

FRBSF ECONOMIC LETTER

Number 2007-17, June 29, 2007

The Narrowing of the Male-Female Wage Gap

According to several measures, the difference in wages between men and women, the so-called “male-female wage gap” (MFWG), has shrunk substantially—by about half—over the past several decades. This phenomenon has been the subject of much research, speculation, and contention. For example, some seek to explain why the gap narrowed so dramatically in the 1980s only to narrow much more slowly in subsequent years. Others have considered the role of new technology, which may have helped level the playing field between the sexes; this view recalls the rise of office work at the turn of the 20th century, which is also thought to have benefited women (Goldin 1990).

In this *Letter*, we focus on an important portion of the research in this area, particularly as it pertains to the very sharp decline in the MFWG during the 1980s. We summarize three of the more well-known possible explanations: declining discrimination against women, rising skills and workforce attachment of women, and changing selection. While each has strong merit in its own right, none has come to be the dominant explanation. We speculate that it may be fruitful, though challenging, to consider whether these three explanations worked together, occurring simultaneously and reinforcing one another, to result in the sharp narrowing of the MFWG in the 1980s.

Measuring the male-female wage gap

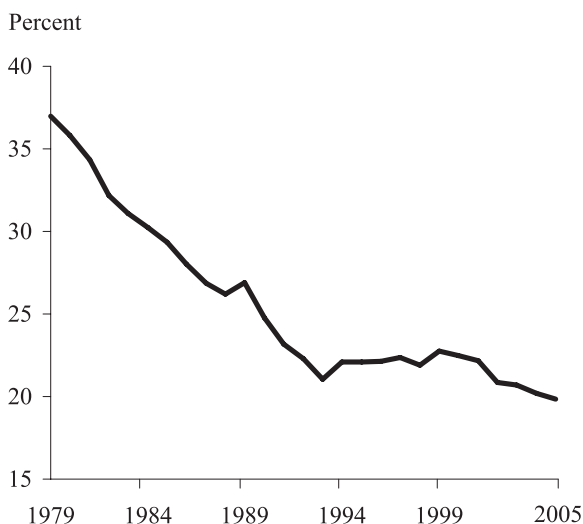
There are several ways to compare the wages of males and females, and no single measure is perfect or preferable in every instance. The method most often used in academic studies is to examine hourly wages for only full-time workers using data sets such as the Current Population Survey (CPS) or Decennial Census. These studies typically measure the difference in wages between the sexes after controlling for differences in years of education and age. This approach ensures that, for example, the wage of a 50-year-old female with a post-college degree is not directly compared to that of an 18-year-old male who dropped out of high school.

Figure 1 presents estimates of the evolution of the MFWG from 1979 to 2005 using CPS data and controlling for age and years of education. It shows that the average hourly wages of men who worked full time in 1979 were 37% higher than the wages of their female counterparts. These estimates, like those of others, show that the MFWG fell at a rapid rate through the 1980s and then decelerated in the 1990s and 2000s. Viewed in a historical context, as provided in Goldin (1990), the rapid narrowing of the MFWG in the 1980s is quite unusual.

Decline in discrimination

Differences in pay between men and women may be partly the result of discrimination against women in the workplace. Such gender discrimination may have lessened, especially as a result of changes that occurred in the 1970s and 1980s. For example, in *Pittsburgh Press Co. v. Pittsburgh Commission on Human Relations* (1973), the U.S. Supreme Court upheld an ordinance that prohibited publishing job advertisements that sorted positions into “Help Wanted: Male” and “Help Wanted: Female.” In addition, Simon and Landis (1989) found that

Figure 1
An estimated male-female wage gap



Source: Authors' calculations using the CPS for full-time workers and controlling for education and age.

opinion polls showed that men's willingness to accept women in the workplace rose considerably in the 1970s and 1980s.

Unfortunately, ascertaining whether the MFWG has shrunk because of lessening discrimination against women is difficult, because measuring discrimination itself, let alone changes in discrimination, is difficult.

Rising skills and attachment to the workforce

Unlike discrimination, trends in the skills of women and their attachment to the workforce (that is, their staying in the workforce) since the 1970s are more easily demonstrable. In terms of education, Goldin, Katz, and Kuziemko (2006) show that American women born after 1960 began completing college at higher rates than men. Perhaps more importantly, during the 1970s, women entered professional graduate programs and went on to professional careers in record numbers (Goldin and Katz 2002). This is important because professional occupations tend to have higher pay than many of the jobs that used to be listed in the "Help Wanted: Female" ads. Additionally, women's attachment to the labor force may have increased. For instance, opinion surveys show a dramatic rise in the proportion of women who say they planned to work at age 35 during the 1970s (Goldin 2005). Also, as shown in Valletta (2007), from 1983 to 2006, the median job tenure rose noticeably for women but remained relatively unchanged for men.

These trends could help reduce the measured MFWG in several ways. An increased attachment of women to their careers would tend to raise women's average wages by lengthening their average work experience. If, for a given age and education, women gained more experience, then their wages relative to men's would be expected to increase. Similarly, if women made career investments that are not picked up in surveys (such as what they study in school instead of years of schooling), then that could lead to a narrowing in the measured MFWG.

Establishing the relative importance of the rise in workplace human capital among women on the narrowing of the MFWG, however, has not been straightforward. One reason is that the data sets used most frequently in such analyses contain only indirect measures of either workplace experience or career investments. For example, potential work experience in many studies is derived using the

age and education of workers in the sample. By contrast, Blau and Kahn (2006) use a data set that does contain years of actual work experience. They found that the rising wages and work experience of women could account for some of the increase in women's relative wages in the 1980s and 1990s. They also found that human capital (a combination of work experience and education) of women increased in the 1980s at about the same pace as it did in the 1990s. So although the increase in human capital may have helped close the MFWG, the human capital story says little about why the MFWG closed faster in the 1980s than it did in the 1990s.

Changing selection

As stated earlier, the MFWG is usually computed using only full-time workers. However, full-time workers may not be representative of the population. Put another way, not everybody works, and economists believe that people's decisions to work or not depend, in part, on what they *would* earn if they did work, their so-called "earnings potential." Therefore, researchers have studied how much the decline in the MFWG may reflect the selective entry of women with high earnings potential into working. Mulligan and Rubinstein (2005) argue that the "stay-at-home" women of the 1960s had high earnings potential compared to those who were working; in other words, they were disproportionately women who would have had high pay if they had chosen to have a career. During the 1970s and 1980s the pay for high-skill and professional jobs increased relative to the pay for low-skill jobs. This better pay may have induced women with high earnings potential to pursue careers rather than stay at home. This latter point is buttressed by Black and Juhn (2000).

Since changes in women's earnings potential cannot be observed directly (one only observes the wages of those who are actually working), Mulligan and Rubinstein offer indirect evidence to support their story. They show that two groups of women likely to have high earnings potential—women with high "IQs" and women with educated mothers—have increased their propensity to work significantly more than other women. In addition, they show that wages grew more quickly over the past 30 years for the kinds of women who were least likely to work in the 1960s—for example, married women with children—and less quickly for women who always had higher rates of participation, such as single women. Overall, Mulligan

and Rubinstein suggest that most of the closing of the MFWG was due to changing selection.

While many might agree that changing selection played a role in the increase in women's wages—due in part to Mulligan and Rubinstein's evidence—there is less consensus over how much changing selection contributed to the increase in women's pay. For instance, Blau and Kahn (2006), using other methods, suggest that the impact is much smaller.

Possible interactions

Exploring whether and how these three explanations may have worked together to narrow the MFWG so dramatically in the 1980s is challenging both theoretically and empirically, and it is beyond the scope of this *Letter*. However, we believe it may be a fruitful avenue to pursue. For example, consider the link between the decline in discrimination and rising skills among women: It is conceivable that less discrimination reinforced women's decisions to invest more in their own human capital, perhaps by furthering their education or pursuing more lucrative occupational paths. The decline in discrimination also could be linked to the selection explanation, in that it may have lured women with high earnings potential into the labor market. The causality between discrimination and labor force attachment could also go the other direction: For example, greater attachment to the labor force may itself help reduce discrimination if the perceptions of women's attachment to the labor force change as a consequence. Clearly, the phenomenon of the MFWG remains a rich field of research, not only to understand the rapid narrowing of the gap in the 1980s and the slower narrowing in later years but also the persistence of the gap today.

Mark Doms
Senior Economist

Ethan Lewis
Dartmouth College and
Visiting Scholar, FRBSF

References

[URLs accessed June 2007.]

- Black, Sandra, and Chinhui Juhn. 2000. "The Rise of Female Professionals: Are Women Responding to Skill Demand?" *American Economic Review* 90(2) (May) pp. 450–455.
- Blau, Francine D., and Lawrence M. Kahn. 2006. "The U.S. Gender Pay Gap in the 1990s: Slowing Convergence." *Industrial and Labor Relations Review* 60(1) (October) pp. 45–66.
- Goldin, Claudia. 1990. *Understanding the Gender Gap*. New York: Oxford University Press.
- Goldin, Claudia. 2005. "From the Valley to the Summit: A Brief History of the Quiet Revolution that Transformed Women's Work." FRB Boston *Regional Review* Q1, pp. 5–12. <http://www.bos.frb.org/economic/nerr/rr2005/q1/section1a.pdf>
- Goldin, Claudia, and Lawrence F. Katz. 2002. "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions." *Journal of Political Economy* 110(4) pp. 730–770.
- Goldin, Claudia, Lawrence F. Katz, and Ilyana Kuziemko. 2006. "The Homecoming of American College Women: The Reversal of the College Gender Gap." *Journal of Economic Perspectives* 20(4) (Fall) pp. 133–156.
- Mulligan, Casey, and Yona Rubinstein. 2005. "Selection, Investment, and Women's Relative Wages since 1975." National Bureau of Economic Research Working Paper 11159.
- Simon, Rita J., and Jean M. Landis. 1989. "A Report: Women's and Men's Attitudes about a Woman's Place and Role." *The Public Opinion Quarterly* 53(2) (Summer) pp. 265–276.
- Valletta, Robert. 2007. "Anxious Workers." *FRBSF Economic Letter* 2007-13 (June 1). <http://www.frbsf.org/publications/economics/letter/2007/el2007-13.html>

ECONOMIC RESEARCH
FEDERAL RESERVE BANK
OF SAN FRANCISCO

PRESORTED
STANDARD MAIL
U.S. POSTAGE
PAID
PERMIT NO. 752
San Francisco, Calif.

P.O. Box 7702
San Francisco, CA 94120
Address Service Requested

Printed on recycled paper
with soybean inks



Index to Recent Issues of *FRBSF Economic Letter*

DATE	NUMBER	TITLE	AUTHOR
12/8	06-35	The Mystery of Falling State Corporate Income Taxes	Wilson
12/15	06-36	The Geographic Scope of Small Business Lending: Evidence...	Laderman
12/22	06-37	Will Moderating Growth Reduce Inflation?	Lansing
12/29	06-38	Mortgage Innovation and Consumer Choice	Krainer
1/5	07-01	Concentrations in Commercial Real Estate Lending	Lopez
1/19	07-02	Disentangling the Wealth Effect: Some International Evidence	Sierminska/Takhtamanova
1/26	07-03	Monetary Policy Inertia and Recent Fed Actions	Rudebusch
2/9	07-04	2006 Annual Pacific Basin Conference: Summary	Glick
3/2	07-05	Financial Innovations and the Real Economy: Conference...	Doms/Fernald/Lopez
3/9	07-06	Update on China: A Monetary Policymaker's Report	Yellen
3/16	07-07	Prospects for China's Corporate Bond Market	Hale
3/30	07-08	The U.S. Productivity Acceleration and the Current Account Deficit	Valderrama
4/6	07-09	Will Fast Productivity Growth Persist?	Fernald/Thiphavong/Trehan
4/13	07-10	Do Monetary Aggregates Help Forecast Inflation?	Hale/Jordà
5/4	07-11	U.S. Supervisory Standards for Operational Risk Management	Lopez
5/25	07-12	Monetary Policy, Transparency, and Credibility: Conference Summary	Dennis/Williams
6/1	07-13	Anxious Workers	Valletta
6/8	07-14	House Prices and Subprime Mortgage Delinquencies	Doms/Furlong/Krainer
6/15	07-15	On Forecasting Future Monetary Policy	Kwan
6/22	07-16	Credit Unions, Conversions, and Capital	Wilcox

Opinions expressed in the *Economic Letter* do not necessarily reflect the views of the management of the Federal Reserve Bank of San Francisco or of the Board of Governors of the Federal Reserve System. This publication is edited by Judith Goff, with the assistance of Anita Todd. Permission to reprint portions of articles or whole articles must be obtained in writing. Permission to photocopy is unrestricted. Please send editorial comments and requests for subscriptions, back copies, address changes, and reprint permission to: Public Information Department, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco, CA 94120, phone (415) 974-2163, fax (415) 974-3341, e-mail sf.pubs@sf.frb.org. **The *Economic Letter* and other publications and information are available on our website, <http://www.frbsf.org>.**