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In February...

Nonfarm Employment

Connecticut.....	1,623,200
Change over month	+0.33%
Change over year	+1.8%

United States	130,515,000
Change over month	+0.15%
Change over year	+1.0%

Unemployment Rate

Connecticut.....	9.0%
United States	8.9%

Consumer Price Index

United States	221.3
Change over year	2.1%

A New Approach to Analyzing the Gender Wage Gap

By Manisha Srivastava, Economist, manisha.srivastava@ct.gov

“Equal Pay Day” takes place on a Tuesday in April (April 12th this year), symbolizing how far into the workweek women must work to earn what men earned the previous week. The gender wage gap is calculated by the Bureau of Labor and Statistics (BLS), and is based on data collected through surveys. This article takes a new approach to understanding the gender wage gap using wage records from Connecticut’s Unemployment Insurance (UI) program. The gender wage gap is analyzed by age group and in further detail for select industries, with interesting implications for policy makers.

The Gender Wage Gap

As of 2009, the national ratio of women’s to men’s median annual earnings for full-time year-round workers was 0.77. Though the gender wage gap decreased since it was first tracked, the rate of decline has plateaued in recent years. The gender wage gap dropped 12.4 cents between 1981 and 1990, 3.8 cents between 1991 and 2000, and 0.7 cents between 2001 and 2009.¹ The gender wage gap is deeper in Connecticut, where women earn 75 cents for every dollar earned by men.²

There are a few weaknesses with how the gender wage gap is calculated. The gender wage gap is based on data derived from the Current Population Survey, which is then tabulated by the BLS. All surveys are subject to some level of sample error. Furthermore, the gender wage gap is calculated for all year-round full-time workers without consideration for the worker’s occupation or

experience; both factors obviously have a huge effect on wages.

Delving in deeper, the BLS does publish weekly earnings for men versus women by occupation. Findings indicate women continue to earn less than men in nearly all occupations, including occupations predominately done by women, occupations predominately done by men, and occupations with a more even mix of the genders.

In summary, though the currently accepted gender wage gap of 77 cents per dollar is missing certain relevant information, data by occupation supports the existence of some level of a gender wage gap. Any level of a wage gap between the genders, whether caused by discrimination or sociological factors, imposes a cost on all of society. Families have increasingly come to depend on women’s earnings. More than a third of mothers in all but two states are their family’s primary breadwinner, and more than half of mothers in all but one state bring in at least a quarter of the family’s earnings.³ Reduced earnings over a 40-year career can add up to hundreds of thousands of dollars lost to women and the families they support.

Factors Leading to the Gender Wage Gap

A number of sociological factors contribute to the existence of the gender wage gap. Wage is dependent upon skills and experience, areas in which women fall behind men since they are more likely to work part time or take a break from the work force to raise children. A study on women who graduated from college in 1992-1993 found 23% were out of

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the workforce, and another 17% were working part time, as of 2003.⁴

The gender wage gap may also result from differences in negotiation skills between the genders. Research has shown women expect less and do not display the same willingness to negotiate salaries as men.⁵ Furthermore, women may be willing to accept lower salaries in exchange for family friendly workplace arrangements.

Another cause of the gender wage gap is occupational segregation – the fact that certain occupations are predominately done by men while other occupations are predominately done by women. Approximately 44% of men work in male dominated occupations and 40% of women work in female dominated occupations. Occupational segregation is an issue because “typically, male dominated occupations pay more than female dominated occupations at similar skill levels.”⁶ Occupational segregation is further problematic because women do not commonly enter the many male dominated high-skill, high-wage occupations.

Numerous studies have taken these sociological factors for the gender wage gap into account. The studies find portions of the gender wage gap can be explained by the above-mentioned causes (hours worked, parenthood, occupational choice, and other factors associated with pay). An interesting finding, however, is that even after accounting for these factors, about 5% of the gender wage gap remains unexplained.⁷

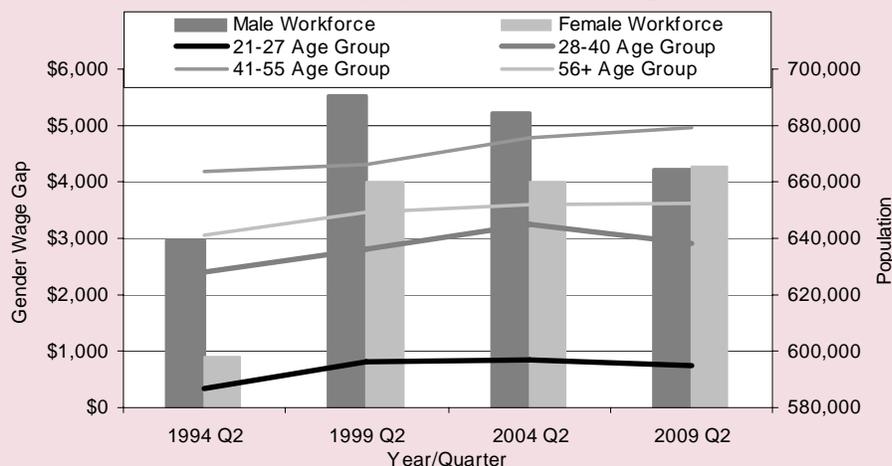
A New Approach Using UI Wage Records

In this analysis, a new approach to understanding the gender wage gap was employed, using wage data submitted quarterly by nonfarm Connecticut employers for the UI program. Within the UI program, Connecticut employers are grouped according to their North American Industry Classification System (NAICS) code. Merging this data with Connecticut Department of Motor Vehicles (DMV) records adds sex and age information for approximately 87% of UI wage records.⁸ In combination, this method provides comprehensive data on wage, sex, age, and industry of employment for nonfarm Connecticut employees.

Before continuing, a major weakness with this approach must be mentioned: the wage records are for all workers, whether they are full-time, part-time, or temporary. Since women are more likely to take time off to raise children, they are more likely to be working part-time than men. The following results would therefore be skewed towards showing a larger gender wage gap than what really exists. For this reason, **the following numbers should not be taken literally; rather the general trends are of significance using this approach.**

Chart 1 shows the quarterly wage gap between men and women in 5-year increments broken down by age group. Interestingly, the magnitude of the wage gap faced by each age group is quite consistent through the years. As one might expect, the

CHART 1. Quarterly Gender Wage Gap Based on Connecticut's Unemployment Insurance Wage Records



Note: Data for all workers regardless of whether they are full-time, part-time, or temporary workers.

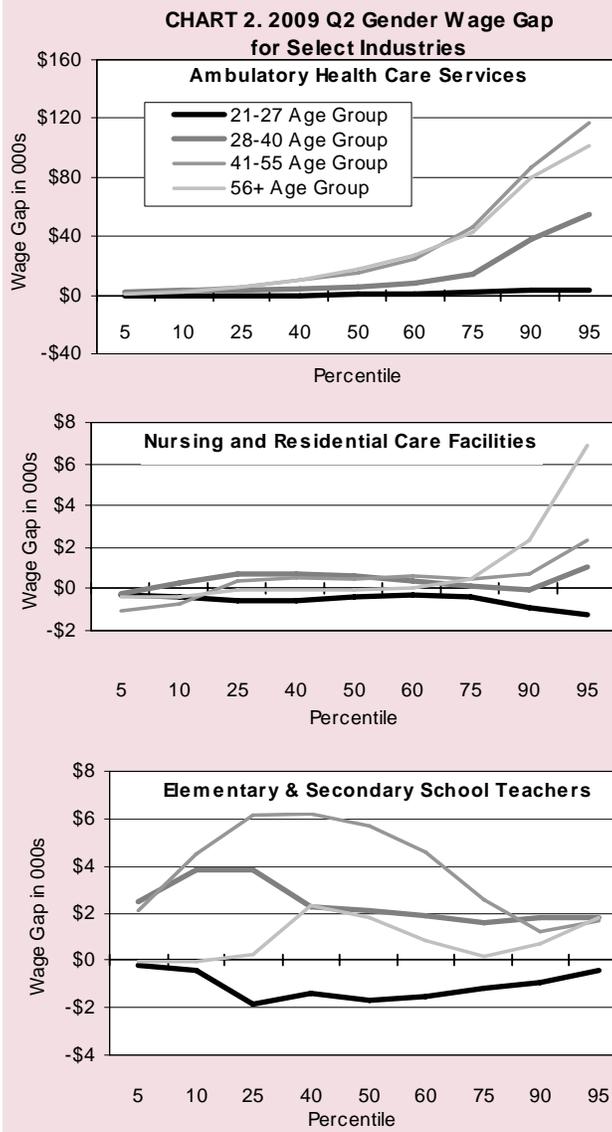
gender wage gap is least for the 21-27 age group, the age before women generally have children in Connecticut.⁹ The wage gap is about 4 to 7 times greater for women in the 28-40 age group as compared to women 21-27, and about 1.5 times greater for women in the 41-55 age group as compared to women 28-40.

There is an upward trend in the gender wage gap from 1994 to 2004, which could possibly be related to the increase in the percentage of women in the workforce (seen by the bars in Chart 1). It is difficult to draw any conclusions between 2004 to 2009 because Connecticut, as well as the nation, was in the midst of a recession in 2009 that resulted in higher job loss rates for men.

Analyzing the Gender Wage Gap by Industry

Connecticut's UI wage records are used to further analyze the gender wage gap by focusing on three industries: ambulatory health care services (NAICS code 621), nursing and residential care facilities (NAICS code 623), and elementary and secondary schools (NAICS code 6111). At least 70% of workers within these industries are women.¹⁰ The gender wage gap is less in female dominated occupations; these industries were therefore chosen in an attempt to analyze the remaining causes of the gender wage gap.¹¹

The gender wage gap for all workers by age group for the three industries under analysis are depicted in Chart 2. The trends among the industries are strikingly different. In the health care industry, the gender wage gap rises steadily as we move across the percentiles of the quarterly gender wage gap. The median (50th percentile) gender wage gap ranges from \$525 for the 21-27 age group to above \$17,000 for women 56 and older. At the highest percentiles, the gap is above \$80,000 for women 41 and older. Conversely, in the nursing and residential care facilities sector the gender wage gap is steady



and ranges mostly between -\$600 to \$700 for all age groups until the 75th percentile, then grows to between -\$900 and \$2,300 at the 90th percentile before exponentially increasing. The picture is completely different for elementary and secondary school teachers. Females in the youngest age group fare better than men; however females aged 28-55 experience about a \$2,000 or greater wage gap per quarter. There is a jump to above \$4,500 for women 41-55 between the 10th to 60th percentiles, and a gap of about \$4,000 for women 28-40 between the 10th and 25th percentiles.

Chart 2 suggests the cause of the gender wage gap may be different based on the industry. In education, the gender wage gap is most for women of childbearing and child-rearing ages in the low to middle percentiles. This suggests that perhaps women in the educational

industry take time off to raise children, resulting in less experience and thus less pay than men within the same age group. In health care, however, it seems occupational segregation plays a major role in the gender wage gap. The fact that women do not pursue higher paying occupations would cause the greater wage gap seen as the percentile increases. In nursing and residential care, a significant gender wage gap was not identified until about the 90th percentile, suggesting occupational segregation may only be an issue for a few of the highest paying occupations within the industry.

Findings from Isolating High- and Low-Income Earners

If occupational segregation is the primary cause for the large gender wage gap found in the health care industry, then removing high-income earners should greatly reduce the gender wage gap for the remaining workers. To this end, Connecticut's Occupational Employment Statistics (OES) survey was used to determine how many high-income earners to remove. The OES survey, which is conducted bi-annually, provides estimates of employment and wages for over 800 occupations by NAICS sector. OES data provided the number of workers within "high-earning" and "low-earning" occupations in our three industries of interest, which were then isolated to study occupational segregation and other aspects of the gender wage gap.

As an example, based on data from OES, it was found that 12% of workers in the health care industry, 16% in the nursing and residential care industry, and 3% in the elementary and secondary school industry are in low-wage occupations. These percentages of the lowest paid employees within each industry, regardless of gender, were isolated. A wage gap between the genders was non-existent for this low-income bracket of workers. The gender wage gap ranged from -\$700 to \$100 per

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quarter at all percentiles and age groups for the industries.

To study occupational segregation, the highest 7% and 3% of wage earners were removed regardless of gender from the health care and nursing and residential care industries, respectively (again, based on data from OES). The gender wage gap was recalculated for the remaining workers. After removing the highest earners, the median gender wage gap in health care reduced from over \$17,000 to about \$3,800. In addition, the gender wage gap at the 90th/95th percentile dropped from over \$80,000 to a maximum of \$8,000. The sharp reduction achieved by removing the top 7% of wage earners suggests that occupational segregation is a strong contributor to the gender wage gap for health care industries in Connecticut.

In the case of nursing and residential care, removing the top 3% of earners did not affect the gap at the median; however, the gender wage gap actually reversed at the 90th/95th percentile from a maximum of \$7,000 to below -\$600. These findings support the earlier notion that though there may be a low incidence of occupational segregation, essentially the gender wage gap is not a major issue for the nursing and residential care industry.

Targeted Policies

This study finds different patterns to the gender wage gap depending on the industry of analysis. The implications are that targeted policies may be necessary to efficiently address the gender wage gap. Perhaps greater options for part-time work within the education industry will allow more women to stay engaged in the workforce, reducing the wage gap they face later in life. Conversely, policies encouraging women in medical fields to pursue higher paying occupations such as surgery or anesthesiology may go a long way towards reducing the gender wage gap within the health care industry. In this manner, industry analysis of the gender wage gap can help policy makers develop targeted policies to tackle the issue.

Final Remarks

The gender wage gap is an issue for society as a whole. Husbands, children, and parents are all increasingly starting to depend on women's earnings. Though great strides towards gender pay equality have been made, progress has slowed in recent years. This paper takes a new approach to analyzing the gender wage gap by using UI wage records, which not only provides insight on multi-year

trends by age group, but also supplements occupational data on the gender wage gap by analyzing trends by industry. Similar analysis for all the industries can help point out where the issue is most egregious, and what policies would be most effective towards reducing the gender wage gap. ■

¹ "The Gender Wage Gap: 2009". Institute for Women's Policy Research. September 2010.
² "Highlights of Women's Earnings in 2009". U.S. Bureau of Labor Statistics. June 2010.
³ Boushey, Heather, Arons, Jessica, and Smith, Lauren. "Families Can't Afford the Gender Wage Gap". Center for American Progress. April 2010.
⁴ Dey, Judy Goldberg, and Hill, Catherine. "Behind the Pay Gap". American Association of University Women. April 2007.
⁵ *Ibid.*
⁶ "The Gender Wage Gap by Occupation". Institute for Women's Policy Research. April 2010.
⁷ Dey, Judy Goldberg, and Hill, Catherine. "Behind the Pay Gap". American Association of University Women. April 2007.
⁸ The other 13% of workers may not reside in Connecticut or may not hold a Connecticut driver's license.
⁹ "QuickStats: Average Age of Mothers at First Birth, by State — United States, 2002." Centers for Disease Control and Prevention. <<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5419a5.htm>>.
¹⁰ Percentage of women to men is 81% to 19% in the health care sector, 80% to 20% in the nursing and residential care sector, and 70% to 30% in the elementary and secondary school sector.
¹¹ "The Gender Wage Gap by Occupation". Institute for Women's Policy Research. April 2010.

GENERAL ECONOMIC INDICATORS

<i>(Seasonally adjusted)</i>	4Q	4Q	CHANGE		3Q
	2010	2009	NO.	%	2010
Employment Indexes (1992=100)*					
Leading	116.3	114.3	2.0	1.8	116.2
Coincident	102.3	102.0	0.3	0.3	101.8
General Drift Indicator (1986=100)*					
Leading	105.2	103.7	1.5	1.4	104.9
Coincident	107.0	106.2	0.8	0.8	107.7
Farmington Bank Business Barometer (1992=100)**	124.1	123.3	0.8	0.6	123.6
Philadelphia Fed's Coincident Index (July 1992=100)***	FEB	FEB			JAN
<i>(Not seasonally adjusted)</i>	2011	2010			2011
Connecticut	155.4	149.8	5.6	3.7	155.0
United States	152.5	148.3	4.2	2.8	152.0

Sources: *The Connecticut Economy, University of Connecticut **Farmington Bank ***Federal Reserve Bank of Philadelphia

The Connecticut Economy's **General Drift Indicators** are composite measures of the four-quarter change in three coincident (Connecticut Manufacturing Production Index, nonfarm employment, and real personal income) and four leading (housing permits, manufacturing average weekly hours, Hartford help-wanted advertising, and initial unemployment claims) economic variables, and are indexed so 1986 = 100.

The **Farmington Bank Business Barometer** is a measure of overall economic growth in the state of Connecticut that is derived from non-manufacturing employment, real disposable personal income, and manufacturing production.

The **Philadelphia Fed's Coincident Index** summarizes current economic condition by using four coincident variables: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average).