



Five Decades of Remarkable but Slowing Change in U.S. Women's Economic and Social Status and Political Participation

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The last fifty years of women's social and economic progress have been lauded as the "grand gender convergence," the "second demographic transition," and the "rise of women"—terms pointing to the remarkable transformation in women's social and economic roles since the 1960s. Many metrics document these changes.

Women made up less than one-third of all U.S. employees in 1950 (Toossi 2002), but today make up almost half (BLS 2014). In the 1960s, they earned around 60 percent of what men did, but this figure has risen today to about 80 percent (Blau and Kahn, forthcoming). Currently, more women than men enroll in and complete college (Goldin, Katz, and Kuziemko 2006; DiPrete and Buchmann 2013), and changes in women's roles as mothers and partners have redefined the "typical" American family (Lundberg and Pollak 2007).

U.S. women hold some of the most influential jobs in the country and are contenders for others. In 2007, Nancy Pelosi became the first female Speaker of the U.S. House of Representa-

tatives. In 2015, Janet Yellen was sworn in as the first chairwoman of the Federal Reserve Board of Governors. In 2016, two women were U.S. presidential candidates (Hillary Clinton and Carly Fiorina).

Despite these advances, other evidence suggests that women's progress has slowed or stalled. Pay gaps at the top of the income distribution are large (Bertrand and Hallock 2001; Bertrand, Goldin, and Katz 2010; Guvenen, Kaplan, and Song 2014). Women make up less than 10 percent of corporate boards and less than 2 percent of CEOs (Matsa and Miller 2011). The integration of women into the so-called STEM fields has been slow since 1990 (Jacobs 1995; Bradley 2000; Xie and Shauman 2003).¹ The odds that a woman earns a physical science, engineering, or economics major have hardly changed in the past twenty years (Goldin and Rouse 2000; England and Li 2006; Goldin, Katz, and Kuziemko 2006; Mann and DiPrete 2013; Goldin 2015).

U.S. women's health and happiness also

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1. STEM is an acronym for science, technology, engineering, and mathematics. Economics is not a STEM field but shares STEM tendencies in these trends.

seem to be lagging. Betsey Stevenson and Justin Wolfers (2009) found that women in recent years report being less happy than they did more than fifty years ago, both absolutely and relative to men (Stevenson and Wolfers 2009), though it is also true that women generally report greater happiness than men from 1974 to the present even as the gender gap in favor of women has been shrinking over time (Hout 2016).² American women's longevity has stopped increasing at the rate of women in other developed countries (Crimmins, Preston, and Cohen 2011), and American women continue to have higher morbidity rates than American men (Ross, Masters, and Hummer 2012). Some commentators argue that the groundswell of support for women's equality is ebbing (England 2010; Cotter, Hermsen, and Vanneman 2011; Fortin 2015b).

Whether and how to address gender inequality is more contentious. A common theme in the media, epitomized by Anne-Marie Slaughter's 2012 *Atlantic* article ("Why women still can't have it all") is that institutions have been slow to accommodate work-life balance (Glass and Estes 1997; Glass and Finley 2002; Gornick and Meyers 2005; Goldin and Katz 2011; Goldin 2014). Indeed, the United States lags behind all other advanced countries in providing basic workplace accommodations for parenthood and paid leave (Council of Economic Advisors 2014). Other commentators argue that women themselves need to change. Sheryl Sandberg's best-selling book encouraged women to *Lean In* to achieve more in their careers (2013).

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ence focuses on these changes in the United States, beginning around 1960 and ending around 2010. This introduction aims to provide an overview of the very large literature on this topic, and provide a quantitative history documenting this remarkable half century. This issue's articles are authored by economists, political scientists, and sociologists; each quantifies and discusses the changes in women's social, familial, and economic roles and highlights their implications for the evolution of U.S. society, family, and economy. We conclude with summaries of each of the volume's nine articles, which delve into specific issues in greater detail.

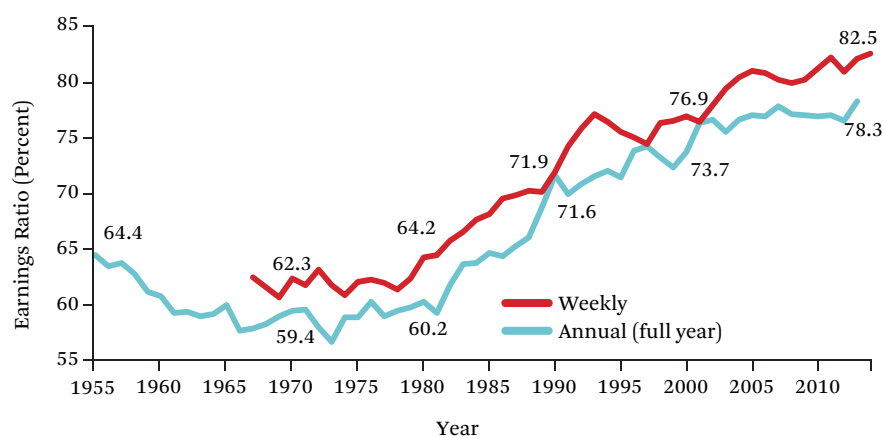
THE GENDER GAP IN WAGES

Our overview of women's progress begins with one of the most easily observed metrics of women's social and economic progress: the difference in wage earnings between men and women. This gap in wages can be defined in a variety of ways, but economists typically focus on the ratio of women's to men's wage earnings.

Figure 1 reproduces the wage earnings ratio from 1955 to 2014 from Francine Blau and Lawrence Kahn's survey of the literature (forthcoming).³ The printed data values report the gender ratio in 1955, in each decade (1960, 1970, 1980, 1990, 2000), and then in 2013 for annual and in 2014 for weekly wage earnings series. The story is one of long-term, continuous progress, and slowing progress after 1990. After an increase in the pay gap between 1955 and the 1970s, the gap closed from around 60 percent to around 80 percent today. Blau and Kahn report that, by 2013, women earned about 78 per-

2. Michael Hout (2016) shows most of the happiness decline occurred among the poor; the affluent are roughly as happy currently as they were in the 1970s.

3. Estimating wage earnings per unit of work is complicated by the fact that many sources ask individuals about earnings and wages in the previous year, not per hour. Moreover, many workers may not know exactly what they earn per hour if they are paid on a salary basis. To adjust for these differences, the literature typically focuses on full-time civilian men and women who should have completed their educations, are unlikely to have retired (ages twenty-five to sixty-four), and are not working on farms or self-employed. To transform annual wage earnings into weekly wage earnings, the literature divides information on annual wage earnings by an estimate of hours worked last year or usual hours worked. To adjust for top-coding in the Current Population Surveys (CPS), much of the literature multiplies top-coded values by 1.45. Finally, extreme outliers are excluded: Blau and Kahn, for instance, exclude those earning less than \$2 per hour in 2010 dollars. Earnings are adjusted into 2010 dollars using the Personal Consumption Expenditures deflator.

Figure 1. Gender Earnings Ratios of Full-Time Workers, 1955–2014

Source: Authors' compilation based on CPS (Blau and Kahn, forthcoming).

cent of what men did on an annual basis and about 83 percent on a weekly basis. The annual ratio is slightly lower than the weekly ratio, in large part because women work fewer weeks per year than men on average. The fastest decade of convergence in the wage compensation of men and women was the 1980s, a phenomenon reflecting increases in women's labor-force participation and their experience working for pay. In 1990, full-time women earned 72 percent as much as men. But convergence in the gender gap has been slower since 1990. By 2000, this ratio had only nudged up to 77 percent and, by 2010, to 83 percent.

Progress at the average masks differences in the pace of this progress across skill groups (observed in datasets such as the Current Population Surveys, CPS, and Panel Study of Income Dynamics, PSID). In 1980 women at the 10th percentile earned 69 percent of what men at the 10th percentile did, whereas women at the 90th percentile earned only 64 percent of what men at the 90th percentile did. The differences in the pay gaps at the highest and lowest percentiles have also been widening. In 2010 women at the 10th percentile earned 88 percent of what men at the 10th percentile did, whereas women at the 90th percentile earned 77 percent of what men at the 90th percentile did (Blau and Kahn, forthcoming). In short, higher gaps in wages have been more persistent for women in the upper part of the wage

distribution than in the lower part of the wage distribution (Blau and Kahn 1997; Fortin and Lemieux 1998).

PRE-MARKET FACTORS: EDUCATION AND OCCUPATION

Much of the change in the pay gap reflects changing conditions and choices that take place before labor market entry. These “pre-market” factors include family background, educational and occupational aspirations, K–12 school quality and curriculum, ability and effort in school, where and how much postsecondary education to pursue, as well as major, degree, and field choices. These choices and outcomes, in turn, facilitate entry into some occupations and hamper entry into others. Labor market and broader societal changes, meanwhile, combined with changing patterns of women's academic preparation and aspirations. This produced a gradual reduction in occupational segregation by gender, though the rate of integration has diminished in recent years (Jacobs 1989; Cotter, Hermsen, and Vanneman 2004; Stainback and Tomaskovic-Devey 2012).

A decomposition of data from the PSID attributes a large and growing amount of the gender gap in wage earnings to pre-market and occupational factors (Blau and Kahn, forthcoming, table 4B). In 1980, around 3 percent of the gender gap could be attributed to differ-

ences in education and nearly 11 percent to occupational differences.⁴ The role of occupational differences has grown. In 2010, the representation of men and women in different occupations explained almost one-third of the gender gap in pay. But, because women today attain more education than men, the gender gap would have been at least 6 percent larger had men achieved as much education as women.

Choices and constraints after entering the labor market also play a role. The time spent working and learning on the job increases know-how and experience, and women's historical rise in compensation reflects the gradual improvement in their labor-force experience and quantity of skills learned on the job. Women with more experience and expertise may be more likely to be promoted, resulting in higher pay, more leadership responsibilities, and higher status. One recent study uses the American Time Use Surveys (ATUS) to show that, between 1965 and 2003, women's work in paid employment grew by 6.2 hours per week (Aguilar and Hurst 2007). The resulting increase in women's work experience has played an important role in the narrowing of pay gaps (O'Neill and Polachek 1993; Blau and Kahn 1997). In 1980, differences in labor-force experience accounted for approximately 21 percent of the gender gap but only 14 percent in 2010 (Blau and Kahn, forthcoming, table 4B).

The differences in the role of labor-force experience play much larger roles in determining the gender gap in the wages in different segments of the economy. Marianne Bertrand, Claudia Goldin, and Lawrence Katz (2010) show that, although women and men MBAs have similar earnings at the beginning of their careers, the gender gap grows to almost 60 log points within roughly fifteen years of graduation—a difference partly driven by career interruptions around the time of a birth as well as shorter hours worked after childbirth.

Differences in industry or occupation of employment have also impacted women's com-

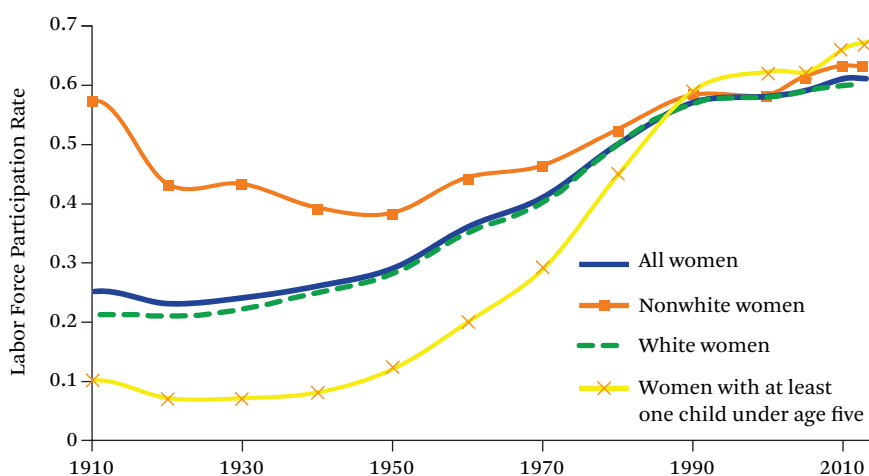
penetration and status, both absolutely and relative to men. For instance, women have historically been much more heavily concentrated in lower earning industries and those with lower union coverage (that is, childcare and services) (Charles and Grusky 2004). Occupational segregation by gender has decreased, but the gains have been slower in the past two decades than before (Stainback and Tomaskovic-Devey 2012). The explanatory power of industry of work remains an important determinant of the gender gap in wages today. In 1980, differences in industry of work and unionization accounted for around 15.8 percent of the wage gap. By 2010, this figure had barely risen to 16.3 percent, but the share explained by unionization had fallen to essentially zero.⁵ This means that the share explained by differences in industry of employment rose from around 10 to 18 percent over these thirty years (Blau and Kahn, forthcoming).

Another reason why industry and occupation of employment matter relates to the effects of broad economic trends on specific industries and occupations that—due to the different distributions of men and women in these occupations and industries—affected men and women differently. Some scholars have surmised that the computerization of the workplace reduced the demand for labor in sectors of the economy where more men were concentrated (like manufacturing) and raised demand for jobs (like office work) where more women worked (Weinberg 2000; Welch 2000). Although this is true in some sectors, broader economic trends appear to have had the reverse effect. Blau and Kahn estimate that the convergence in the gender gap would have been 5 to 6 percentage points larger if the overall distribution of wages had remained stable (2007). They argue that women in the 1990s were “swimming upstream” against an economy pushing their pay in the other direction.

The erosion of the minimum wage also worked against a declining gender gap (Lee 1999; Card and DiNardo 2002). John DiNardo,

4. Note that this section's attribution in words like *explained by* or *accounted for* is not intended as a causal statement but as a statistical one.

5. The decline in unionization in the American workforce has been more extensive for males than for females and has had a larger effect on the male wage distribution than on the female wage distribution (Western and Rosenfeld 2011).

Figure 2. U.S. Women's Labor-Force Participation, 1910–2010

Sources: Authors' calculations based on decennial censuses and ACS (Ruggles et al. 2010).

Notes: Decennial censuses from 1910 to 2000 decennial censuses and ACS from 2005, 2010, and 2013. Samples are restricted to women ages sixteen and older who do not reside in group quarters. Allocated values are omitted. Historical comparisons necessitate that race categories are very crude and do not account for changes in how individuals self-identify by race or ethnicity over time.

Nicole Fortin, and Thomas Lemieux (1996) note that, in 1979, the modal wage for a woman with a high school diploma was identical to the federal minimum wage. As the value of the federal minimum wage plummeted by 30 percent over the next decade, wages at the bottom end of the distribution would have fallen by more had women not continued to increase their relative positions in the wage distribution. Despite considerable consensus that economic changes over this period tended to work against women, the magnitude of these effects depends largely on the reference group (Fortin and Lemieux 1998).

THE ROLE OF SELECTION

Other more difficult to measure factors have contributed to the decline in the gender gap in wages. One such factor is *selection*, a term that refers to changes in the distribution of characteristics among working women (relative to nonworking women) that are compensated (or penalized) in the labor market. Many of these characteristics are observed. As women in-

creased their labor-force participation rates over the twentieth century, from around 20 percent in 1900 to 59 percent in 2010 (as shown in figure 2), the share of married women workers and working mothers changed dramatically. For instance, roughly 32 percent of married women ages sixteen to sixty-four were in the labor force in 1960, but today their labor-force participation rates have doubled to exceed that of the overall working-age, female population (59 percent). Similarly, the growing representation of mothers with young children is yet another important change in U.S. labor markets. Historically, very few women with children ages five and under worked for pay. In 2010, the labor-force participation rates of mothers with young children had risen to more than 60 percent.

These transformations have been accompanied by changes in the racial composition of working women. Historically, nonwhite women were significantly more likely to be labor-market participants, in large part because their husbands tended to earn less (Costa 2000).⁶ In

6. Unfortunately, historical comparisons with the 1960s cannot be meaningfully broken down into smaller race or ethnicity groups, because census and survey questions about race or ethnicity in 1960 and 1970 were crude by today's standards.

1960, nonwhite women were almost 30 percent more likely to work than white women. By 2010, however, these race gaps in women's labor-force participation had almost completely evaporated (for more detailed reviews of these changes over the last hundred years, see Goldin 1990; Juhn and Potter 2006).

Alongside these compositional changes in the labor force, unmeasured characteristics of working women have also likely changed. If researchers could observe wage offers by firms to workers who chose not to work, researchers could directly calculate the effects of changes in selection on the gender gap in wages. But because wage offers and characteristics that determine wage offers are not observed in most labor-market surveys, the quantitative importance of selection for explaining women's wage gains is difficult to pin down.

Researchers have used various methodologies to estimate the importance of selection, but these calculations depend on assumptions that are almost impossible to test. Blau and Kahn (2006) estimate that selection on unobservable labor-market relevant skills changed from very positive to less positive between the 1980s and 1990s, meaning that the advantage in terms of unmeasured skills of new entrants had fallen for the average working woman between the 1980s and 1990s. It follows that convergence in the gender wage gap would have been slower in the 1980s but faster in the 1990s without these changes in selection. Casey Mulligan and Yona Rubinstein (2008), however, reach different conclusions using different methods. After accounting for compositional changes using a Heckman two-step procedure and an alternative procedure of identification

at infinity, they argue that the convergence in the gender gap between the late 1970s and early 1990s is due almost entirely to selection on unobservable characteristics.

CULTURE AND SOCIAL-PSYCHOLOGICAL FORCES

The extent to which gender differences reflect environmental conditions (*nurture*), biology (*nature*), or the interaction of the two is the subject of a long-standing academic debate. Some recent work suggests a role for nature,⁷ but many studies provide strong evidence that conditions in the family and the broader environment play important roles.

It is clear that cultural and institutional constraints play important roles from birth. Parents' treatment of children is related to their perceptions and expectations about their children's abilities and future opportunities, both of which are linked to gender. Choice of college major, first job, and when to have a family are not independent of labor-market realities such as gender discrimination, rigid work schedules, shift work, and required long hours. Women who expect their spouses not to support them or employers to discriminate against them—by paying them less for comparable work or by hiring or promoting them less—may opt out of certain jobs. They may avoid industries in which they fear unfriendly work environments, sexual harassment, and overt discrimination that may take the form of hostile or sarcastic comments, inappropriate humor or physical contact, and intentional or de facto exclusion from professional clubs or extracurricular activities (Lopez, Hodson, and Roscigno 2009).

7. For instance, some studies link testosterone levels with willingness to take financial risks (Apicella et al. 2008). The difficulty with this literature is that it is unclear whether testosterone levels are the cause or the consequences of other biological differences, and testosterone levels can be influenced by the environment as well as by behavior that has environmental rather than biological causes (Freese, Li, and Wade 2003). Other work links fluctuations in women's hormones associated with menstrual cycles with outcomes. Arndt Broder and Natalia Hohmann (2003) link these hormone fluctuations to women's willingness to take risks. Andrea Ichino and Enrico Moretti (2009) show that menstruating women working at banks in Italy are more likely to be absent from work, thus implying that nature increases the gender gap. Work by Jonah Rockoff and Mariesa Herrmann (2012) in the United States, however, fails to find such associations among New York City public school teachers. The latter finding, therefore, suggests that responses to biological differences are mediated by institutions, industry, or culture. These examples fit within a broader literature that finds genetic effects on outcomes such as measured intelligence to be strongly conditioned by the environment (Nisbett et al. 2012). In short, this literature supports the conclusion that forces other than biological ones play a large role in the expression of nature.

Similarly, employers who expect women to leave the labor force when they have children may invest differently in their female employees (Coate and Loury 1993; Thomas 2014). The perception of discrimination and “chilly climates” in certain industries and occupations may in turn affect women’s pre-market investment in education and skills. These perceptions of discrimination also encourage men to specialize in the more time-flexible tasks in the domestic division of labor (Charles 2011), which can exacerbate gender gaps in home and market production. The resiliency of these cultural and institutional barriers (or their rapid deterioration) may hasten or slow the speed of change (Fernandez 2013).

Other factors such as gender differences in risk aversion, competitiveness, and willingness to negotiate predict certain types of career choices and outcomes. We provide a brief review of these studies here but refer interested readers to more comprehensive reviews by Bertrand (2010) and Muriel Niederle and Lise Vesterlund (2010).

Differences in men and women’s willingness to compete has been highlighted as an important potential impediment to women’s career progress (Ridgeway 2001; Ridgeway and Correll 2004). For instance, differences in competitiveness may matter if promotions to more lucrative positions or assignments in the workplace are often very competitive. If women shy away from competition, they would be less likely to win these promotions. Indeed, recent work shows that, holding ability constant, women are less likely to choose to compete (Niederle and Vesterlund 2010). Differences in competitiveness translated into striking differences in selection into more prestigious math- and science-intensive tracks (Buser, Niederle, and Oosterbeek 2014).

More interesting, however, is that gender differences in perceptions of own task competence, own aspirations to pursue careers related to task activities, and competitiveness related to these tasks are mediated by the environment. Shelley Correll (2001, 2004) uses both experimental and nonexperimental evidence to demonstrate how gender differences

in perceptions about task competence and about aspirations for career-relevant activities emerge from culturally gendered differences in beliefs about tasks. She finds that experimental dissociation of gender from task beliefs eliminates gender gaps in perceptions of task competence and also in aspirations for career-relevant activities requiring competence with the task.⁸ Alison Booth and Patrick Nolen (2012) examine gender differences in willingness to compete in a laboratory setting where students are assigned to mixed-sex groups and single-sex groups. Moreover, they examine how students respond based on whether their school is a single-sex or mixed-sex school. They find that the gender gap in choosing to compete was similar in magnitude to comparable studies (Niederle and Vesterlund 2007, 2010), but that girls who attended a single-sex school were *42 percentage points* more likely to choose to enter the tournament than girls from a coed school—even after controlling for ability, learning, family-background, and age. It remains unclear to what extent competitiveness is correlated with unobserved determinants of where parents choose to send their children (that is, parents send their more risk-loving daughters to private girls’ schools).

International evidence also suggests that environments help determine competitiveness. In one case study, Uri Gneezy, Kenneth Leonard, and John List (2009) show that gender differences in competitiveness are reversed in the Khasi, a matrilineal society in India. Similar studies indicate that both gender differences in performance and gender differences in attitudes toward STEM careers appear to be influenced by the local school environment (Legewie and DiPrete 2012, 2014; Mann, Legewie, and DiPrete 2015). Measured gender differences in competitiveness and their effects may also be manipulated by the structure of laboratory experiments. By repeating a math competition up to five times in primary classrooms (as well as a number of other experiment characteristics), Christopher Cotton, Frank McIntyre, and Joseph Price (2013) show that boys’ advantage in competition does not persist beyond the first round and may also be elimi-

8. For a comprehensive review of the related literature on experimental and nonexperimental studies of self-affirmation and its effects on performance, see Cohen and Sherman 2014.

nated by altering time pressure or the assigned competitive task.

Outside of the lab, cultural and social-psychological forces may play even larger roles. Even in the absence of explicit, overt discrimination, stereotypes and stigma can socialize gender segregation and inequality.⁹ Social-psychological factors may influence educational and occupational choices and reinforce the continuing occupational segregation in the American labor market. Maria Charles (2011) notes that behaving in accordance with stereotypes is a strategy for affirming one's gender identity. Behaving contrary to stereotypes concerning, for example, math, science, or the pursuit of elite corporate positions imposes greater costs to women than to men among those who value a strong and culturally coherent gender identity. As with overt discrimination, these cultural factors can influence pre-market choices, decisions to promote or remain in a position, and, in turn, the gender wage gap.

A growing number of studies find that stereotypes not only affect the process by which people evaluate others. They also affect performance and self-evaluation of performance in tasks that are coded as either especially suitable or especially unsuitable for that person's gender (Correll 2004; Ridgeway 2006; Correll, Benard, and Paik 2007; Cohen et al. 2009; Charles 2011; Sherman et al. 2013; Cohen and Sherman 2014). For example, reminding subjects that they are women (given negative stereotypes about women's negotiation abilities) has led women to perform substantially worse in negotiations in laboratory experiments (Kray, Thompson, and Galinsky 2001; Kray, Galinsky, and Thompson 2002). This is not unique to women: gender priming also affects men's level of altruism when they are assigned to mixed gender groups (Boschini, Muren, and Persson 2012).

A related finding concerns professor gender. In a compelling study of U.S. Air Force Academy students, the random assignment of students to STEM courses taught by women had a large effect on female students' performance in these

classes but little on men's performance. Higher-performing women randomly assigned to take math and science from female professors were also much more likely to enroll in more STEM classes and graduate with a STEM degree (Carrell, Page, and West 2010). Although the reason for this effect is unclear, these results may be related to how having a professor who challenges gender stereotypes alters women's perceptions of their own abilities.

Another potential explanation is that bias is operating at the professorial level which could affect students more directly. Women professors in STEM may better recognize female students' abilities by, for example, calling on them in class or acknowledging their achievements. Some evidence for this later phenomenon comes from studies of corporate leadership. Greater representation of women on U.S. corporate boards is strongly associated with the likelihood of employing women in top management positions (Matsa and Miller 2011). Similarly, Lisa Cohen and Joseph Broshak (2013) find that the proportion of newly created jobs first filled by women in 153 New York City advertising agencies over thirteen years was positively affected by the proportion of female managers in the agency. Moreover, Matt Huffman, Phillip Cohen, and Jessica Pearlman analyze thirty years of administrative data from the Equal Employment Opportunity Commission and find that the presence of women in managerial positions in an establishment was positively associated with occupational gender integration in the establishment, with the strongest desegregating effects of female managers occurring in larger and growing establishments (2010). The evidence does not all favor effects in one direction. Another study demonstrates that a higher share of female managers in an industry does not invariably reduce gender gaps in pay or promotions (Penner, Toro-Tulla, and Huffman 2012).

Subjective bias in evaluators is yet another way stereotypes cloud evaluations of men and women, a bias persisting among even the most elite and educated evaluators. A recent working paper of women's promotions in economics

9. For an overview of economic models of discrimination, see Altonji and Blank 1999; for a recent overview of sociological and psychological models of how discrimination emerges from social norms and implicit and explicit prejudicial attitudes, see Quillian 2006.

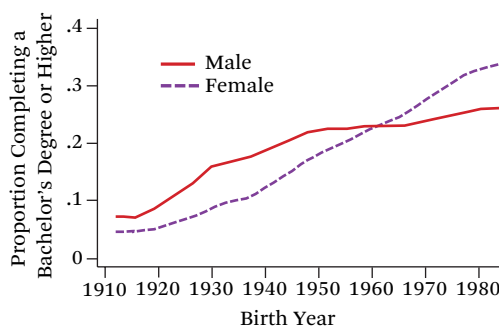
suggests that the field gives women less credit for their academic publications if they coauthor with men, presumably because the field attributes more of the intellectual work to their male coauthors (Sarsons 2015). This systematic bias bears directly on the large gender tenure gap in economics. Among economists with initial placements in the top thirty economics programs, only 32 percent of women, versus 49 percent of men, received tenure. For the PhD cohort of the early 1990s initially placed at other PhD-granting institutions, only 29 percent of women received tenure, versus 43 percent of men (Hilmer and Hilmer 2010). These biases operate in the press as well, with even top female economists being relegated to the second author by journalists. A recent analysis of gender differences in retention and promotion across the social sciences in nineteen American research universities suggests that the gender gap in tenure rates in sociology departments may be similar to that found in economics (Box-Steffensmeier et al. 2015).

PREPARATION FOR CAREERS: THE ROLE OF EDUCATION AND OCCUPATIONAL CHOICE

Fifty years ago, women lagged behind men in their educational attainment. In the United States and most industrialized societies, however, the days when gender inequality in education meant economic disadvantages for women have long passed. In fact, women have made substantial gains in all realms of education and now outperform men on many key educational benchmarks. In 1970, 58 percent of college students were men, but by the 1980s (cohorts born in the 1960s), the gender gap in college enrollment had reversed. In 2010, 57 percent of all college students were women. Women are also more likely than men to persist in college, to graduate, and to enroll in graduate school (DiPrete and Buchmann 2013). As of 2013, women earned 57 percent of bachelor's degrees and 61 percent of associate's degrees.

Figure 3, which displays college completion rates of twenty-six- to twenty-eight-year-olds by birth year from the U.S. census, shows that men led women beginning with the birth cohorts of 1910, the ratio peaking in cohorts born

Figure 3. Bachelor's Degree or More

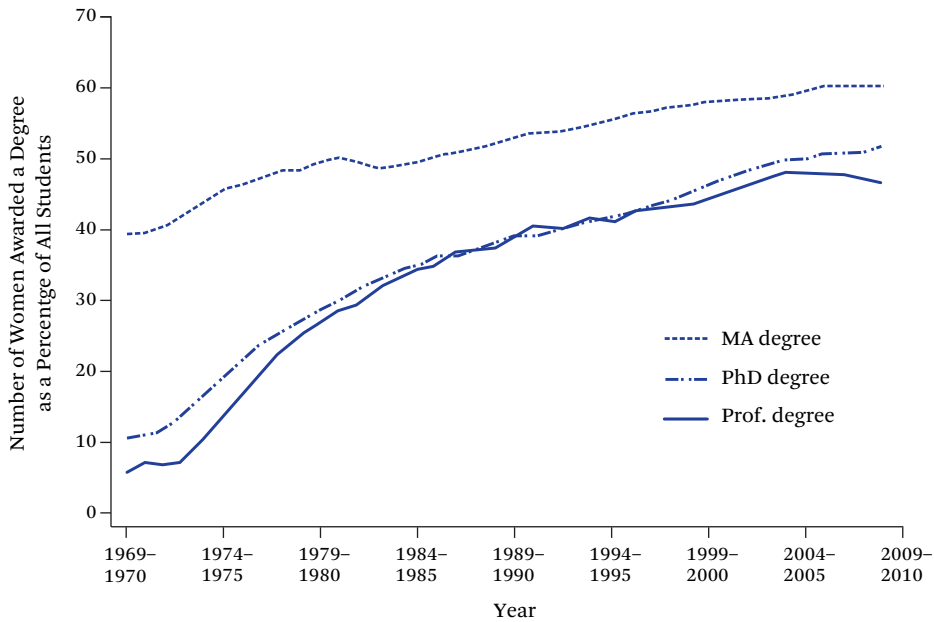


Source: DiPrete and Buchmann 2013.

in the 1920s and 1930s (see also DiPrete and Buchmann 2006; Goldin, Katz, and Kuziemko 2006). Women born in the 1940s began closing the gap, and their gains accelerated to the extent that women born in the late 1950s and early 1960s (who were of college age during the 1980s) overtook men in their rates of college completion.

Women have continued to increase their educational attainment at roughly the same rate since the 1960s. On a cohort by cohort basis, the male college graduation rate peaked around the birth cohort of 1950 and then remained essentially flat for the next fifteen years of cohort or so (DiPrete and Buchmann 2006). Thereafter, male cohorts gradually increased their rate of college completion, but these gains lagged behind the contemporaneous gains for women and the gains for male cohorts born before 1950. By 2010, women ages twenty-six to twenty-eight had more than an 8 percentage point lead in college degree receipt over their male counterparts. This constitutes an enormous change in the relative position of men and women in a very short time.

Women's now-sizable lead in college completion has occurred despite the scientific consensus that girls and boys have similar aptitude. Girls generally outperform boys on verbal tests and lag behind boys on math tests, especially in the population at the lower end of the test score distribution, but gender differences in cognitive ability, as measured by test scores, appear too small to account for the current gender gap in college completion. These small differences in test score performance have re-

Figure 4. Women's Share of Advanced Degrees

Source: DiPrete and Buchmann 2013.

mained fairly stable, whereas the gender gap in educational attainment has reversed from a male advantage to a female advantage that continues to grow. From grade school on, girls outperform boys on teacher assessments of classroom performance and in social and behavioral “noncognitive” skills that have been linked both to academic success and to the growing gender gap in academic performance and educational attainment (for a comprehensive review, see Buchmann, DiPrete, and McDaniel 2008).

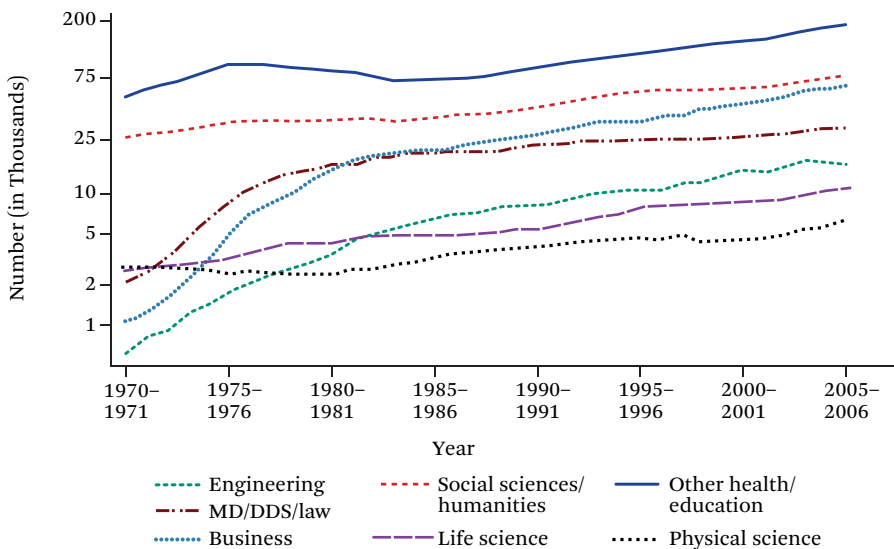
Women have also made impressive gains in completing advanced degrees relative to men. Today, women have achieved equality or surpassed men in the number of degrees earned at every level of education. From 1969 to 1970, as figure 4 shows, women made up almost 40 percent of master’s degrees, 11 percent of doctoral degrees, and 6 percent of professional degrees. The share of master’s degrees earned by women has grown over the last three decades, and women currently earn 60 percent of the total.

The number of professional degrees awarded to women has increased dramatically since 1970, including degrees in business, medicine,

dentistry, and law. Women now earn 47 percent of all professional degrees (DiPrete and Buchmann 2013; Blau, Ferber, and Winkler 2014). Figure 5 presents this remarkable takeoff. In 1970, men completed sixteen times more professional degrees than women. Since 1982, however, that number has declined slightly—from 40,229 in 1982 to 34,661 in 2010. Over the same period, the number of women’s professional degrees has increased by almost twenty times—from 1,534 in 1970 to 30,289 in 2010. But since 1990, the pattern has changed to one of smaller, uneven gains. With the exception of a continued gradual rise in the proportion of advanced degrees in business conferred to women, the share of advanced degrees for women has remained fairly stable.

The gendered pattern for doctoral degrees conferred is similar to that of professional degrees. Men completed almost eight times as many doctoral degrees as women in the 1969–1970 school year (58,137 versus 6,861 for women). However, by 2009–2010, more doctoral degrees were awarded to women than men, 81,953 versus 76,605, and women now earn 52 percent of all doctoral degrees (DiPrete and Buchmann 2013; Blau, Ferber, and Winkler 2014). If these

Figure 5. Advanced Degrees Awarded to Women



Source: DiPrete and Buchmann 2013.

Note: The y-axis is on a log scale.

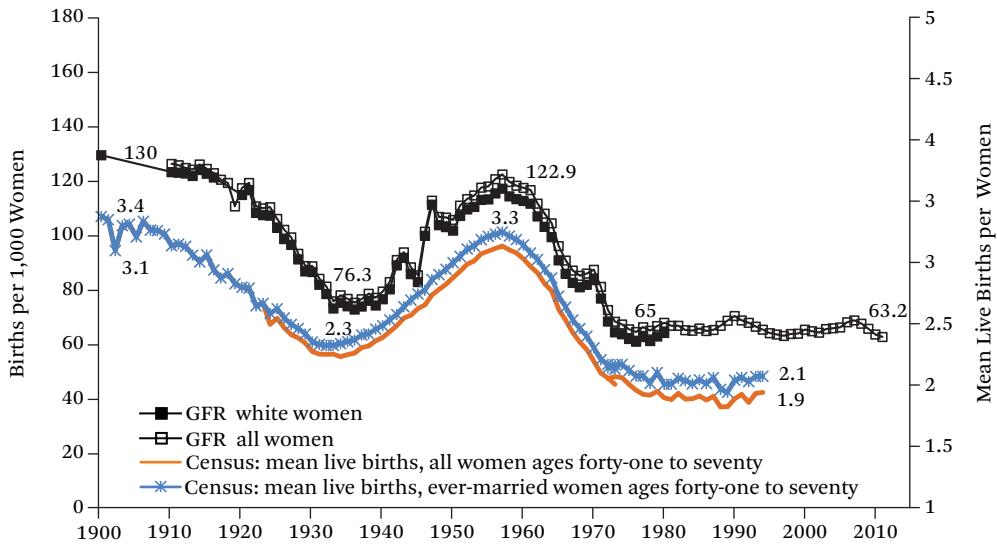
trends follow the gender gap in bachelor’s and master’s degrees, we should expect a gap to emerge favoring women in the coming years.

Despite parity in the rate of degree completion, convergence has not carried over to all fields of study, especially the “STEM” fields. During the 1970s and 1980s, women made rapid advances into bachelor-level fields that were formerly male dominated, but change has been smaller and more uneven since around 1990 (England and Li 2006; Goldin, Katz, and Kuziemko 2006; Bronson 2013; Hegewisch and Liepmann 2013). Although women have continued to increase their share of undergraduate majors in biological and biomedical sciences, the odds that a physical science or engineering major is female have hardly changed in the past twenty years (Mann and DiPrete 2013; Ceci et al. 2014). The same is true for the field of economics (Goldin 2015).

Because girls have begun to outperform boys in many STEM subjects in high school, the persistence of these degree gaps is especially surprising. Data collected by the National Center for Education Statistics (NCES) show that high school girls have earned higher grades, on average, than boys since at least the senior class of 1972 and have had a

clear advantage over boys since 1992 in the completion of Algebra II and Chemistry, which are gateways to more advanced math and science courses in high school (DiPrete and Buchmann 2013). By 2004, girls opened up a clear lead over boys in the taking of pre-calculus or calculus. Likewise, their lead in taking at least chemistry or Physics I has widened since 2004, though boys retain slight leads over girls in the taking of calculus and at least one of Chemistry II, Physics II, or advanced biology (Dalton et al. 2007).

Women’s educational gains ensuing from these positive performance shifts and increased STEM enrollments affected their ultimate occupations. Unsurprisingly, occupational segregation by sex has evolved similarly to major and degree choices (Jacobs 2003). A period of rapid change in the 1970s and 1980s was followed by slower change and then stagnation. Francine Blau, Peter Brummund, and Albert Liu (2013) document the declining pace of change in occupational gender segregation, with the index of dissimilarity falling by 6.1 percentage points in the 1970s, 4.3 percentage points in the 1980s, 2.1 percentage points in the 1990s, and 1.1 percentage points in the 2000s. Given this slowing rate of change, 50

Figure 6. U.S. General Fertility Rate and Completed Childbearing

Sources: Authors' compilation (CDC 2000; Ruggles et al. 2010).

Notes: Fertility rates are from the CDC's historical 1909 to 2000 statistics (CDC 2000). Mean live births are computed using the 1940 to 1990 decennial census IPUMS samples (Ruggles et al. 2010) and the 1995 to 2010 June CPS. The general fertility rate (right vertical axis) is the number of births per thousand women (all or white women only) ages fifteen to forty-four in the population from Vital Statistics.

percent of women would have to change occupations in order to have the same distribution across occupations as do men.

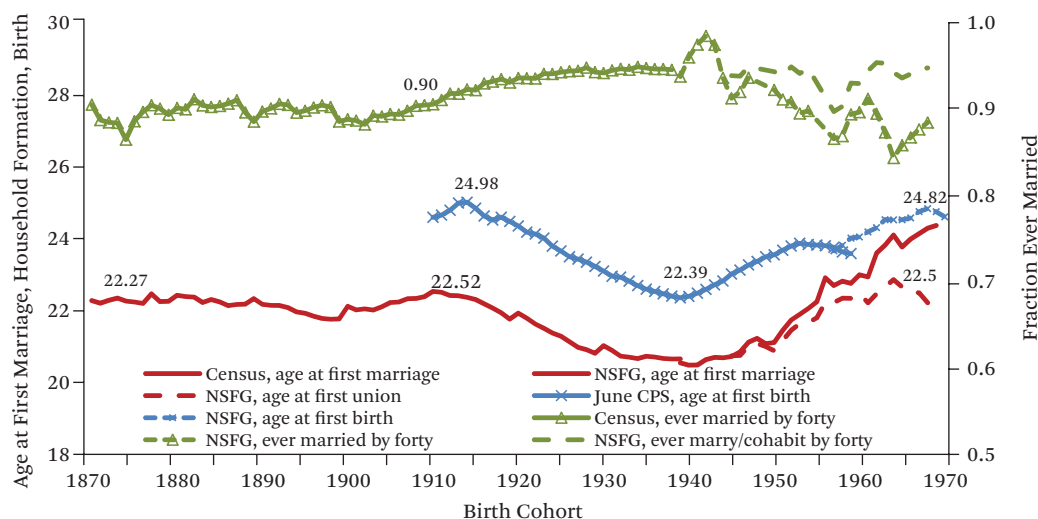
This slow change can be partially attributed to the relatively strong growth of occupations that are more intensely segregated by gender, such as nursing (Hegewisch and Liepmann 2013). However, even after taking differential growth rates into account, the rate of integration of occupations has slowed, and some occupations—such as kindergarten teacher, secretary, or carpenter—remain overwhelmingly male or overwhelmingly female. If a *nontraditional occupation* is defined as one that is less than 25 percent male or less than 25 percent female, only 6 percent of women, versus 44 percent of men, work in nontraditional female occupations (Hegewisch and Matite 2013). At the same time, nontraditional male occupations employ only 5 percent of all men, but 40 percent of all women. Today, around 60 percent of American workers work in occupations that employ both men and women, and about 40 percent of both genders work in occupations that employ very few members of the opposite sex.

Although the rate of change is slowing, the gender gap in education and occupation is still narrowing. Because education and occupation are correlated with other measures of well-being, changes in women's health statuses have been evident. Although less-educated women generally report worse health than do less-educated men (unless the comparison is between older individuals), the self-reported health of college-educated women is nearly as good as that of college-educated men (Ross, Masters, and Hummer 2012). If part of this relationship is causal, rising levels of education for women may be closing the gender gap in self-reported health. Equally important, women's educational gains extend far beyond the realm of personal health and have significant implications for marriage, childbearing, and family structure, which we discuss next.

CHANGES IN CHILDBEARING, MARRIAGE, AND FAMILY STRUCTURE

Accompanying the dramatic changes in women's career preparation and labor-market outcomes have been changes in their roles as

Figure 7. Mean Age at First Marriage-Cohabitation and First Birth and Share Ever Marrying



Sources: Authors' compilation based on IPUMS samples (Ruggles et al. 2010), CPS, and National Survey of Family Growth (Smock et al. 2013).

Notes: Decennial census figures from 1940 through 1980; CPS figures from 1979 to 1995; NSFG figures from 1982 through 2010. The figure plots the mean age at first marriage (conditional on ever married by age thirty-nine), first household formation or union (the younger of first marriage or first nonmarital cohabitation), first birth (left vertical axis), and share ever married (right vertical axis) against single year-of-birth cohort. The NSFG and CPS trends are based on three-year cohort moving averages.

mothers and partners. Figure 6 shows that U.S. fertility rates have declined over the last fifty years, from around 122.9 births per thousand women ages fifteen to forty-four, and have stabilized at around half of that figure. Similarly, completed childbearing by age forty-one has declined from a high of 3.3 children for women born in the mid-1930s to around two children for women born around 1970 (Bailey, Guldi, and Hershbein 2014).¹⁰

These changes in the number of children correspond to another important shift in American family structure since 1960: the dissociation of childbearing and marriage. In 1970, only 11 percent of American children were born to unmarried parents; by 2009, the figure had risen to 41 percent (Martinez, Daniels, and Chandra 2012). In the last fifty years, the share

of children living with unmarried parents has risen from just over 5 percent to over four times that rate today (Ellwood and Jencks 2004), with a considerably higher fraction expected to experience parental cohabitation at some point in their childhood (Graefe and Lichter 1999). These changes signal important shifts in the relationships between children, parents, and other adult relatives such as grandparents (Selzer and Bianchi 2013). They have affected other dimensions of partnership as well. Figure 7 shows that, although the share of women marrying by age thirty-five has fallen, the same share of American women form unions (through marriage or cohabitation) by the age of thirty-five as did fifty years ago. First union by age thirty-five is roughly as high as at any other time in the past hundred

10. Mean live births (on the left vertical axis) is the mean self-reported number of children ever born for each birth cohort as measured between the ages of forty-one and seventy (indexed to year by adding twenty-five years to mother's year of birth; for example, mean children ever born to the birth cohort of 1870 corresponds to the year 1895 on the graph's horizontal axis). In addition, we include rates for never married women as measured in the 1970 through 1990 censuses. Computations use population weights.

years, and the average woman today first forms a union at just over age twenty-two—the same age as she did before the baby boom (Bailey, Guldi, and Hershbein 2014). In short, the terms of unions have changed. Even though the age at first union, including cohabitation, has changed very little, women tend to marry about 3.7 years later than they did around 1960 (birth cohorts around 1940; for men this number is 2.7 years).

Another important change relates to “who” marries. Marriage is increasingly becoming an institution of the elite. More-educated women are more likely than less-educated women to marry by age forty-five and, conditional on marriage, they divorce at substantially lower rates. Marriage rates have diverged sharply by race since the 1960s, nonwhites being substantially less likely to ever be married (Stevenson and Wolfers 2006; McLanahan and Watson 2011). Trends in age at first marriage have also diverged, with the most-educated women now marrying much later than their least-educated counterparts (Bailey, Guldi, and Hershbein 2014). This final pattern may be, at least in part, related to increases in women’s education and occupational investments which leads them to delay family formation.

THE ROLES OF TECHNOLOGY AND POLICIES

The labor market and family changes described have both stimulated and been affected by important developments in the technologies of preventing childbearing and of enabling childbearing for women seeking to get pregnant at older ages. This literature is large, so this section describes only some of its key findings.

Modern Contraception and Abortion

A growing literature in economics suggests many of the longer-term changes in family formation and childbearing—as well as the previously described changes in women’s education

and labor-force outcomes—are related to the introduction of modern contraception and abortion.

In 1957, the Food and Drug Administration’s approval of “the Pill” for the regulation of menses, and later, in 1960, as an oral contraceptive, decreased women’s uncertainty related to the timing and circumstances of conception.¹¹ The Pill was wildly popular. In 1965, 25 percent of white married women and 15 percent of non-white married women reported having ever used the Pill. By 1970, these figures reached 50 percent and 60 percent (Bailey 2010). By 1973, nearly 65 percent of married women age fifteen to twenty-four using any contraception chose the Pill (Westoff 1976).

Beginning in 1969, the legalization of abortion, first in a subset of states and then in the remaining states in 1973 with *Roe v. Wade*, provided additional insurance against unintended pregnancy and unanticipated circumstances after conception (Levine and Staiger 2002). According to the Guttmacher Institute, nearly 20 percent of pregnancies ended in abortion during the first year of *Roe v. Wade*, and this share rose to 30 percent over the next decade, before decreasing through today (Henshaw and Kost 2008).

Recent studies suggest that access to abortion had important implications for women’s childbearing. Using the staggered legalization, Phillip Levine and his colleagues (1996, 1999) show that the early legalization of abortion in five states around 1970 led to a 5 percent reduction in the birth rate of women of childbearing age relative to the decline in the rest of the United States. The effects are larger for teens, women over age thirty-five, and nonwhites, and they also vary systematically by distance to early repeal states (Levine et al. 1996, 1999; Angrist and Evans 1996). Once Levine and his colleagues (1996) account for cross-state travel to early repeal states, they estimate that the legalization of abortion reduced birth rates by almost 8 percent.¹² Evidence is more limited,

11. The first modern intrauterine device (IUD) made from plastic, the Margulies Spiral, was introduced in 1960, but IUDs with copper were not brought to market until the 1970s (Hutchings et al. 1985).

12. Other recent changes in funding, regulations, and program interventions allow the evaluation of more recent policy changes. In contrast to estimates using variation in the 1960s and early 1970s, subsequent restrictions on abortion, like parental involvement or mandatory waiting periods, have been found to have minimal effects on fertility rates, with some evidence showing a slight reduction in abortion rates (and increased contraceptive

however, that changes in abortion access translated into changes in women's labor-force outcomes. More specifically, Joshua Angrist and William Evans (1996) show that abortion reform appears to have affected schooling and labor-market outcomes among African American women, although the statistical strength of these results tempers their conclusions.

The technology of the Pill complemented the insurance conferred by legal abortion. For the first time in history, both women and men could plan their childbearing with virtual certainty around their personal circumstances and human capital investments. Unintended pregnancies could be prevented, and women had options if unforeseen circumstances arose after conception (for example, if a partner chose not to support the child). This greater control allowed childbirth to be timed to benefit both children and their parents. Women and men could pursue more education, find better jobs and mates, and provide better financial and other support for their children. Figure 6 shows why, despite these outcomes, estimating the effects of the Pill or abortion is challenging: their introduction corresponded to the peak of the baby boom (in the case of the Pill) and occurred in the midst of dramatic declines in childbearing (in the case of abortion).

Recent research uses "natural" or "quasi-" experimental methods to isolate the impacts of these technological innovations, for example, using variation in state-level restrictions on the sale of the Pill before *Griswold v. Connecticut* and *Griswold's* weakening of these restrictions. As much as 40 percent of the decline in the marital fertility rate from 1955 to 1965 might be attributable to the Pill (Bailey 2010). Another study showed that the county-level ex-

pansion of federally funded family planning programs reduced fertility rates by roughly 2 percent within five years (Bailey 2012). Finally, state-level restrictions on contraceptive access for unmarried, younger women show how these restrictions affected women's career investments (Goldin and Katz 2002). Recent studies also show that legal access to the Pill affected marital and birth timing and had broad effects on women's and men's education, career investments, and lifetime wage earnings (Goldin and Katz 2002; Bailey 2006, 2009; Guldi 2008; Hock 2008; Bailey, Hershbein, and Miller 2012).¹³ Women and men were more likely to enroll and complete college. Women were more likely to work for pay, invest in on-the-job training, and pursue nontraditional professional occupations.

As women aged, these investments paid off. Thirty percent of the convergence of the gender wage gap in the 1990s can be attributed to these changing investments made possible by the Pill (Bailey, Hershbein, and Miller 2012). Moreover, women who gained access to oral contraception before age twenty were significantly less likely to live in poverty (Browne and LaLumia 2014). They also appear more likely to cohabit before marriage, which in turn may have directly and indirectly altered the gendered division of labor in the household (Christensen 2011).

Greater cohabitation rates imply important changes in matching between men and women, as well as changes in women's bargaining power. A rising age at first marriage among more educated women indicates that they gained more time to search for a mate, increasing both the quality of their matches and, potentially, the earnings of their households. The rise in cohabitation may also imply substantial

use) among teens (Bitler and Zavodny 2001; Levine 2003). Similarly, limiting the use of Medicaid funding for abortion does not appreciably affect birth rates and lowers abortion rates only slightly, as many women are induced to travel to nearby states for an abortion (Blank, George, and London 1996) or, for teens, are less likely to get pregnant (Kane and Staiger 1996). A recent study also shows that increased Medicaid eligibility for family planning services for the near poor leads to reduced birth rates for teens and older women, and these effects appear to be driven by increased contraceptive use (Kearney and Levine 2009).

13. In a recent working paper, Caitlin Myers (2012) argues that her estimates of the effects of changes in legal access to the Pill for younger women differ from those of Goldin and Katz (2002) and Bailey (2006). Although smaller, the magnitudes of her updated estimates are not statistically different from published estimates (Bailey, Guldi, and Hershbein 2013).

changes in matching between men and women as well as further changes in the gendered division of labor. It also implies a shift in the meaning and implications of marriage. Marriage may have increasingly become a status symbol (McLanahan and Watson 2011), or it may be motivated by consumption (rather than production) complementarities (Stevenson and Wolfers 2007).

Antidiscrimination Policies

The long view makes clear that the extent and intensity of sex-based discrimination has decreased markedly over the last fifty years. Explicit mentions of sex in job ads, the dismissal of women from positions when they marry (“marriage bars,” Goldin 1991), or requirements that flight attendants be age twenty-five, size four, and single have been largely relegated to the past (for some lively accounts of the reality of being a working woman fifty years ago, see Collins 2009).

Part of this transition may be attributable to antidiscrimination policies. The 1963 Equal Pay Act mandates equal pay for men and women who are performing the same jobs.¹⁴ Title VII of the 1964 Civil Rights Act prohibits sex-based discrimination in either the terms or conditions of employment. Title IX of the 1972 Educational Amendments to the Civil Rights Act banned discrimination in educational institutions receiving federal assistance, which covered the exclusion of pregnant teens from public high schools as well as gender-based discrimination in colleges and universities. The 1978 Pregnancy Discrimination Act requires employers to treat pregnant women the same as other similarly capable employees (for detailed reviews, see Leonard 1990; Albiston 2007).

Yet isolating the effects of these policies in a context of the shifting labor markets, families, and culture is challenging, because these policies tended to be applied at a national level. This means that researchers face considerable difficulties in separating employees into sensible “treatment” and “control” groups to infer policy effects. Consequently, direct em-

pirical evidence that federal labor-market antidiscrimination policies mattered is scant. The time series evidence alone provides few obvious clues. Even as the legal basis for sex discrimination ended in the 1960s, the gender gap in pay changed little (see figure 1). The ambiguous and arguably limited impact of the courts certainly lies in part in the fact that an organization paying women and men different salaries in the same job was a smaller component of the gender pay gap than differences in pay by the same organization for jobs that are arguably comparable but where one job is more female dominated than the other. Courts have been reluctant to issue judgments in favor of plaintiffs in cases involving what some have called “values discrimination”; this fact has limited the impact of antidiscrimination laws on the gender pay gap (Nelson and Bridges 1999).

One way that antidiscrimination policies may have mattered, however, is in contributing to the broader social and cultural movement that altered women’s expectations about their work lives and pay. The redefinition of gender identity and the corresponding legitimization of women’s career ambitions that was in part facilitated by the passage of legal barriers to gender employment discrimination may have inspired a younger generation of women to invest more in labor-market careers. Consistent with this hypothesis, Claudia Goldin (2006, figure 2) shows that the proportion of teenage women who expected to be in the labor force at age thirty-five increased from around 33 percent for those interviewed in the late 1960s to around twice that by the mid-1970s. By the late 1970s, this figure had risen to above 80 percent.

Antidiscrimination laws, regulations, and enforcement practices may well have contributed to this trend, partly by improving the effectiveness of organizational personnel reforms aimed to promoting equity, such as official promotion of equity, constraints on managerial discretion, increases in transparency, and internal or external monitoring to promote accountability (Dobbin, Schrage, and Ka-

14. “Equal work” is defined narrowly. If the pay inequality is due to something other than the sex of the employee, then unequal pay is still permitted.

lev 2015). Other, less well-known policies also appear to have had labor-market effects. Title IX, for instance, increased women's participation in high school athletics, which may have increased women's ability to navigate competitive, male-dominated careers (Stevenson 2010). On the other hand, the enactment of the 1978 Pregnancy Discrimination Act slowed the wage growth of married women of childbearing age, largely because employers shifted the costs of the increase in the cost of insurance for these groups to these employees (Gruber 1994).

Smaller-scale industry- and firm-level policy changes also increased women's integration in labor markets. Kevin Stainback and Donald Tomaskovic-Devey (2012) show that just over half of the decline in occupational segregation between white men and either white or black women occurred from internal desegregation of existing firms, with the rest coming from the closing of relatively more segregated establishments and the opening of relatively less segregated establishments. One of the most compelling studies of localized antidiscrimination policies is Claudia Goldin and Cecilia Rouse's (2000) examination of orchestras' shift to "blind auditions". A unique feature of orchestras is that candidates only need to play an instrument and not speak during their audition. Goldin and Rouse's natural experiment uses a change in orchestras' auditions to use screens to conceal the identity of candidates. They then examine whether this policy increased the representation of women in orchestras and find that sex-blind auditions increased the probability that a woman would advance out of the preliminary trials by 50 percent. Sex-blind auditions furthermore increase by several times the probability that a woman will be the winner of the position in the final round. Their estimated magnitudes imply that blind auditions explain between 25 to 46 percent of the increase in women's representation in orchestras since 1970.

Whether restricting managerial discretion is the optimal strategy for reducing gender discrimination across the labor market as a whole, however, has been cast in doubt by recent research. Frank Dobbin and his colleagues conclude after their study of 816 establishments over a thirty-year period that organizational re-

forms that "engage managers in recruiting and training women and minorities for management posts" (2015, 1034) had more positive effects than policies intended to restrict the discretion of managers to discriminate against women and minorities. Evidence is considerable that discrimination emerges out of what Barbara Reskin (2000, 320) calls "normal cognitive processes . . . that occur regardless of people's motives" and that produces unequal outcomes through evaluation and attribution biases. How best to create to reduce the strength of cognitive biases is still an open and important research question.

PARENTAL LEAVE, HOURS REQUIREMENTS, AND CHILDCARE POLICIES

More recent work has focused on the impact of labor-market policies relating to parental leave. The increase in married mothers' labor-force participation and dual-earner families has created substantial demand for workplace policies that are "flexible" or "family friendly." Issues of balancing work and family life have been amplified by the rise in work hours (Jacobs and Gerson 2004) and women's entry into more demanding (and highly compensated) occupations. For historical or institutional reasons, many of these occupations do not allow for part-time work and many informally require more than standard forty-hour work weeks for continued employment or promotion.

In practice, many working parents are forced to choose either full-time or no employment. For a variety of cultural and economic reasons (including that women often earn less than men), the pattern of parental leave-taking has remained strongly gendered. Over the past two decades, around 20 percent of women have taken some time off of work for the birth of a child. The rate is lower among men, though it increased from 13 to 16 percent between 1995 and 2012 (Klerman, Daley, and Pozniak 2012). The larger gender gap is in the duration of leave. In 2012, 70 percent of men who took parental leave were away from work for ten days or less. In contrast, 78 percent of women taking parental leave were away from work for more than ten days; 40 percent of women who took

parental leave were away for sixty days or more (Klerman, Daley, and Pozniak 2012). Survey evidence also shows that many working mothers prefer to work less. In survey data, 44 percent of mothers who currently work full time report that they would prefer to work part time (Wang, Parker, and Taylor 2013).

Parental leave provides one approach to mitigating the potentially negative effects of childbearing on women's careers and also for increasing men's ability to remain at home with new children. In other countries that make up the Organization for Economic Cooperation and Development (OECD), paid leave is considerably more generous. The OECD average is eighty weeks of leave, which includes thirty-three weeks of full-time equivalent paid leave (Byker 2016). Advocates argue that parental leave allows parents to preserve their attachment to the labor force and to their employers, which many argue should increase women's earnings and help close the gender gap. Opposing arguments suggest that more generous leave policies cause employers to discriminate against women by promoting them less or assigning them to tasks where other employees can easily replace them (when they take leave, for instance). The jury is still out on whether these policies reduce women's wage growth or promote women's career advancement (Ruhm 1998; Lalive and Zweimuller 2009; Blau and Kahn 2013).

Only recently have U.S. policies responded to the growing demand for reduced work requirements for parents. The 1993 Family and Medical Leave Act (FMLA) requires employers to provide up to twelve weeks of unpaid leave for a variety of issues, including childbirth. Some states have changed their policies to go further than the FMLA. More recently, California and New Jersey have passed laws to mandate paid leave for parents. California's policy provides for up to six weeks of paid leave at up to 55 percent of salary for a maximum of \$1,075 per week.

The earliest research on FMLA found no measurable effect on women and men's leave taking (Han and Waldfogel 2003) or on women's employment outcomes (Han, Ruhm, and Waldfogel 2009). A recent working paper, however, provides a theoretical argument for how

mandated maternity leave could affect firms' investments in their female employees and, ultimately, women's promotions. Using the PSID and the Multi-City Study of Urban Inequality, Mallika Thomas (2014) finds evidence suggesting that FMLA reduced the likelihood that women are promoted.

Paid leave laws do appear to have increased the use of parental leave (Espinola-Arredondo and Mondal 2010; Rossin-Slater, Ruhm, and Waldfogel 2013), though they find limited evidence that women's labor-force attachment responded. Tanya Byker (2016) uses detailed monthly information on women's employment to show that paid leave laws reduce short-term separations of women from their employers by 5 to 10 percentage points. Consistent with the structure of the policy, the largest effects of paid leave were among women with less than a college degree. More time is needed before the longer-term effects of these policies can be evaluated.

Some of the most interesting emerging evidence relating to family friendly policies is that they may shift how women select into occupations or firms in ways that benefit employers. This is similar to the finding that, in lab environments, introducing a gender quota has the effect of increasing the entry of high-performing women into more competitive environments (Niederle, Segal, and Vesterlund 2013). Similarly, capping the maximum work requirements in medical residencies altered the women who chose these specialties but did not affect men's choices (Wasserman 2015). Women's responses to these policies may help explain why some of the most profitable companies in Silicon Valley are adopting extremely generous family leave policies (Garcia 2015; Greenberg 2015).

Recent studies—based on imperfect data—suggest that the fraction of firms offering family-friendly work policies has been increasing. The Council of Economic Advisors' 2014 report notes that more than 75 percent of employers say they allow at least some workers to change their starting and ending times. At the same time, only 49 percent of all workers and 47 percent of full-time workers reported in 2011 that they have flexible work hours. Moreover, flexibility was reported to be more frequent for

higher skilled workers. Employers cite costs as the reason why they do not further expand the use of flexible working hours; additionally, provision of such benefits is biased in favor of the incumbents of high-status jobs requiring high levels of education.

According to the Council of Economic Advisors, 74 percent of employers allowed some workers to gradually increase work hours after the birth or adoption of a child, but only 47 percent allowed most of their workers this flexibility. Only 37 percent of employers allowed most employees a few days off without having to use vacation days to care for sick children. Fifty-eight percent reported that they provided paid maternity leave for female employees. However, only 39 percent of workers in the American Time Use Surveys reported that they had access to paid family leave. As evidenced here, work-family balance is still a rarity for many employed mothers in the United States.

CULTURAL CHANGE

Changes in culture either caused by or resulting from these factors are difficult to quantify. Yet the increasing prevalence of more egalitarian sex-role attitudes in American society is an important and relatively recent development. Several studies document large changes since the 1960s. In a panel study of white mothers in metropolitan Detroit, only about 33 percent in 1962 disagreed that most important decisions in the life of the family should be made by “the man of the house.” By the early 1990s, the proportion of these women disagreeing had risen to 84 percent for the mothers, and 78 percent of their adult sons also disagreed (Thornton and Young-DeMarco 2001). In 1977, only 33 percent of women over eighteen in the General Social Survey disagreed that “it is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family.” By the mid-1990s, the proportion of women disagreeing with this statement had risen to nearly 66 percent, as

had the proportion of men (Thornton and Young-DeMarco 2001).

However, David Cotter, Joan Hermsen, and Reeve Vanneman (2011) show that, since the mid-1990s, the fraction of men and women who support gender egalitarianism has stopped its upward trend. Many scholars explain the “stalled” gender revolution as an outcome of three conditions: persisting beliefs in “gender essentialism” (that is, women and men are “inately and fundamentally different” in interests and skills), a failure to achieve greater egalitarianism in domestic work and childrearing, and an adjustment by even strongly career-oriented women to the reality of dual pressures from work and family by making career compromises even if they have not actually adopted an ideology of “opting out” (Charles and Bradley 2002; Stone 2007; England 2010).

Changes in culture surrounding gender, in large part, are the consequences of the considerable changes in childbearing, parenting, educational attainment, and career investments that have occurred over the past fifty years. Arland Thornton, Duane Alwin, and Donald Camburn (1983) argue that the growth in egalitarian attitudes was a consequence of growing educational attainment on the part of both men and women, growing labor market experience on the part of married women, and the transmission of more gender egalitarian attitudes from mothers to daughters. Changes in access to modern contraception documented in previous sections may also encourage more egalitarian attitudes surrounding women’s careers, motherhood, and domestic division of labor.

This shift toward more egalitarian attitudes has been accompanied by growing heterogeneity in the nature of the marital “exchange.”¹⁵ Historically, because men often specialized in market work (the output of which can be saved or accrued as an asset) and women in home production (the output of which is often more ephemeral, for example, clean laundry and

15. The Becker production model of marriage treats marriage as a contract in which the two parties follow their “natural” comparative advantages to split domestic and market work in order to create a “marital surplus.” This surplus is divided between parties and provides an economic rationale for the union. The Becker method of calculating the value of marital surplus has been extensively criticized as ignoring the gains to marriage that can result even when both wives and husbands invest in their careers (Oppenheimer 1997).

meals), marital dissolution often meant that “men gained” financially and that “women lost.” Men often took the income and assets with them and women bore the loss of the male income and gained sole responsibility for supporting dependents. But, over time, the rise in women’s work and the growing economic interdependency of men and women has meant that by 1990 the typical divorcing male suffered a net loss in household-size-adjusted income following union dissolution as a consequence of losing the wife’s income (McManus and DiPrete 2001), even though the financial consequences were typically worse for the woman than for her ex-partner. Meanwhile, recent estimates of the marriage premium find that women and men’s wages grow following marriage (Budig and England 2001; Glauber 2007; Killewald and Gough 2013). Changes in women’s labor-market participation and the change in the risk (and the laws surrounding divorce) have affected how households save and how women invest in their careers (Voena 2015)—all of which has changed the culture of marriage, family, and division of labor.

On the other hand, changes in culture are also a catalyzing force for change. The disaffection with domesticity at the height of the baby boom (as captured in Betty Friedan’s 1963 best-seller, *The Feminine Mystique*), and the rise of second wave feminism likely played important roles (Mason, Czajka, and Arber 1976). At the same time, it is also likely that more recent developments are the continuation of an evolution that extends back in time to the first wave of feminism of the late nineteenth and early twentieth centuries, as well as women’s empowerment during World War II. For instance, Raquel Fernandez, Alessandra Fogli, and Claudia Olivetti (2004) show that boys raised in families with working mothers during World War II were more likely to have wives who worked outside the home. Nicole Fortin (2015a) shows that beliefs about gender roles have a great deal of power in explaining both the evolution of women’s labor-force participation during the last fifty years and the leveling off of these changes in the mid-1990s (for a more detailed cross-country summary of trends

in happiness and well-being by gender, see Fortin 2015b).

Although much has changed, features of an older culture remain imprinted in today’s economy and society. Even as changes in the age at first marriage and motherhood—in conjunction with changes in women’s human capital and wages—have altered women’s bargaining power within unions, the household division of labor has persisted. In a study of trends in time use by women and their male partners from the middle 1960s to the early 2000s, Suzanne Bianchi, John Robinson, and Melissa Milkie (2006) and Bianchi (2011) show a decline in the average housework of U.S. mothers from thirty-two hours in 1965 to eighteen in the middle 2000s, with most of this decline being in the “core” housework tasks of meal preparation, laundry, and housecleaning. Offsetting the decline was an upward trend in time spent at primary childcare time by U.S. mothers. After dropping from an average of ten hours a week in 1965 to 8.5 hours in 1975, primary childcare began rising after 1985 to almost fourteen hours a week by 2003 to 2008. Fathers, in contrast, doubled their hours spent on housework from 1965 to 1985 from an average of four to an average of ten hours per week, and they nearly tripled the amount of time devoted to primary childcare (from 2.5 hours between 1965 and 1985 to seven hours a week between 2003 and 2008).

Mark Aguiar and Erik Hurst (2007) show that total hours of childcare done by both sexes has increased by equal amounts, but the share of childcare done by men has risen from around 20 to 30 percent of the weekly hours. The bulk of nonmarket work (such as shopping and conducting household chores) also continues to be done by women and the share performed by men has fallen. In 1965, women spent around thirty-three hours per week on these tasks and men fewer than ten. By 2003, women had reduced their nonmarket work to 22.6 hours, and men had increased to thirteen. This implies that the share of nonmarket work done by men increased from 24 percent to around 36 percent between 1965 and 2003. Even though much has changed in labor markets and in homes, the division of nonmarket

work in households has remained strongly gendered.

Many scholars have explored the persistence of culture through the lens of the norm about women earning less than their husbands (Brines 1994; Killewald and Gough 2010; Schwartz and Gonalons-Pons, this volume). In a recent and provocative study, Marianne Bertrand, Emir Kamenica, and Jessica Pan (2015) document in administrative and census data the persistence of a large discontinuity of wives' share of household income at 50 percent. Between 1970 and 1990, it appears that the discontinuity at 50 percent grew slightly, even as women's wages and career investments rose, though it has shrunk since 2000. In addition, recent internet and speed dating studies show that both men and women continue to prefer relationships in which men have higher status than their female partners (Fisman et al. 2006; Hitsch, Hortacsu, and Ariely 2010).

Scholars have argued about the cultural explanations for these patterns. In her analysis of PSID data, Jule Brines (1994) finds that women whose share of household income was more than 50 percent actually did more housework than women making slightly less, a pattern she refers to as a "gender display," which, she argues, offset the gender deviance of their making more money than their husband. Bertrand, Kamenica, and Pan (2015) use the PSID and fixed-effects models to estimate the woman's housework response to relative earnings, confirming Brines. Alexandra Killewald and Margaret Gough (2010) generate different estimates using more flexible linear splines. This reanalysis argues that the relationship between a woman's relative earnings and housework is actually a nonlinear relationship between the woman's absolute earnings and housework. Housework reductions are four times larger for women in the second to lowest quartile of the earnings distribution than above the median, and they are eight times larger for women in the lowest quartile than above the median. More work remains to be done to understand these findings. Where these studies agree, however, is that women generally do more housework than their husbands, even if they make

as much or more money. In short, culture is slowly changing, but long-standing norms and perceptions about gender persist and can continue to impede convergence in women's and men's economic and social status.

VOLUME SUMMARY

The papers in this volume address several important aspects of career and family and find evidence of continued but uneven change in the status and behavior of both women and men. The questions in these papers range from the size of the family pay gap (sometimes called the "motherhood penalty") to the impact of persistent gender differences in fields of study.

The volume begins with two papers providing novel descriptions of recent changes in women's labor supply. The first, by Tanya Byker, engages the recent debate over whether highly educated women are increasingly likely to drop out of the labor force to care for children—a phenomenon called the opt-out revolution. This paper uses rich monthly information from the 1984 to 2008 Surveys of Income and Program Participation (SIPP) to quantify changes in labor-force participation and hours of work for mothers for two years before and after childbirth. Consistent with recent claims that labor-force participation rates drop around the time of childbirth, Byker documents a large (at least 18 percentage points) and persistent drop in women's participation after births for all education groups.

However, Byker's intertemporal comparisons reject recent claims of an "opt-out revolution." Byker finds surprisingly little change in opting out trends across the last thirty years. Before and after the enactment of the Family and Medical Leave Act of 1993 (FMLA), the drop in women's labor-force participation eight months after the birth compared with the year before the birth is remarkably similar and not statistically distinguishable. She does, however, find considerable heterogeneity by race, with black mothers less likely than white or Hispanic mothers to opt-out following the birth of a child.

Kim Weeden, Youngjoo Cha, and Mauricio Bucca address another interesting dimension

of women's labor supply that affects the gender wage gap: women's representation in jobs demanding more than fifty hours per week. Both the rising returns to working these longer hours between 1969 and 2014 and the continued disproportionate representation of men in these positions play an increasingly important role in the gender gap in wages. Using the CPS Merged Outgoing Rotation Groups from 1984 to 2014, Weeden and her colleagues document how the hourly wages associated with long hours have risen relatively rapidly, both in absolute terms and after adjusting for education and demographic characteristics of employees in those jobs. This trend has been accompanied by a growing wage gap since 2000 in the wages of full-time and part-time workers. They estimate that the wage gap between fathers and mothers would be 15 percent lower if the observed growth in the wage premium for long hours had not occurred.

The articles that follow describe the evolution of the so-called motherhood gap, or family gap over the last forty-five years. The first, by Ipshita Pal and Jane Waldfogel, analyzes differences in pay between mothers and women without children in the 1967 to 2013 CPS. They document that, at the start of the period, the family pay gap was a fairly sizable 5 to 6 percent on average and rose to around 8 to 10 percent during the 1970s and early 1980s, producing findings that go against the conventional wisdom. Unlike the stalled convergence in other areas of the gender gap, the family gap fell quickly after 1990 to under 2 percent by the 2011 to 2013 period. Interestingly, these raw figures are fairly unaffected by controls for occupation, part-time work, or industry controls. They are also similar for mothers who have at least completed high school. Another fascinating finding is that the pay gap has disappeared or even reversed for married mothers, white mothers, and highly educated women. In contrast, the gap has persisted for unmarried mothers, mothers with less than high school completion, and non-Hispanic black mothers. The trend has also differed by age of youngest child, with the gap disappearing for mothers with children under six, but remaining at around 6 percent for mothers whose youngest child is over six.

Claudia Buchmann and Anne McDaniel shift the focus to the changing situation of women in professional and managerial positions. Using 1980 to 2010 censuses and ACS data, they document declines in the pay gap across a myriad of professional occupational groups; however, the magnitude of these declines varied by occupation in often surprising ways. In the traditionally male-dominated occupations of medicine, law, and STEM fields, mothers have completely erased the negative family pay gap and now even show a small positive premium, making them similar in this respect to fathers in these occupations. Interestingly, a motherhood gap persists (even though smaller in size) for mothers who work in professions that are dominated by women. They conclude with several possible explanations for why the sign of the family pay gap has reversed for women in the most elite occupations, thus setting an agenda for future research on this important issue.

The next set of papers explores the implications of women's increasing entry into nontraditionally female and STEM fields. Kimberlee Shauman's paper explores the changing influence of the sex-composition of degree field in the early outcomes of college graduates. Using data from the National Longitudinal Study of the Class of 1972 and more recent data from the Baccalaureate and Beyond Studies, she studies men and women who major in subjects that are nontraditional for their gender and graduated between 1976 and 1978, in 1993, in 2000, and in 2008. Consistent with other research, Shauman finds that the entry of women into more male-dominated fields has slowed for cohorts graduating since the early 1990s. In contrast, men's distribution across fields according to their gender composition changed very little across the last four decades. Field integration, in other words, has occurred through shifts in the behavior of women much more so than of men. Shauman finds a small but persistent tendency for men and women to be less likely to work in a job that is closely related to their field of study when the field is atypical for their gender. Another fascinating finding is that of a persistent negative relationship between the share of women in a field and starting salaries for full-time employed gradu-

ates from that field, and that the relationship became more negative over time. Women generally earned less than men in their first year, even controlling for hours worked, and the gap was especially large for graduates of male-dominated fields. At the same time, the relative advantage to women of majoring in male-dominated fields increased across the period studied.

Katherine Michelmore and Sharon Sassler examine trends in the size of the gender gap in wages in STEM fields. Their analysis uses the 1995 to 2008 National Science Foundation's Scientists and Engineers Statistical Data System and includes STEM majors who graduated from college between 1970 and 2004 and who work at least thirty-five hours per week. They find a wage gap of about 20 percentage points between women and men in these fields. Most of this difference, they argue, is due to differences in work experience. Consequently, this gap has been falling across cohorts as more women move into STEM fields and as the work experience gap between male and female STEM workers has fallen. Similar to that of Buchmann and McDaniel, Michelmore and Sassler's analysis finds that the gender wage gap in STEM fields is generally smaller than it is in other occupations, which suggests that the gender gap in wages would decrease if a greater proportion of women college graduates entered STEM fields. The authors also identify two forces that work to maintain a gender wage gap in STEM fields: a tendency for women to work in lower paid STEM occupations and a continuing gender wage gap among computer scientists that has not changed across cohorts. This latter force, they argue, suggests that women are not getting the same returns to experience in computer science as are their male coworkers.

The next set of papers focuses on the relationship between women's work and their marriage outcomes. Although women generally earn less than men, the growth in the wages and hours of female workers has—along with assortative matching—increased the share of marriages in which the wife earns more than her male partner. Using the 1968 to 2009 PSID, Christine Schwartz and Pilar Gonalons-Pons investigate whether marriages in which women

outearn their partners are more likely to dissolve. True to conventional wisdom, they find that such marriages were, indeed, more vulnerable to divorce during the 1970s and 1980s. Over time, however, this heightened divorce risk has essentially disappeared. Average real household earnings have increased by more than 30 percent for couples where wives earn more than husbands, whereas the real earnings of couples in which wives earn no more than their husbands has barely changed. Schwartz and Gonalons-Pons hypothesize that the growing economic advantage of having a high-earning wife may have facilitated the adaptation of this cultural norm to more egalitarian marriages.

Chinhui Juhn and Kristin McCue examine the reverse relationship, running from marriage to earnings. Of particular interest is the standard cross-sectional finding that married men earn from 10 percent to 40 percent more than single men but that married women earn significantly less than unmarried women with similar human capital characteristics. The two primary explanations relate to selection, the process by which the characteristics related to earnings differ between those who marry and those who do not, and specialization, the process by which spouses increase the total family output when one spouse invests more heavily in the labor market and the other invests more in home production. Using data from the SIPP that has been matched to Social Security Administration earnings records from 1954 to 2011, Juhn and McCue find a decline in the marriage earnings gap associated with specialization for women, particularly when children are not present. They also find an increasing selection of more educated women into marriage between cohorts born from 1936 to 1945 (who entered labor markets between 1954 and 1963) and 1966 to 1975 (who entered labor markets between 1984 and 1993) that further reduced the difference between earnings of married and single women. When these selection effects are not taken into account, a positive marriage gap is evident even among women with children. Their analysis suggests a growing marriage premium for men, even when they use a fixed-effects specification as an attempt to control for selection. Taken literally,

this finding implies an increase in specialization or selection into marriage based on predicted earnings trajectories—a puzzle they leave for future research.

The volume's final paper, by Ashley Jardina and Nancy Burns, examines how political participation by sex has changed in recent decades as women's social and economic roles have changed. A long history of research on political participation has made it clear that resources such as educational attainment and the civic skills individuals acquired in the workforce are important predictors of political participation. Not surprisingly, then, in the middle of the twentieth century, when most American women did not attend college and did work at home as caretakers, women's levels of political participation were relatively low. Women voted, donated to campaigns, expressed interest in elections, and participated in campaign activities at much lower rates than men. Jardina and Burns posit, however, that the impressive economic and educational gains women made over the course of the next five decades ought to have had similarly profound consequences for women's levels of political participation. They note that while women's levels of participation have certainly increased in recent decades, their engagement with the political world is perhaps more tepid than we might expect to see given the magnitude of the social and economic changes women have experienced. Jardina and Burns argue that men's and women's attitudes about gender roles explain why greater increases in women's political participation have not occurred. Even though both sexes have become more egalitarian in their views over time, this shift has been slow, and a persistent and sizeable minority of both men and women continue to endorse traditional gender roles. As a final part of their paper, the authors address the level of support for governmental policies that would reduce the conflict between work and family: federally supported childcare, parental leave, equal pay for equal work, and federal efforts to prevent job discrimination against women. In each case, they show that the level of support for such policies is relatively low among those who have more traditional views about women's role in employment and in the home.

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