left(\sum_j \theta_j E_{jt}^\rho \right)^{1/\rho} \quad (1)$$

t indexes time j indexes educational attainment

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$$E_j = \left(\sum_k \alpha_k E_{jk}^\eta \right)^{1/\eta} \quad (2)$$

k indexes labor market experience

Labor Demand Equations

$$w_{gh} = \frac{\partial Y}{\partial E_{gh}} = \theta_g \alpha_h \left(\frac{E_{gh}}{E_g} \right)^{\eta-1} E_g^{\rho-1} \left(\sum_j \theta_j E^{\rho_j} \right)^{\left(\frac{\rho-1}{\rho} \right)} \quad (3)$$

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$$\begin{aligned} \ln(w_{gh}) = & \ln(\theta_g) + \ln(\alpha_h) + (\eta - 1) \ln\left(\frac{E_{gh}}{E_g}\right) \\ & + (\rho - 1) \ln E_g + \left(\frac{\rho-1}{\rho}\right) \ln\left(\sum_j \theta_j E_j^{\rho_j}\right) \end{aligned} \quad (4)$$

Regression Specification

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- ▶ α_h , represents how productivity varies with experience.
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Estimation

Relative cohort size within educational attainment groups is likely endogenous.

- ▶ Population relative cohort size is used as an instrument for relative cohort size within educational attainment groups.

Labor demand equations estimated for data pooled over men and women, and also separately by gender.

Coefficients on Relative Cohort Size Interacted with Experience

(pooled data for men and women)

	Less Than High School	High School Grad	Some College	College Grad	Post-College
0-3 years	-0.15	-0.10	-0.08	-0.07	-0.05
3-6 years	-0.15	-0.10	-0.08	-0.06	-0.04
6-9 years	-0.15	-0.10	-0.08	-0.05	-0.03
9-15 years	-0.15	-0.10	-0.09	-0.05	-0.04
15+ years	-0.15	-0.11	-0.09	-0.06	-0.04

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3-6 years	-0.15	-0.10	-0.08	-0.06	-0.04
6-9 years	-0.15	-0.10	-0.08	-0.05	-0.03
9-15 years	-0.15	-0.10	-0.09	-0.05	-0.04
15+ years	-0.15	-0.11	-0.09	-0.06	-0.04

Estimated cohort crowding effects for highly educated groups would likely have been larger if changes in fringe benefit coverage were taken into account.

Coefficients on Relative Cohort Size Interacted with Experience

(separate equations for men and women)

	Less Than High School	High School Grad	Some College	College Grad	Post-College
0-3 years					
men	-0.10	-0.11	-0.09	-0.06	-0.05
women	0.08	-0.10	-0.08	-0.06	-0.03
3-6 years					
men	-0.10	-0.11	-0.09	-0.06	-0.06
women	0.09	-0.10	-0.07	-0.05	-0.02
6-9 years					
men	-0.10	-0.11	-0.09	-0.06	-0.06
women	0.09	-0.10	-0.08	-0.05	-0.01

Coefficients on Relative Cohort Size Interacted with Experience

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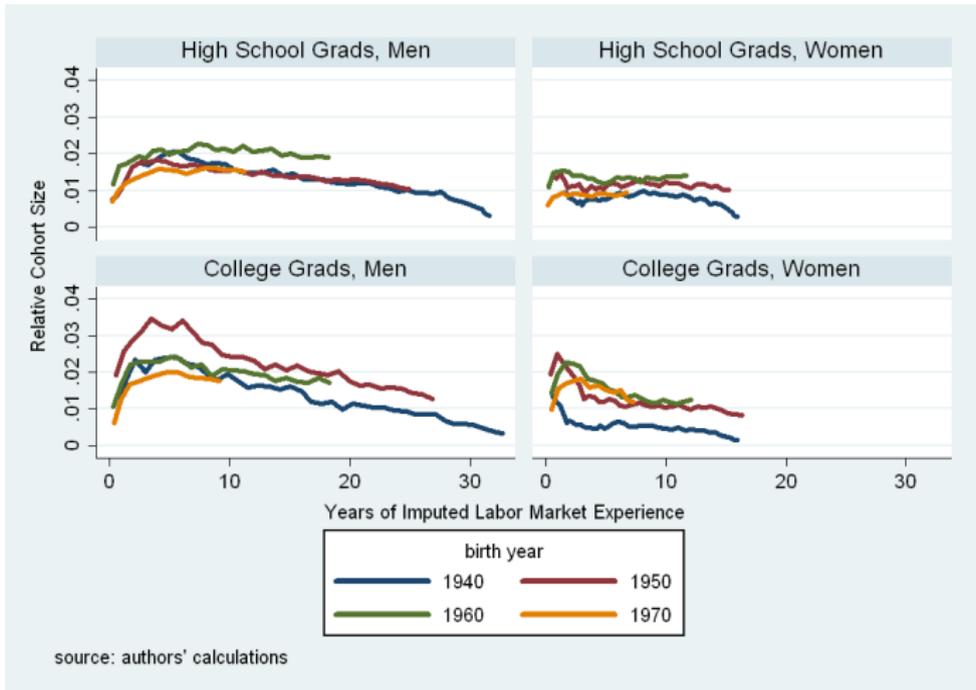
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men	-0.10	-0.11	-0.09	-0.06	-0.06
women	0.09	-0.10	-0.07	-0.05	-0.02
6-9 years					
men	-0.10	-0.11	-0.09	-0.06	-0.06
women	0.09	-0.10	-0.08	-0.05	-0.01

Coefficients on Relative Cohort Size Interacted with Experience

(separate equations for men and women - continued)

	Less Than High School	High School Grad	Some College	College Grad	Post-College
9-15 years					
men	-0.10	-0.11	-0.09	-0.07	-0.07
women	0.12	-0.10	-0.08	-0.05	-0.01
15+ years					
men	-0.15	-0.10	-0.08	-0.08	-0.08
women		-0.10	-0.08	-0.04	-0.02

Evolution of Relative Cohort Size



Coefficients on Labor Market Experience

(pooled data for men and women)

	Less Than High School	High School Grad	Some College	College Grad	Post- College
0-3 years	0.12	0.12	0.15	0.15	0.14
3-6 years	0.05	0.08	0.06	0.07	0.09
6-9 years	0.04	0.05	0.05	0.05	0.04
9-15 years	0.02	0.04	0.04	0.04	0.03
15+ years	0.00	0.01	0.01	0.01	0.02
Birth year					
men	0.00	0.01	0.02	0.01	0.02
women	0.01	0.02	0.02	0.01	0.02

Coefficients on Labor Market Experience

(pooled data for men and women)

	Less Than High School	High School Grad	Some College	College Grad	Post- College
0-3 years	0.12	0.12	0.15	0.15	0.14
3-6 years	0.05	0.08	0.06	0.07	0.09
6-9 years	0.04	0.05	0.05	0.05	0.04
9-15 years	0.02	0.04	0.04	0.04	0.03
15+ years	0.00	0.01	0.01	0.01	0.02
Birth year					
men	0.00	0.01	0.02	0.01	0.02
women	0.01	0.02	0.02	0.01	0.02

Cross-sectional earnings profiles will combine effects of structural earnings profiles, cohort-size effects, and vintage effects.

Conclusion

Relative cohort size effects are important.

- ▶ Cohort crowding does not diminish with labor market experience.
- ▶ The magnitude of the cohort size effect is similar for men and women.
- ▶ The cross-sectional return to labor market experience depends on the distribution of cohort sizes.