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I. INTRODUCTION

The United States, along with virtually all other developed countries, is on the cusp of a radical transformation of its labor markets. As many have documented (see, for example, Little and Triest, 2001), the growth rate of the working age population has already dropped substantially, and as the Baby Boomers start to enter normal retirement ages the elderly dependency ratio (the ratio of those over 65 to the population aged 15 to 65) will increase dramatically. As a consequence, labor supply may grow at a slower rate than labor demand, putting upward pressure on wages and creating tight labor market conditions. Often overlooked, however, is the fact that the age distribution of the labor force will also be changing dramatically. According to Census Bureau projections (2000), the traditional working age (16-64) population of the U.S. will increase by just 13 percent between 2001 and 2025, but the population aged 60 to 64 will increase by 90 percent. So, although there may be a shortage of workers overall, there will be a relative glut of older workers.

The effect of these changes on the labor market opportunities of older workers is not immediately obvious. Although labor demand conditions are likely to be favorable for workers in general, the large size of the Baby Boom cohort compared to younger cohorts may place the Baby Boomers at a relative disadvantage. The same crowding effect that depressed wages of the Boomers when they were young (Welch, 1979 and others) may continue to haunt them as they enter their 60s. Although there may be upward pressure on wages in general, the relative glut of older workers may depress their wages relative to those of their younger colleagues.

What happens to the wages of older workers, and the structure of wages more generally, as the population ages has potentially important implications for public policy. Many analysts are convinced that lengthened work lives must be a key part of finding a solution to providing for the consumption needs of the old as the traditionally defined dependency ratio increases. The efficacy of this solution depends, in part, on the wage rates which older workers command in labor markets. If the wages of older workers fall as their ranks become crowded with the baby boomers, then continued work may seem like a less desirable option to those contemplating retirement, and the earnings of those who do continue working will not go as far in financing their consumption.

How the wage structure changes as the baby boomers age also has potential implications for forecasting future payroll tax revenue and Social Security benefits. To the extent that the boomers' wages have been depressed due to cohort size effects, then the exit of the boomers from the labor market may affect aggregate earnings growth. More generally, the earnings trajectories of those currently in the middle of their careers, as well as those just starting out, will likely be affected by changes in the age distribution of the population. And changes in earnings trajectories will, of course, result in changes in payroll tax payments and eventual Social Security benefits.

This paper empirically investigates the effects of changes in the age distribution of the working age population on the structure of wages. In particular, we examine the hypothesis that cohort crowding not only affects wages of large cohorts as they enter the labor market but continues to exert downward pressure on the wages of large cohorts as they approach retirement age. Overall, we find strong support for this hypothesis. The size of one's birth cohort affects wages throughout one's working life, with members of

relatively large cohorts earning a significantly lower wage than members of smaller cohorts at all stages of their careers. Our results suggest that cohort size effects are quantitatively important, and should be incorporated into public policy analyses.

II. PREVIOUS RESEARCH

There is a sizable research literature examining the effect of changes in the age distribution of the labor force on the structure of wages. The unifying idea underlying this literature is that workers with different amounts of labor market experience are imperfect substitutes in production. Workers acquire human capital through on-the-job training and through learning-by-doing, and so more experienced workers will tend to perform somewhat different tasks than do younger workers, and will tend to play roles different from those of younger workers within firms' organization of production. As the supply of labor with a given level of experience increases, the wages of workers in that group will tend to decrease relative to those with different experience levels. The smaller the degree of substitutability between workers of different experience levels, the greater the change in relative wages that will result from a given change in relative supplies. Variance over time in the relative supplies of workers at given levels of experience is essential for estimating the degree of substitution, and so most of the studies on this topic are based on an examination of how relative wages changed as the baby boom entered the labor market, with the more recent studies utilizing data capturing the movement of the older boomers into early middle age. Our research builds on this work, using more recent data than that available to previous researchers. By utilizing wage data extending through 2003, we observe the effects of the movement of the oldest baby boomers through the bulk of their careers, extending to age 57. The added variance in relative

cohort sizes associated with the recent data is very useful in empirically identifying the effects of changes in the age distribution, and provides direct evidence of the impact of cohort crowding on the wages of the baby boomers as they approach retirement.

An early, and very influential, empirical examination of the effect of the baby boom on relative wages is Welch's (1979) famous study of "The Baby Boom's Financial Bust." Using data from the March income and demographic supplements of the Current Population Survey (CPS) from 1968 to 1976, he finds that the wages of young white men were reduced relative to those of older men as the baby boomers started entering the labor market. Noting that the range of potential substitution possibilities is too large to be investigated without some structure, Welch imposes the restriction that substitution between workers with different degrees of educational attainment is independent of their experience levels. Welch estimates the effect of own cohort size on wages allowing for an interaction between cohort size and labor market experience. The resulting econometric estimates suggest that the relative wage reductions associated with being a member of a large cohort are concentrated in the early years of workers' careers.

A concurrent study by Freeman (1979) reaches a similar conclusion – relative wages of young workers were depressed due to cohort crowding effects. Freeman finds that the effect of the entry of the baby boom into the labor market on the premium paid to older workers was especially large for college educated men.[1]

Berger (1985) generally follows Welch's (1979) methodology, but uses additional years of data and a somewhat less restrictive econometric specification. Like Welch, Berger finds that entry-level wages are reduced by cohort size, but unlike Welch, his

[1] Somewhat similarly, Stapleton and Young (1984) find that the decline in the relative wage of young men is limited to those with a college education.

estimates indicate that the cohort size effect grows with labor market experience. Subsequent research studies have also supported the finding that older workers and younger workers are imperfect substitutes in production, and so changes in the age distribution of the labor force induce changes in the relative wages of young and old workers.[2]

III. EMPIRICAL PATTERNS

Following most previous research on this topic, we use data from the annual income and demographic supplement to the March Current Population Survey (CPS). Unlike previous researchers, who observed data for a more limited span of time, we use data for the years 1964-2004. The March supplement survey collects income information for the preceding year, so our wage data span 1963 through 2003.

At this stage of our research, we have analyzed the relationship between cohort size and wages only for men. We aggregate the data into groups defined by educational attainment and potential labor market experience. Our analysis categorizes individuals into five educational attainment categories: less then high school graduation, high school graduates, some college (1 to 3 years completed), four year college graduates, and those with post-college education. Actual labor market experience is not included in the data, so following previous researchers we calculate potential labor market experience based on age and educational attainment: age – 17 for those who do not complete 12^{th} grade,

[2] Among the other studies which have focused on the effect of the age distribution on relative wages are Berger (1983), Berger (1989), and Macunovich (1999). Katz and Murphy (1992) and Murphy and Welch (1992) examine the interaction of changing labor supply with shifts in labor demand on the structure of wages. Card and Lemieux (2001) study the effect of changes in relative labor supplies on how the college wage premium varies by age.

age-18 for high school graduates, age – 20 for those with some college, age – 22 for college graduates, and age – 24 for those with graduate education.[3]

Our wage measure is based on individual average hourly earnings, which is annual wage and salary income divided by the total hours worked. Total hours worked per year is computed by taking the product of weeks worked last year and usual hours worked per week.[4] The median of individual hourly wages within education-experience groups for each year is used as the group wage measure.[5]

Figure 1 shows that striking changes have occurred in the age distribution of the working age (here defined as ages 18 through 65) male population over the past 40 years.[6] Each panel of the figure shows the frequency distribution of the working age population for a given year. A growing population will be associated with a downward sloping line, while a stable population will produce a horizontal line (with each annual birth cohort making up roughly 2.1 percent of the working age population). Barely discernable in 1964, the emergence of the younger baby boomers into their working years is very apparent in the graph for 1974, where young people greatly outnumber the middle aged and old. In 1984, when the youngest baby boomers turned 20, one can see the start

[3] This scheme would not work as well for women. Because female labor force participation was trending upward over much of the period for which we have data, the relationship between potential labor market experience and average actual labor market experience would also have a pronounced trend.

[4] Because the 1964-1975 CPS surveys report weeks worked in classes, the number of weeks worked for those years was set to the mean of the interval. For 1964-1975, usual hours per week are not directly reported, but there is a variable indicating whether or not the sample member worked less then 35 hours per week. Usual hours per week for these years were imputed using the same regression based procedure previously used by Murphy and Welch (1992).

[5] Experience groups are single years of potential labor market experience.

[6] The plotted distributions can be interpreted as sample density functions for the distribution of men aged 18 to 65. The age distributions were calculated by first summing the CPS sample weights over all men in each age-year category, and then normalizing by dividing the age-year weight sums by the sum of the weights for all men aged 18 to 65 in the corresponding year. A 5 year (over age cells within the same year) centered moving average (with weights of 1/9, 2/9, 3/9, 2/9, and 1/9) was calculated to smooth over sampling variation. The 2014 data is from U.S. Census Bureau projections of the population by age and gender.

of a hump shaped distribution forming as the post-boom "baby bust" generation starts to enter their working years. The hump moves to the right between 1984 and 1994, producing an unusual situation where the middle-aged outnumber those in both older and younger cohorts.

The 2004 age distribution looks somewhat similar to the 1964 distribution. However, unlike 1964, when the baby boomers were about to enter the labor force, the working age population distribution will increasingly approximate a uniform distribution over the next few years. The 2014 panel, which is based on U.S. Census Bureau population projections, shows a population that is fairly evenly distributed over ages, with only a modest downward tilt associated with people in their 50s and 60s. The days of there being a large ratio of old to young workers seem to be over for good.

Following Welch (1979), researchers have generally assumed that substitution possibilities between workers of different experience levels are greater within educational attainment groups than they are between groups. So, changes in the age distribution of workers within educational attainment groups are especially relevant for analyzing the changes in the relative supplies of labor that are most likely to affect relative wages. Figure 2 is similar to Figure 1, but shows the frequency distribution of potential labor market experience separately for male high school graduates and college graduates.[7] The

[7] The plotted distributions can be interpreted as the sample density functions for the distribution of potential labor market experience within educational attainment groups for experience values greater than 0 and less than 43 years. In producing the plots for 2014, it was necessary to combine the Census Bureau population projections by gender and age with an imputed distribution of educational attainment. In imputing educational attainment, we used the distribution of educational attainment for males by age averaged over the 2002-2004 March CPS files to produce a benchmark for the current (2004) distribution of educational attainment for each single year of age. We assume that in 2014 the distribution of educational attainment for people less than 30 years old will be the same as in our benchmark distribution for each single year age group. For birth cohorts who were no more than 30 years old in 2004, we assume that their distribution of educational attainment in 2014 will be the same as the distribution for 30 year olds in the benchmark. For birth cohorts who were older than 30 in 2004, we assume that their distribution of educational attainment in 2014 will be the same as the distribution of educational attainment for their birth cohort in the benchmark.

patterns in Figure 2 differ from Figure 1 primarily because of changes in average levels of educational attainment over time.[8] As a result, the impact of the baby boom on the age distribution will differ across educational groups. Because there was a large increase in the percentage of men obtaining college degrees during this period, the entry of the baby boom had a larger initial impact on the age distribution of college educated men than it did on male high school graduates – the oldest baby boomers were not only much larger in overall numbers than were earlier birth cohorts, but were also much more likely to attend and complete college. The relative cohort size of the oldest baby boom college graduates then decreased over time as the pre-baby boom cohorts were replaced by the younger, even more highly educated, baby boomers. In recent years, the age distributions of the high school graduates and college graduates have converged, and over the next decade both will be approaching a uniform distribution.

That cohort size has a large impact on the wage rates of older workers relative to younger workers is evident in Figure 3, where the solid lines display the median wage rates of full-time male workers with 31 to 35 years of potential labor market experience relative to the median wage rates of those with 6 to 10 years of potential labor market experience. As previous researchers have noted, wages of older workers increased relative to younger workers as the baby boomers entered the labor market. With the more recent data available to us, it is apparent that the reverse is occurring as the baby boomers age. The premium paid to older workers relative to younger workers has decreased within all educational groups except post-college graduates. The decrease in the

[8] A second reason that the patterns in Figures 1 and 2 differ is that the horizontal axes in Figure 2 measure potential labor market experience rather than age, and the age at which potential experience starts increases with educational attainment.

experience premium has been particularly sharp, and began earliest, for college graduates, the group for which the initial change in the experience distribution was especially strong as the oldest baby boomers entered the labor market.

IV. REGRESSION RESULTS

The patterns in Figures 2 and 3 are highly consistent with the distribution of experience within educational groups being one determinant of the wages of more experienced workers relative to less experienced workers. This section presents the results of wage regressions which quantify the effects of changes in the experience distribution on relative wages.

The dependent variable for all of the regressions is the natural log of the median real wage of full-time, full-year male workers within cells defined by single years of potential labor market experience, the five educational attainment groups defined above, and single calendar years.[9] The independent variables are divided into three groups. First there is a five segment spline for years of potential labor market experience, with kink-points at 5, 10, 20, and 30 years of potential labor market experience. The coefficients on the experience spline terms can be interpreted as the annual rates at which real wages increase over the corresponding ranges of labor market experience.

The second set of variables controls for changes in the distribution of potential labor market experience. We use the measure of relative cohort size plotted in Figure 2 as our main control. This measure is interacted with five indicator variables corresponding to the potential experience ranges associated with the five segments of the

[9] We define full-time, full-year workers as those who report working at least 45 weeks in the previous year, and report that they normally work at least 35 hours per week. We use the CPI-W series to express

labor market experience spline.[10] The coefficients on the relative cohort size-experience indicator interaction variables can be interpreted as the percentage increase in the real wage which is associated with a 1 percentage point increase in relative cohort size.

The third set of variables, a time trend spline with kink points at five year intervals, controls for growth over time in real wages conditional on educational attainment and potential labor market experience. The time trend spline coefficients can be interpreted as the rate of real wage growth during the corresponding period, holding potential experience and educational attainment constant.

Table 1 presents the results of the regressions estimated using ordinary least squares (OLS), and Table 2 displays the results from instrumental variables (IV) estimation. Educational investment decisions may be affected by changes in relative wages induced by demographic change, and so it may be incorrect to treat relative cohort size within educational attainment groups as exogenous. In addition, sampling error may be a significant factor in measured changes in relative cohort size over time. To address these problems, in the instrumental variables regressions we use relative cohort size defined over all educational groups with the same birth year as an instrument for relative cohort size defined within educational groups. Overall relative cohort size is very likely to be exogenous in this context, and has smaller sampling variation due to the larger number of observations used in its estimation. However, one can argue that it belongs in the regression itself. This would be true, for example, if the substitution possibilities between workers with different levels of educational attainment vary with years of labor

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nominal wage rates in 2004 dollars. The median, rather than the mean, of individual wages is used primarily to lessen the impact of outliers.

[10] To smooth over sampling variation, cohort size is calculated as a 5 year centered moving average, with weights equal to 1/9, 2/9. 1/3, 2/9, and 1/9.

market experience. To the extent this is the case, the instrumental variables coefficients may be partly reflecting the direct contribution of the overall relative cohort size variables.

The relative cohort size coefficients are generally negative and significant in both the OLS and IV estimates, indicating that increases in relative cohort size are associated with decreases in wages. The two major exceptions are for the post-college OLS estimates, and the high school non-graduates IV estimates. In the case of the post-college OLS estimates, a possible explanation is complementarity between college-educated and post-college educated workers combined with endogenous sorting of the younger baby boomers into graduate education. The IV relative cohort size coefficients for the post-college group are negative and statistically significant, suggesting that endogeneity is playing a role in the OLS estimates.

In the case of the high school non-graduates IV estimates, the explanation is clear. Because there has been a steady drop in the percentage of students failing to complete high school, the overall population relative cohort size instrument is only very weakly correlated with relative cohort size within the high school non-graduate group. The implicit first stage regression has little explanatory power, and the IV estimates are essentially non-informative.

Because endogeneity of the experience distribution within education groups seems likely, we generally prefer the IV estimates to the OLS estimates and will focus on them in discussing the results. In these estimates, the depressing effect of relative cohort size on wages generally does not decrease with labor market experience. For high school graduates, the effect of cohort size starts relatively small (a one percentage point increase

in relative cohort size decreases wages by 2.8 percent for workers with five or fewer years of experience), but then increases fairly steadily with experience (to 7.0 percent for those with 31 or more years of experience). For college graduates, the effect of cohort size is initially much larger than it is for high school graduates (6.4 percent for men with five or fewer years of experience), but it increases less with experience (it increases somewhat erratically to 7.8 percent for men with more than 30 years of experience). The strongest effect is for workers with post-college education, where a one percentage point increase in relative cohort size is always associated with a decrease in wages in excess of 12 percent.

The labor market experience spline coefficients generally imply that although real wages initially increase rapidly with labor market experience, there is a sharp drop in the rate of growth as experience increases. Real wage rates level off after twenty years of experience, and then decrease somewhat after 30 years of experience.

The time trend coefficients are interesting because they reflect the rates of real wage growth for men over five year intervals conditional on years of labor market experience, relative cohort size, and an implicit interaction between educational attainment and both labor market experience and relative cohort size. The estimated coefficients generally increase with educational attainment within the five year intervals, reflecting the widely documented increase in the economic return to educational attainment. A stark exception to this tendency is the second half of the 1970s, when the surge of recent college graduates into the labor force temporarily decreased the economic return to college.

How changes in the distribution of labor market experience affect the life-cycle wage profile of a given birth year cohort is not immediately obvious from the regression results because the relative size of a given birth cohort changes over time. This fact is illustrated in Figure 4, which shows relative cohort size over time for four birth cohorts: those born in 1940, 1950, 1960, and 1970.

Looking first at the data for college graduates shown in the bottom panel of the figure, one sees that the baby boomers born in 1950 were an exceptionally large fraction of the college educated labor force when they first entered the labor market, but their relative size decreased over time as even larger cohorts from the middle years of the baby boom subsequently entered their working years. Those born relatively late in the baby boom, in 1960, were a smaller fraction of the labor force when they first entered the labor market than the early baby boomers were at the same stage of their careers. As the baby boom matured and increasingly made up the bulk of the college educated work force, the relative size of any given baby boom birth year cohort shrank. This is reflected in the gradual convergence of the lines for the 1950 and 1960 birth cohorts in the figure. Note that the lines for the two baby boom years are always well above that for the pre-baby boom 1940 birth cohort. The post-boom 1970 cohort is also smaller than the baby boom cohorts.

The patterns are somewhat different for high school graduates. Because of changes in the distribution of educational attainment over time, the 1960 birth cohort was a larger fraction of the high school educated labor force at all levels of labor market experience than was the 1950 birth cohort. Unlike the case of college educated men, where the early baby boomers had exceptionally high values of relative cohort size, the

later baby boomers were a larger fraction of the high school educated labor force than were the early baby boomers at all levels of labor market experience.

Table 3 shows the effects of relative cohort size on wage rates. Each row in the table shows the predicted (from the IV regression estimates) percentage change in a birth cohort's wage rates (at 1, 10, 20, and 30 years of labor market experience) that results from their actual relative cohort size being different from the 1950 birth cohort's relative size at the same levels of labor market experience.[11]

For college educated men, the large size of the 1950 cohort is predicted to be associated with substantially depressed wages relative to those of other cohorts (holding general productivity levels constant). The 1950 cohort's wages upon entry into the labor force would have been 18 percent higher if their relative cohort size was the same as that of the 1970 cohort upon its entry to the labor force. The effect of differences in relative cohort size on the wages of the 1950 cohort relative to the 1970 cohort decreases with years of experience; after 10 years of potential experience, the 1950 cohort's wages are predicted to be 9 percent lower than they would have been if the 1950 cohort had the 1970 cohort's relative size.

It is important to recognize that the reason that the effect of the 1950 cohort's large size on its wages decreases with years of labor market experience is largely because of changes over time in the 1950 cohort's relative share of the college educated labor force. The relative cohort size coefficient for 6-to-10 years of experience is larger in magnitude than the coefficient for 1-to-5 years of experience. But as Figure 4 shows, the

[11] Each cell in the table is calculated by first subtracting the 1950 birth cohort's relative size from the relative cohort size of the other birth cohorts for the four different values of labor market experience and two education levels shown in the table. The differences in relative cohort size were then multiplied by the IV relative cohort size regression coefficients for the corresponding years of labor market experience. The

relative size of the 1950 cohort is much larger at 1 year of experience than it is at 10 years of experience. The effect of a given increment in relative cohort size on wages does not generally decrease with experience, but the pattern of changes in birth rates results in attenuation of the relative cohort size differentials as the 1950 cohort ages.

The predicted wage effects shown for high school graduates in the top panel of Table 3 are smaller than those shown in the bottom panel for three reasons. First, the 1950 birth cohort used in computing the comparisons does not have the largest relative cohort size values among the seven birth cohorts being compared. As the top panel of Figure 4 shows, the1960 birth cohort was a larger fraction of the high school educated labor force at the given levels of labor market experience than was the 1950 cohort. As a result, wages for high school graduates born in 1950 would have been lower than they actually were if the 1950 cohort had the same profile of relative cohort size as the 1960 cohort.

Second, as the top panel of Figure 4 shows, there is generally less variance in relative cohort size conditional on years of experience for high school graduates than there is for college graduates. Third, and most important, the relative cohort size coefficients are smaller in magnitude for the high school graduate regression than they are for the college graduate regression.

The cohort size effects have interesting implications for how one interprets the relationship between wages and labor market experience. The regression coefficients for the labor market experience spline reflect what the wage-experience profile would be for a birth cohort which has a constant relative size (within education groups). In a growing

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gaps in the table (aside from the line for 1950) are due to the limited range of experience values for given birth cohorts in out dataset. A future draft of the paper will use supplemental data to fill in these gaps.

population, a cohort's relative size will shrink with age. If the relative cohort size coefficients were negative and constant over experience levels, this would result in any given cohort's wage-experience profile being steeper than the experience spline coefficients indicate. A decrease in the population growth rate would eventually flatten the wage-experience profile, producing cohort wage-experience profiles closer to that implied by the experience spline coefficients. At a given point in time, the cross-sectional wage-experience profile will reflect the pattern of relative cohort sizes experienced by the birth cohorts in the labor force at that time, and will generally differ from both any given cohort's wage-experience profile and from the constant relative cohort size wage-experience profile implied by the experience spline coefficients.

V. CONCLUSION

The age distribution of the working age population is becoming flatter, and will soon approach a uniform distribution. The historical pattern of there being a relatively large number of inexperienced young people working alongside a relatively small number of older more experienced workers is being replaced by a labor force where older and younger workers are roughly equal in number. The change in the relative supplies of older and younger workers can be expected to change the experience premium which older workers can command in the labor market.

The results reported in this paper are broadly consistent with earlier research on the effect of demographic change on relative wages. Large cohorts depress their own wages relative to those of other cohorts in the labor force at the same time. The increase in the cross-sectional labor market experience premium induced by the baby boom's entry into the labor market that was documented in earlier research is now being offset by

a decrease in the cross-sectional experience premium as the baby boom progresses through middle age and approaches retirement.

This paper reports the results of our ongoing research program on this topic, and the regression analysis here is somewhat limited. We have not allowed for substitution between labor supplied by women and that supplied by men, and the implicit assumptions regarding substitution between workers of different experience levels are quite strong. We are addressing these limitations in our ongoing work, and are also examining the role of shifts in the composition of labor demand. However, it is clear from the results so far that changes in the age and experience composition of the labor force will continue to exert a powerful influence on the structure of wages.

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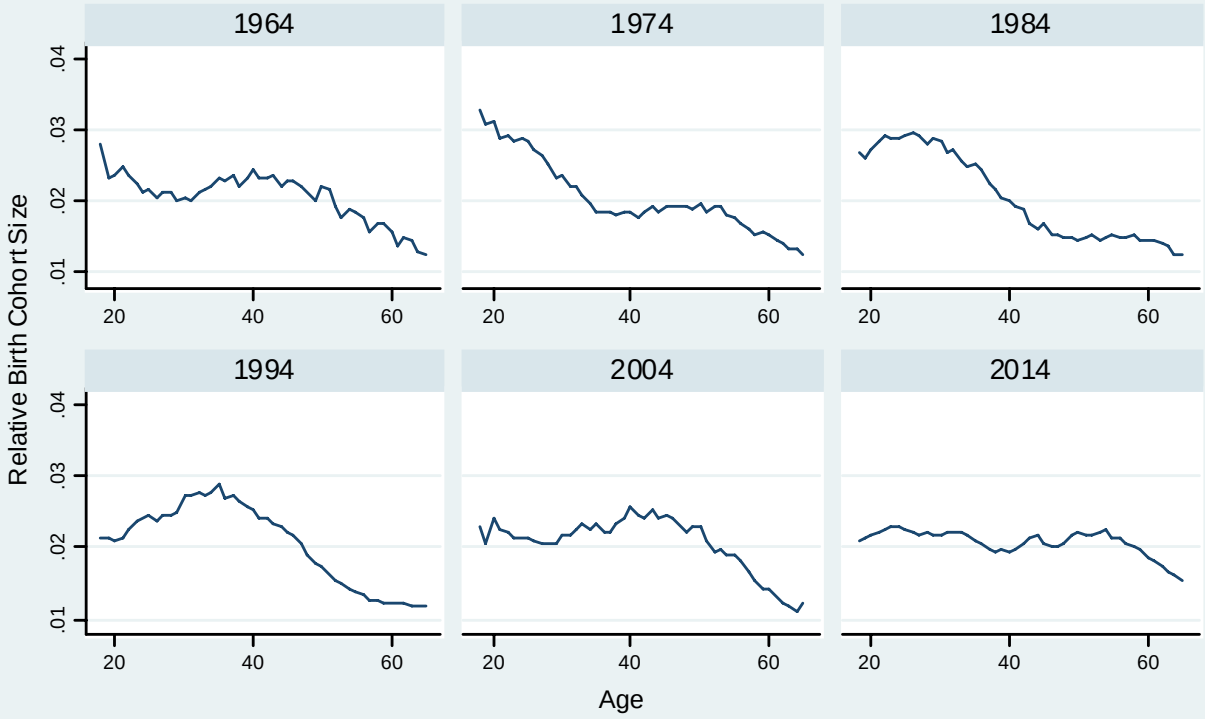
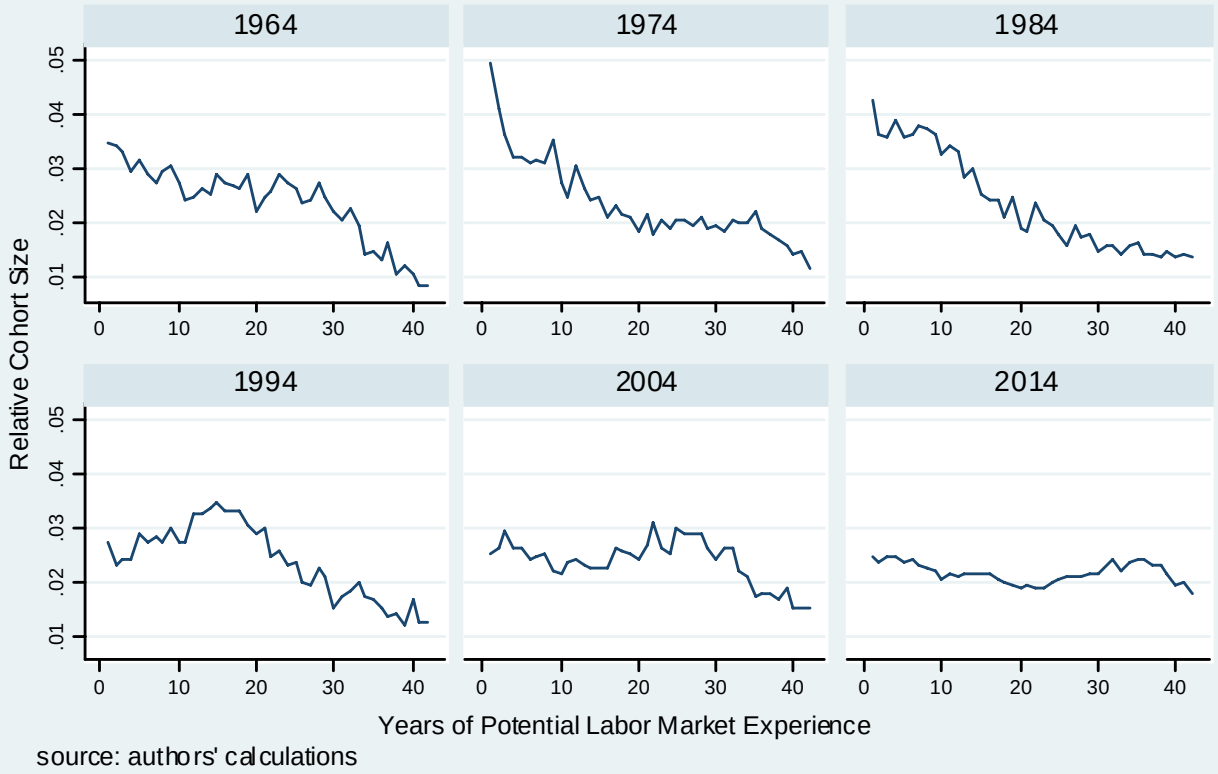
Figure 1
Changes in the Age Distribution over Time



source: authors' calculations

Figure 2a
Changes in the Distribution of Labor Market Experience for High School Graduates

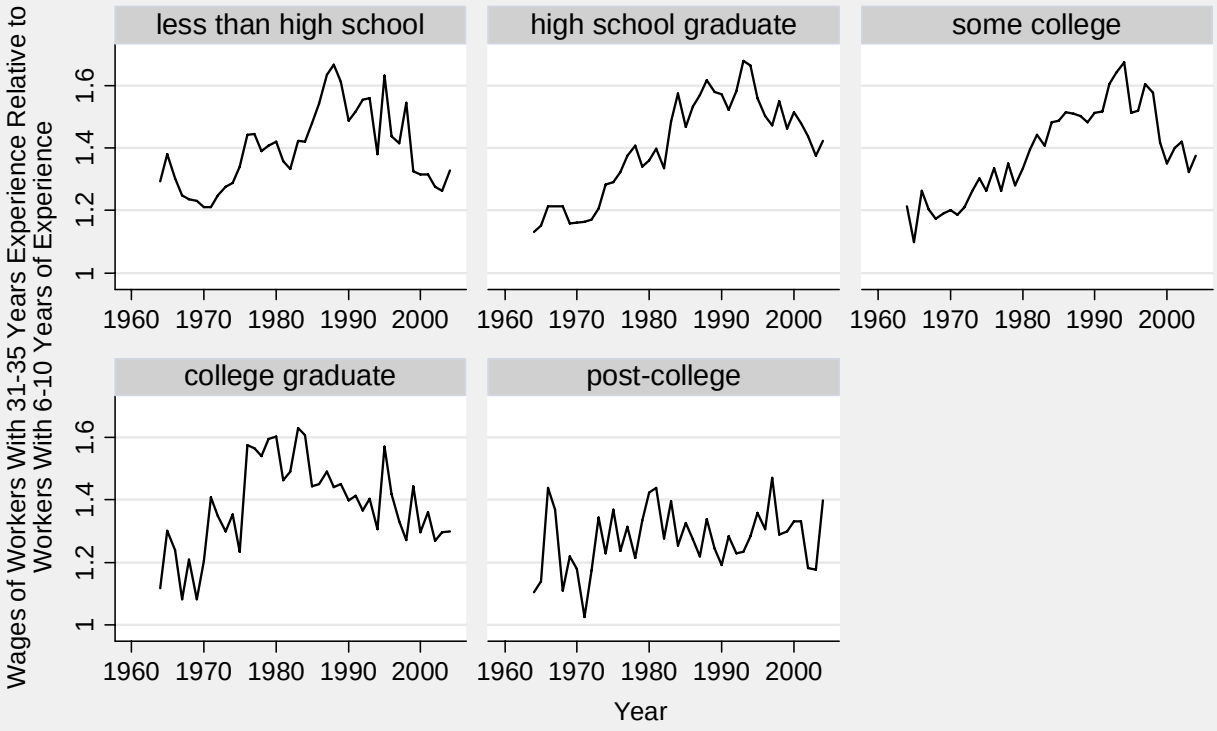


source: authors' calculations

Figure 2b
Changes in the Distribution of Labor Market Experience for College Graduates

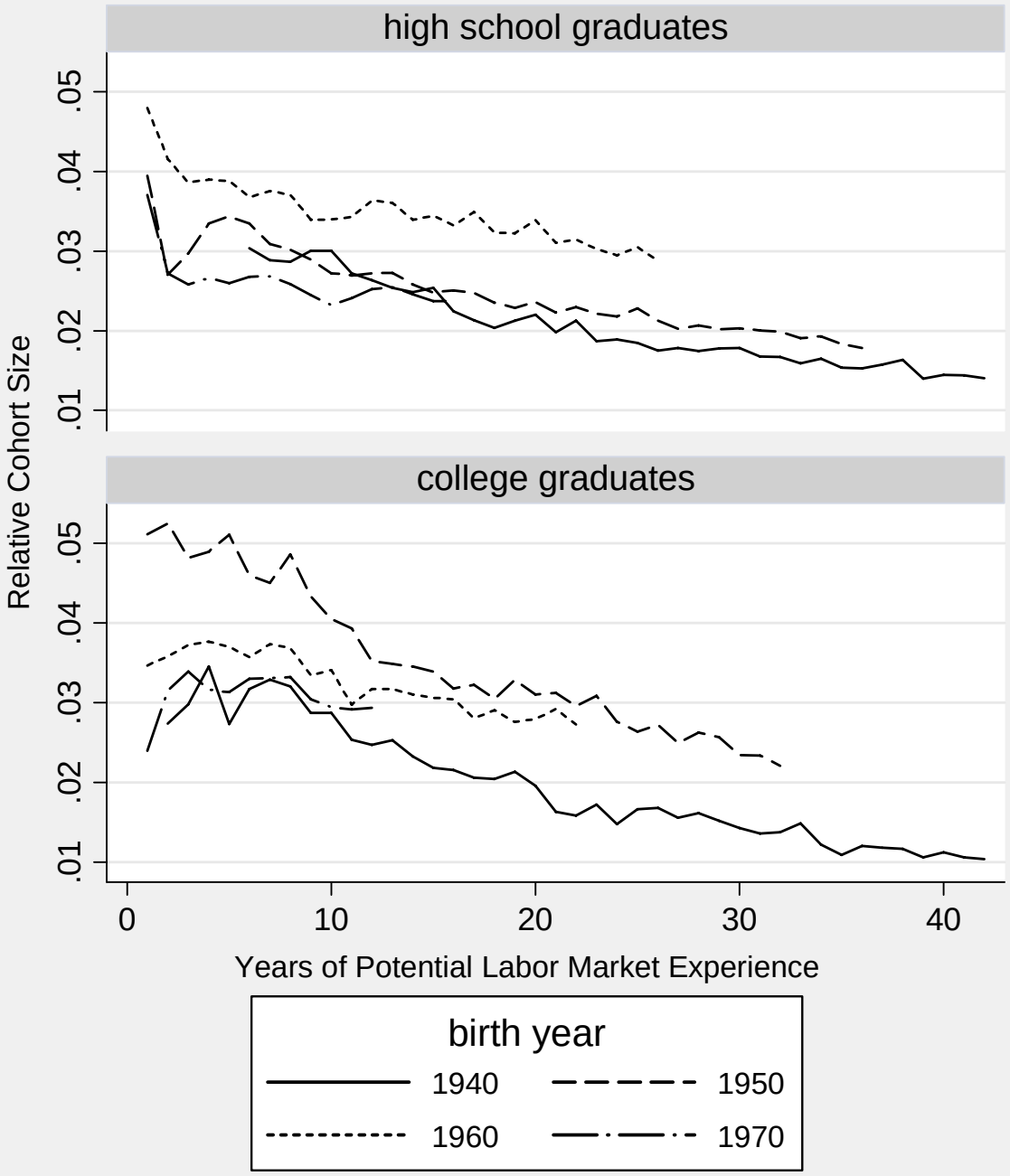
source: authors' calculations

Figure 3
Changes over Time in the Experience Premium



Source: Authors' calculations

Figure 4
The Evolution of Relative Cohort Size



source: authors' calculations

Table 1. Wage Regression Results, by Level of Education (OLS)
Dependent variable: ln(realwage)

	Less Than High School	*High School Graduate*	*Some College*	*College Graduate*	*Post-College*
Labor Market Experience					
1-5 years	0.138	0.093	0.108	0.084	0.054
	(0.007)	(0.004)	(0.006)	(0.005)	(0.006)
6-10 years	0.047	0.051	0.051	0.040	0.048
	(0.003)	(0.003)	(0.003)	(0.005)	(0.006)
11-20 years	0.016	0.018	0.020	0.016	0.014
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
21-30 years	0.007	0.006	0.003	-0.001	0.000
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
31+ years	0.003	-0.004	-0.005	-0.008	-0.005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Relative Cohort Size					
1-5 years	1.134	-0.745	1.342	-3.250	2.015
	(0.392)	(0.568)	(0.449)	(0.693)	(0.837)
6-10 years	-3.421	-1.654	-0.047	-4.035	0.812
	(0.644)	(0.482)	(0.439)	(0.631)	(0.711)
11-20 years	-3.475	-2.022	-0.868	-3.586	0.780
	(0.735)	(0.495)	(0.493)	(0.682)	(0.706)
21-30 years	-3.168	-2.558	-1.302	-3.545	0.396
	(0.721)	(0.560)	(0.572)	(0.768)	(0.790)
31+ years	-3.109	-2.778	-0.274	-2.496	1.503
	(0.772)	(0.740)	(0.849)	(1.130)	(1.106)
Real Wage Growth Spline					
1964-69	0.020	0.022	0.012	0.021	0.026
	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)
1970-74	0.012	0.007	0.012	0.013	0.015
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
1975-79	-0.023	-0.013	-0.024	-0.031	-0.041
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
1980-84	-0.017	-0.008	0.004	0.007	0.017
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
1985-1989	-0.001	-0.006	-0.002	0.006	0.012
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
1990-94	-0.032	-0.023	-0.022	-0.017	0.001
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
1994-99	0.002	0.004	0.005	0.004	0.014
	(0.003)	(0.002)	(0.002)	(0.003)	(0.004)
2000+	0.008	0.003	0.007	0.014	0.019
	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)
Constant	1.561	1.989	2.058	2.514	2.544
	(0.037)	(0.262)	(0.036)	(0.331)	(0.033)
Adjusted R-squared	0.8642	0.9202	0.8759	0.7897	0.6243
Number of observations	1681	1681	1681	1681	1681

Table 2: Wage Regression Results, by level of education (Instrumental Variables Estimation)

Dependent Variable: ln(realwage)

	Less Than High School	*High School Graduate*	*Some College*	*College Graduate*	*Post-College*
Labor Market Experience					
1-5 years	1.405	0.093	0.076	0.085	0.093
	(0.777)	(0.004)	(0.007)	(0.005)	(0.014)
6-10 years	0.092	0.054	0.046	0.036	0.040
	(0.037)	(0.003)	(0.004)	(0.005)	(0.008)
11-20 years	0.024	0.018	0.018	0.015	0.006
	(0.010)	(0.001)	(0.001)	(0.002)	(0.003)
21-30 years	0.016	0.007	0.002	-0.001	-0.010
	(0.010)	(0.001)	(0.001)	(0.002)	(0.004)
31+ years	0.004	-0.005	-0.007	-0.010	-0.016
	(0.009)	(0.001)	(0.001)	(0.001)	(0.004)
Relative Cohort Size					
1-5 years	90.545	-2.269	-2.802	-6.373	-14.588
	(54.690)	(0.640)	(0.664)	(0.885)	(4.362)
6-10 years	28.300	-3.732	-3.768	-6.905	-14.095
	(19.470)	(0.550)	(0.562)	(0.841)	(4.421)
11-20 years	22.081	-4.432	-4.369	-6.562	-12.101
	(16.904)	(0.570)	(0.586)	(0.914)	(4.271)
21-30 years	17.233	-5.546	-4.990	-7.165	-12.527
	(14.840)	(0.649)	(0.666)	(1.006)	(4.363)
31+ years	12.945	-7.039	-4.733	-7.806	-12.177
	(13.340)	(0.848)	(0.973)	(1.400)	(4.703)
Real Wage Growth Spline					
1964-69	0.015	0.022	0.012	0.022	0.026
	(0.019)	(0.002)	(0.003)	(0.003)	(0.005)
1970-74	0.003	0.007	0.012	0.012	0.015
	(0.017)	(0.002)	(0.002)	(0.003)	(0.005)
1975-79	-0.038	-0.014	-0.024	-0.031	-0.041
	(0.018)	(0.002)	(0.002)	(0.003)	(0.005)
1980-84	-0.021	-0.008	0.004	0.007	0.016
	(0.016)	(0.002)	(0.002)	(0.003)	(0.005)
1985-1989	-0.002	-0.005	-0.002	0.006	0.011
	(0.016)	(0.002)	(0.002)	(0.003)	(0.005)
1990-94	-0.035	-0.023	-0.022	-0.017	0.000
	(0.016)	(0.002)	(0.002)	(0.003)	(0.005)
1994-99	-0.011	0.004	0.005	0.004	0.014
	(0.018)	(0.002)	(0.002)	(0.003)	(0.005)
2000+	0.009	0.003	0.007	0.014	0.019
	(0.018)	(0.002)	(0.003)	(0.003)	(0.005)
Constant	-5.419	2.034	2.344	2.621	2.838
	(4.278)	(0.028)	(0.050)	(0.382)	(0.082)
Adjusted R-squared	-	0.9183	0.8664	0.7847	0.4642
Number of observations	1681	1681	1681	1681	1681

Table 3
Estimated Effects of Cohort Size Relative to 1950 Birth Cohort

High School Graduates

	Years of Labor Market Experience			
Birth Year	1	10	20	30
1920				-1.59%
1930			0.03%	1.93%
1940		-0.79%	0.62%	1.59%
1950				
1960	-1.70%	-2.15%	-4.35%	
1970	0.75%	1.67%		
1980	2.32%			

College Graduates

	Years of Labor Market Experience			
Birth Year	1	10	20	30
1920				3.05%
1930			4.05%	4.31%
1940		8.74%	7.42%	6.57%
1950				
1960	11.22%	4.79%	2.04%	
1970	17.98%	8.59%		
1980	20.72%			

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