

Nobel Lecture: An Evolving Economic Force[†]

By CLAUDIA GOLDIN*

Women are now at the center of the world's economies. Employment rates for women are at historic highs across the globe. Of the 165 nations in Figure 1, almost 60 percent have female employment rates (for those 25 to 54 years old) that exceed 0.70, and 80 percent exceed 0.50. For comparison, in the United States one-half of the women in that age group worked in 1970 and around three-quarters have done so ever since the early 1990s.¹ Only 20 of the nations in Figure 1 have rates below 0.40, and they are disproportionately in the Middle East, North Africa, and South Asia.²

Women are at the center of the world's economies not just because they are engaged in paid employment to a significant degree. They are rapidly becoming the better-educated gender, constituting the majority of college students in every one of the 38 OECD nations. Women do the vast amount of care-work across the world. And they largely determine the birth rate.

But women were not always at the center. They didn't always control their fates, and they don't today in some parts of the world. Many of the nations with substantial rates of female employment today once had very low rates. A century ago in the 1920s, less than 10 percent of married women in the United States were reported as being employed outside their homes. In 1900, estimates of “gainful employment”—the conventional measure before the labor force construct was devised—indicate that the figure was only 6 percent, although we will soon see that actual rates were several times that amount.³

How did the female labor force evolve? And what about the complicated issues of measurement? In particular, what is meant by the notion of “conventionally”

* Harvard University, Henry Lee Professor of Economics and Lee and Ezpeleta Professorship of the Arts and Sciences (email: cgoldin@harvard.edu). Acknowledgments: This is an expanded version of my 2023 Nobel Lecture in Economic Sciences. I am honored to have been depicted, by Johan Jarnestad and the Royal Swedish Academy of Sciences, as a detective. But I could never have been an effective detective, without the help of others. I thank Gary Becker, Ester Boserup, Richard Easterlin, and Jacob Mincer for providing big ideas in their writings and in discussions with me. I am grateful to my co-authors (Marianne Bertrand, Sari Kerr, Ilyana Kuziemko, Joshua Mitchell, Claudia Olivetti, and Cecilia Rouse) and other researchers of gender economics (especially Francine Blau and Elyce Rotella), for providing evidence, stories, and history. There have been many research assistants, thanked in the papers referenced here. Dev Patel has been part of virtually all my projects ever since he was my research assistant in 2017. Anna Esenther and Shu Yang Wei provided last minute help. I thank them both. Larry Katz is in all categories and is irreplaceable.

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¹ See <https://fred.stlouisfed.org/series/LRAC25FEUSM156S>.

² The statistic used is the employment to population rate rather than the labor force participation rate because the latter includes unemployment, and some nations have exceptionally high unemployment rates.

³ Data are from Goldin (1990), Table 2.1.

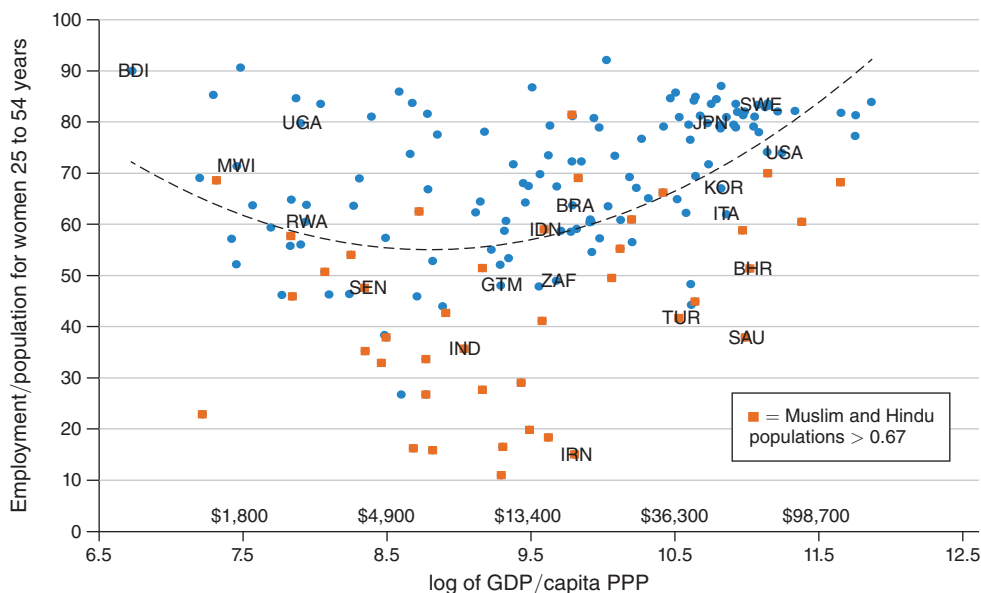


FIGURE 1. THE U-SHAPED RELATIONSHIP: EMPLOYMENT TO POPULATION RATIOS FOR WOMEN 25 TO 54 YEARS OLD, 2020 AND GDP PER CAPITA 2022

Notes: The 165 countries shown had employment to population data for women 25 to 54 years old and income data from the sources listed. Countries identified are: BDI (Burundi), BHR (Bahrain), BRA (Brazil), GTM (Guatemala), IDN (Indonesia), IND (India), IRN (Iran), ITA (Italy), JPN (Japan), KOR (Korea), MWI (Malawi), RWA (Rwanda), SAU (Saudi Arabia), SEN (Senegal), SWE (Sweden), TUR (Turkey), UGA (Uganda), USA (US), ZAF (South Africa). Square orange markers are countries with greater than 67 percent of their populations that are Muslim and Hindu, although most exceed 97 percent. The three letter country codes are on top of the marker. No employment data predate 2015 and 83 percent of the countries had data in at least one year from 2018 to 2023.

Sources: Employment data from ILO Stat-Explorer: https://rshiny.ilo.org/dataexplorer25/?lang=en&id=EMP_TEMP_SEX_AGE_MTS_NB_A. GDP/capita, PPP adjusted, for 2022 from the World Bank: <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>. Muslim and Hindu from a combination of sources, such as the PEW Research Center and the CIA World Factbook.

measured labor force participation for periods before the modern constructs of the labor force, unemployment, and national income were formalized?⁴

This essay summarizes how women historically became an economic force and why, despite being vital to the world's economies, they still earn less than comparable men even in nations with family-friendly policies and gender-neutral laws, norms, and values.

I. The Rise of Women's Market Work Historically

The movement of women from the home to the market provides what is probably the most important change in the history of the labor force in many nations. The

⁴Simon Kuznets (see Fogel et al. 2013), the 1971 Nobel laureate in economic sciences, devised many of the procedures regarding national income accounting that were later adopted by governmental agencies across the globe. Robert W. Fogel was a doctoral student of Kuznets at the Johns Hopkins University and was the 1993 Nobel laureate in economic sciences. I was a doctoral student of Fogel's at the University of Chicago. Therefore, I am the intellectual grandchild of Simon Kuznets.

degree to which populations are more efficiently allocated enhances the incomes and well-being of women and their families. And as young women gain better information of their future employment options, they can more effectively invest in their human capital and that provides a dynamic feature to the story. But one must also realize, in assessing the impact of the move from the home to the market, that economic growth can be overstated by the move since women were active participants in and producers of national income, even when their employments went uncounted.

A. The U-shaped Function of Women's Employment

Women shifted their locus of market-oriented work across time and through the process of economic development along a U-shaped curve. The U-shaped relationship has been analyzed by numerous researchers.⁵ It can be observed in cross section, although there is considerable dispersion. Many studies (see, in particular, Olivetti 2014) have demonstrated that the U-shaped relationship generally stands up to the inclusion of country and year fixed effects, even though data are often thin and less reliable for poorer nations. In addition, the meaning of historical data for the most developed nations is often unclear due to measurement issues.⁶ It is also the case that the U-shaped relationship has shifted upward over time as female labor force participation has increased across most nations and that the quadratic form has become more shallow.

Despite these factors, the U-shape relationship is clear even in the most recent data, as in Figure 1, relating the employment to population rate for women 25 to 54 years old to GDP per capita (PPP) in roughly the year 2022, across 165 nations. I prefer to use the 25- to 54-year-old group since the fraction of younger women attending school increased over time.

B. Traversing the Downward Portion of the U-shape

What explains the ubiquitous pattern of the U-shaped relationship? When the goods-producing market and the home were nearly the same, women were often employed for pay or profit even when they had young children. But as work moved out of the home, family firm, and farm and into the wider market of larger and more productive enterprises, women's measured economic activity *decreased*. They remained at home while men went off to work in more lucrative employments. These facts are true historically, and they are also played out today in many parts of the world.

The subject concerns tricky issues of measurement regarding what economists and governments have chosen to include in national income. These issues plagued those who devised national income accounts. But even if one limits the inclusion in national income to work that gives rise to conventionally measured income and not those activities, such as family caregiving and ordinary household activities, that do not, one would still find that women's economic activity was greater in the more distant past and then declined before its enormous increase in the most recent

⁵Goldin (1995) discusses its roots in the work of Boserup (1970) and Durand (1975).

⁶See also Heath and Jayachandran (2018) and Mammen and Paxson (2000) on India and Thailand.

epoch.⁷ This is the downward slope of the first half of the U-shaped trajectory of women's labor force participation.

Work for pay or profit has been understated historically for a set of related reasons. One concerns the survey questions that produced the data. When individuals are asked for an "occupation," as they were in US censuses before 1940, each will respond with their main vocation. The binary nature of the question may force responders to exclude activities even if they are valid occupations.

The main activity for most married women may have been "housewife" or "at home" even if they were engaged in other economic activities such as working on the family farm, or as a boardinghouse keeper, or in industrial homework. To add those other activities would require information on how much time was spent on each. Another factor is that women may have been embarrassed or fearful to tell the census taker that they took in laundry or did industrial piece work in their homes even if they spent considerable time at these activities. Finally, they may not have been asked for their occupation and the presumption might have been that the man was the baker, storekeeper, jeweler, book binder, and so forth. Women may have engaged in "hidden market work."

Each of these activities can be added to existing numbers by computing the undercounts of female workers, for example as boardinghouse keepers, agricultural workers, and industrial piece workers, which is what I did using US data for 1890 (see Goldin 1990, Appendix). The addition of these activities increases the labor force participation of married women, especially White women and also implies that the labor force participation of married women was lowest around the 1920s or later, after which it began to increase.

But there are other assumptions regarding the undercount of married women's work that will increase the levels further and shift out the decade when the bottom of the U was reached. For example, if one designates a greater fraction of the wives of farmers and of the self-employed as being in the labor force for some number of hours, employment levels for married women will be higher and the bottoming out of the U will shift to around the immediate post-WWII period (see Ngai, Olivetti, and Petrongolo 2024).

Another set of calculations was done for the late eighteenth and early nineteenth century United States, when women were often engaged in substantial "hidden market work" and when population censuses did not inquire of the occupation of all household members. Fortunately for economic historians, city and business directories listed occupations of the heads of households. The occupation of a husband would generally have been listed for a married couple.

If the husband had an untimely death (and many occurred during the era's epidemics), his widow—the new household head—might have been listed with an occupation in a subsequent directory. If an innkeeper's widow was listed as an innkeeper, or if a baker's widow was listed as operating a bakery in a later directory, a reasonable presumption would be that the widow had done similar work, when

⁷ There are two possible values that can be calculated and they can greatly differ in magnitude: that to the caregiver and that in the economic marketplace. If an individual who could earn \$X per hour, decides to care for a child and not be actively employed, then the value to that person of caring would exceed \$X per hour even if the cost of care in the marketplace were considerably lower.

her husband was alive. She would have been previously engaged in “hidden market work.”

I showed in Goldin (1986) that around 1790, a substantial fraction of widows (43 percent) were listed with the same occupational title as their husbands had been. In addition, around 55 percent of female heads of household were listed with an occupation in 1790. But because small business occupations declined over time as the American economy grew and markets for goods and services expanded, by 1860 only around 35 percent of female household heads were listed with an occupation. These facts bolster the notion that married women’s employments first declined as economic activity moved from the home and family business to the larger market.

Countries can get stuck near the bottom of the U. The subsequent move of women from home to market—the upward portion of the U—is often stymied by social stigma and traditions regarding their paid employment, and that is still the case in many parts of the world. India, shown just south of the vertex in Figure 1, is such a case. Some governments in nations with among the lowest female employment rates, notably Saudi Arabia, have recently enacted policies aimed to increase women’s employment.

Of the 20 nations with rates less than 0.4, all were majority Muslim or Hindu (most exceeding 97 percent of their populations) other than two island nations. But the relationship between religion and female employment is more complex. Of the almost 40 nations with populations exceeding 67 percent Muslim and/or Hindu (marked with squares), 17 had female employment rates exceeding 0.5. Rather than using religious preference, Bertrand (2020) categorizes nations using a “sexism” measure, giving the share of men agreeing with the notion that men have more of a right to a job when jobs are scarce. Countries having different levels of sexism cluster on separate U-shapes so that those with higher levels of sexism are on lower U shapes than those with lower levels of sexism.

C. Navigating the Upward Portion of the U-shape

That’s just half the story. Over time in most places, women eventually increased their role in the market economy and in paid work, and this happened as their earnings rose relative to the cost of household-produced goods and services of all types. An increase in earnings can occur because of neutral technological change in the economy or because of changes that favor a group, such as rising levels of women’s education.

Employment increased first in the expanding manufacturing sector. Since industrial work has historically been more onerous than office work, social stigma often develops around the employment of married women in burdensome, often unsafe activities, possibly to incentivize their husbands to work. The man who allows his wife to work in hazardous, unhealthy, and risky pursuits is chastened by the community as slothful and indolent.

The social stigma served to increase the estimated income effect (the negative impact of family income on employment) and to reduce the estimated substitution effect (the positive impact of real own wages on employment) since with stigma, women’s employment is less sensitive to their own wage but more sensitive to family income, mainly that of the husband.

Many industrial employments today (for example in electronics) are less taxing and hazardous than were those in the past (for example in textiles or food canning). But some may require that a woman travel to work daily, or migrate from home, or work in close proximity to men. All these conditions might be seen as unsafe or unseemly for women.

For these and other reasons, prohibitions against the employment of women outside the home, sometimes only married women and sometimes all women, exist in many places today. These prohibitions may be linked to limited legal rights or to a larger set of norms concerning women's appropriate dress, or to religious doctrine. But in some places, as was the case in the United States historically, these were norms that involved social stigma, and they greatly lessened over time. What led to the escape from such prohibitions?

Education levels greatly rose for most groups in the early twentieth century United States, and employment expanded in office and professional jobs (rising from just 20 percent of all employed women in 1900 to 40 percent by 1920). These were, at the time, "good" jobs in terms of conditions, hours, and pay. Young women were thereby encouraged to enter the labor force, and they remained employed for some time, even after they married. Thus, the rising portion of the U, which is shown in Figure 2 for married women by race, began to unfurl.

Stigma was reduced historically in the United States as education levels of women rose, as the demand for clerical and office positions increased, and as more-educated women entered the labor force in greater numbers. The norms became more expensive to enforce, and there was far less of a reason to maintain them. Since norms are kept in place to achieve an outcome favorable to a larger group, the social norm against men who allowed their wives to labor for pay outside the home became less useful and declined.

The data on labor force participation rates in Figure 2 are from conventional sources (for example, the US census) and are greatly understated for the first several decades depicted, particularly for White women.⁸ Yet, there is good reason for using the conventional measures when exploring why women entered the paid labor force even if such measures understate their contribution to national income. Work for pay outside the home is different from that done for family businesses or for pay within the home and often gives women more bargaining power and a greater sense of worth.

The conventionally measured rate in 1890 of just 3 percent, for married women 35 to 44 years old, vastly understates women's role in the economy. Employment rates for Black women are much higher in Figure 2 and have always been higher than those for White women. The reasons are many, including that the Black population was more rural and agricultural and was generally poorer. But there may also have been a lower stigma to the work of Black married women than for White married women, within their respective communities.

Employment rates for married women, as conventionally measured, began to increase in the early part of the twentieth century with greater levels of education and a burgeoning white-collar sector of clerical, office, retail, and professional positions. The woman who was employed at 20 years old and then exited to have children was

⁸The data in the dashed lines, for 1890 to 1980, are for all women other than Black women and would, therefore, include Asian women and other non-Blacks as well as White women.

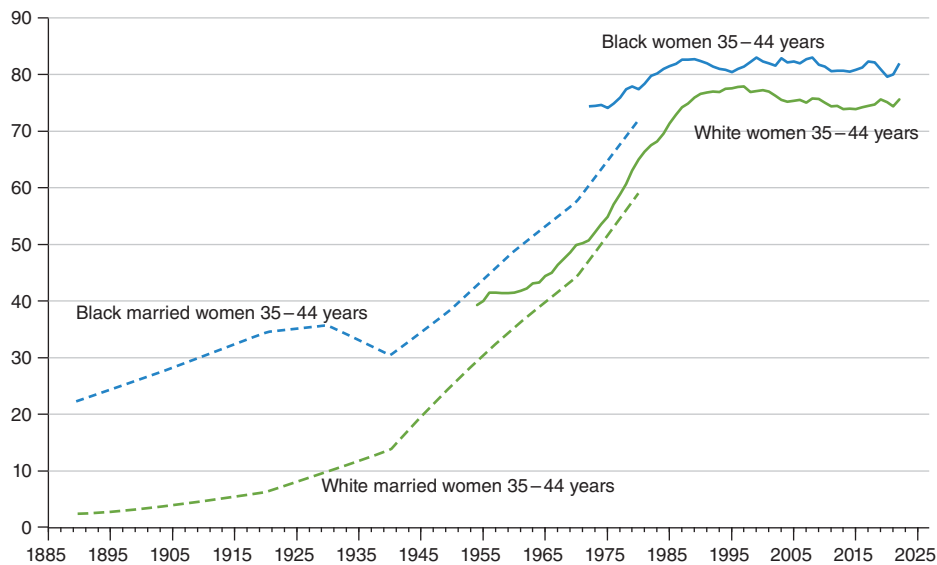


FIGURE 2. US FEMALE LABOR FORCE PARTICIPATION RATES BY RACE, AGE 35 TO 44 YEARS: 1890 TO 2022

Notes: Dashed lines, 1890 to 1980 Goldin (1990). White includes all non-Black.

Source: Data in solid lines are from <https://www.dol.gov/agencies/wb/data/lfp/women-by-age>.

more likely to re-enter, when her children were a bit older and especially if labor demand greatly increased, as it did in the United States during the 1940s and 1950s.

The upward portion of the U was thereby set in motion. Real wages increased relative to the opportunity cost of household production. Female labor force participation rates, in turn, greatly increased. Because there was less stigma, income effects were lower, and substitution effects were greater. Jacob Mincer's (1962) pioneering work on female labor supply was written around the historical moment when the substitution elasticity was probably the greatest in absolute value and the income elasticity had declined as social stigma was reduced. Many factors had operated to alter these components of the labor supply function. The substitution elasticity increased because of several factors including the appearance of part-time employment, which had been rare before the late 1940s, and the proliferation of household appliances, frozen foods, and the like. Female labor supply became rather elastic especially for women whose children were already in school.⁹

Some researchers have emphasized mechanisms for increased female employment besides changes in relative wages, prices, and income. The most important of these involve cultural factors that are set in motion and then replicate across generations or are learned from acquaintances to trace out a logistic curve, similar to the Figure 2 graphs (Fernández 2013; see also Fogli and Veldkamp 2011). Nevertheless, a standard labor supply model can trace out the features observed in the data when

⁹See Goldin (1990, 2006) for a longer treatment.

substitution and income effects are allowed to change across long periods and are not fixed across many decades.¹⁰

Considerable evidence supports the notion that the income and substitution effects of the female labor supply function evolved over time. Some of these changes can be traced to the reasons that norms and social stigma regarding married women's employment were formed in the first place. The reasoning mentioned earlier makes the point that stringent norms about married women's employment increase the income effect and reduce the substitution effect and that the reverse will occur when the norm lessens. Income and substitution effects also change for other reasons and continued to shift across the twentieth century.

But there is room for a combination of the notions about how change in the female labor force came about. The enjoyment of staying at home with children is considerably less when there are fewer mothers at the playground with their children. The costs of providing daycare falls as demand increases and facilities proliferate. Network effects such as these abound and were not given a large enough role in many traditional models of change in women's employment in which labor supply is assumed to passively respond to changes in economic variables.

Yet another departure from the notion that change was continuous is the possibility that there was an abrupt or episodic event that catapulted women into employment. World War II is often seen as a positive shock to female labor supply. For one thing, employment levels for women soared during the war, especially for those with husbands away in the armed forces. These rates plummeted immediately following the war, largely because many wartime jobs were reserved for returning GIs and also because there was a desire for a return to normalcy. But female participation in the late 1940s and 1950s subsequently increased. How much of that later change was *caused* by wartime employment by altering women's preferences for paid work and their families' acceptance of it? How much, on the other hand, was a continuation of the increase in married women's employment that preceded the war?

I have shown that much of the increase after the war was accomplished by cohorts of women who had been employed when they were younger, often in the 1920s (Goldin 1991a). In more causal empirics using state-level mobilization rates of men, Goldin and Olivetti (2013) demonstrate that the lasting impact of World War II on the "treated" cohorts was mainly for women with high school degrees who had likely been office employees during the war and not workers in war-industry plants. In fact, a simple graph of female labor force participation by age does not reveal obvious trend breaks for a younger group (25 to 34 years old) of married women. But it does reveal one for an older (45 to 54 years old) group. The role of World War II on married women's employment is not zero but is much smaller than had been assumed.

D. The "Quiet Revolution"

After many decades of increased participation and evolutionary change in the US female labor force, something momentous and radical occurred in the late 1960s. No

¹⁰Fernández (2013) uses income and substitution effects from Blau and Kahn (2007) for 2000.

longer did young women want to be employed only to provide for themselves and their families. Young women could see that their mothers, aunts, and older female friends of their families had been employed for substantial periods but without much career progression, if there had been any.

Female labor force participation had greatly increased. But the increase had been unanticipated, and investment in human capital was, therefore, too low given the ultimate outcome. The younger generation, seeing that they were likely to be employed for much of their adult lives, if history was any guide, set out to do things differently.

In the late 1960s and 1970s, young women experienced what I have termed a “Quiet Revolution,” distinct from the noisier revolutions in the United States at that time (women’s rights, anti-war, and civil rights movements). The women’s movement led to greatly expanded legal rights of women in employment, education, family, credit, and judicial matters (Goldin 2023). The inklings of a Quiet Revolution can first be seen when these women were in high school and took more math and science courses that prepared many of them to apply to college (Goldin, Katz, and Kuziemko 2006).

Their rising expectations of future employment can be gleaned from the first major longitudinal surveys in the United States. In the late 1960s, according to the National Longitudinal Survey of Young Women (begun in 1968), young women’s expectations of future employment looked more like their mothers’ actual employment levels. But by the mid-1970s, their expectations were more in line with what their own future rates would actually be. They responded to their more rational expectations by increasing their college going and switching their majors to more lucrative career-oriented fields, especially those in business fields.

By 1982, more females than males were graduating college in the United States, and that trend has continued every year since. Today, women in the United States are 58 percent of those obtaining a bachelor’s degree. But this is not just a US phenomenon. It is now global. More young women than young men have attended college in *every* OECD nation in recent years. This statement is true ranging from the nation with the highest college graduation rate in the OECD, Korea—where 63 percent of males 25 to 34 years had some college in 2022, but 77 percent of females did—to the nation with the lowest graduation rate in the OECD, Mexico—where 27 percent of males had some college, but 28 percent of females did.

When expectations of employment are more realistic, individuals can engage in human capital investments that are more in line with what their future labor market participation will be. But the story of the Quiet Revolution involved another critical change that gave women the ability to engage in optimal lifetime investments. That change served to alter the age at marriage, give women more control over their reproductive lives, and increase the stability of their marriages. It involved a new form of contraception that was female controlled and exceptionally effective.

Most changes in female labor market participation have been sparked by major technological innovations, such as those that led to the shift from agriculture to industry to services. They include those that increased the economic returns to education, that altered household production, and that expanded markets in general. These changes were generated by major innovations such as general purpose technologies, like electricity, and the growth of large-scale firms.

There was another, critical innovation that was as tiny as a pill. In fact it was “the pill”—the birth control pill. But to be fully effective in driving social change, the pill needed institutions and laws that would allow young and unmarried women to obtain it.

During the first decade or more after it was approved by the FDA in 1960, the dissemination of the pill in the United States was governed by state laws (and in other countries by their laws) that regulated its use by unmarried, generally young, women. But by the late 1960s and early 1970s, young single women, even on college campuses, had gained access to the pill. The rise in the age at first marriage was among the most important results of the pill. In 1970, the median age at first marriage for recent college graduate women (born in the late 1940s) was younger than 23. Because of the pill and the law changes that enabled young, single women to obtain contraception, the age at first marriage began to soar (Goldin and Katz 2002). Later ages at first marriage enabled women to advance their education and thereby causally decreased the divorce rate.¹¹

In just six years, the age at first marriage among college graduate women increased from less than 23 years to 25 years. The additional breathing space before marriage and childbirth gave women time to enter a law, business, medical, or graduate program. Professional school enrollment of women climbed rapidly after 1970, as can be seen in Figure 3. The largest changes in the fraction female among professional school graduates occurred from the early 1970s to the mid-1980s. Whereas less than 6 percent of those graduating from law school were female in 1970, almost 40 percent were by the mid-1980s.

College graduate women significantly altered their occupations. In the 1950s and 1960s around 65 percent of those 30 to 34 years old were teachers, nurses, librarians, social workers, and clerical workers. But that percentage fell by more than a half, to 30 percent, by 1990. On the other hand, before 1970 less than 10 percent were lawyers, managers, physicians, professors, and scientists. But 30 percent were after 1990.¹² A shift occurred among these women from planning for family first and then for a good job, to starting on a career path and then aiming for a family.

The increase in the female labor force and in the employment of women was an *evolutionary* change. But the change in the expectations of women, in their horizon, in their sense of identity, in their new-found ability to better control their destinies, were *revolutionary* changes.

E. *Beyond the Quiet Revolution*

The prime drivers in the long run story I have told about the rise of the female labor force were set in motion in the early twentieth century. Social and economic change is often conveyed through time by a succession of generations. The larger the shocks, the more prior generations resist change and the greater the generational and gendered conflicts that will arise. Although the period of the Quiet Revolution was also accompanied by a noisier one (the women’s movement) that

¹¹ On the role of the increased age at first marriage in causally decreasing divorce, see Rotz (2016).

¹² The graph of this relationship and the sources are in Goldin (2021, Figure 6.4). The data have been extended to 2020 from those in Goldin (2006, Figure 8).

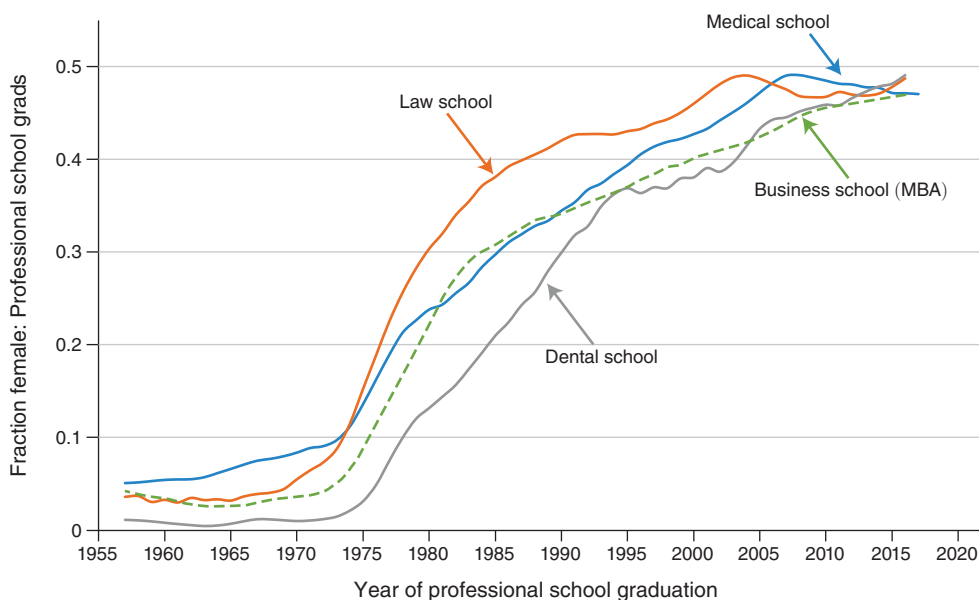


FIGURE 3. FRACTION FEMALE AMONG US PROFESSIONAL SCHOOL GRADUATES: MEDICAL, LAW, DENTAL, AND MBA, 1957 TO 2017

Note: Goldin (2021), Chapter 6, Figure 6.3.

Source: See Figure and Table Appendix to Goldin (2021 p.247).

revealed generational differences, most change in the United States occurred over long periods. When change is sufficiently incremental, older generations are less opposed. But that has not always been the case in parts of the world in which economic and social development has been rapid.

In fact, one probable reason for low birth rates in southern Europe and parts of Asia today is that rapid economic and educational changes have resulted in generational and gendered conflicts. Women have been enabled to advance their education and enter the most prestigious occupations, yet their families and their husbands still expect them to do most of the household and caring labor. It should not be surprising that women in these countries have fewer children than in parts of the world in which women share more equally with men (although rarely is there anything resembling equality in sharing household tasks and caregiving).

Countries in which women do far more hours of unpaid household work than do men have lower fertility rates. Figure 4 shows that fertility is negatively correlated with gender disparities in unpaid labor as measured by the difference between the hours per day done by women versus men in household and care work. In the low-fertility nations of Spain, Greece, Italy, Japan, and Korea women's unpaid work per day is around 2.5 to 3 hours more than men's. In the higher-fertility nations of Sweden, Norway, and the Netherlands women's unpaid work per day is around 0.75 to 1.25 hours more than men's.¹³

¹³I use the absolute difference rather than the ratio or relative difference to emphasize the number of hours of additional unpaid work that women do.

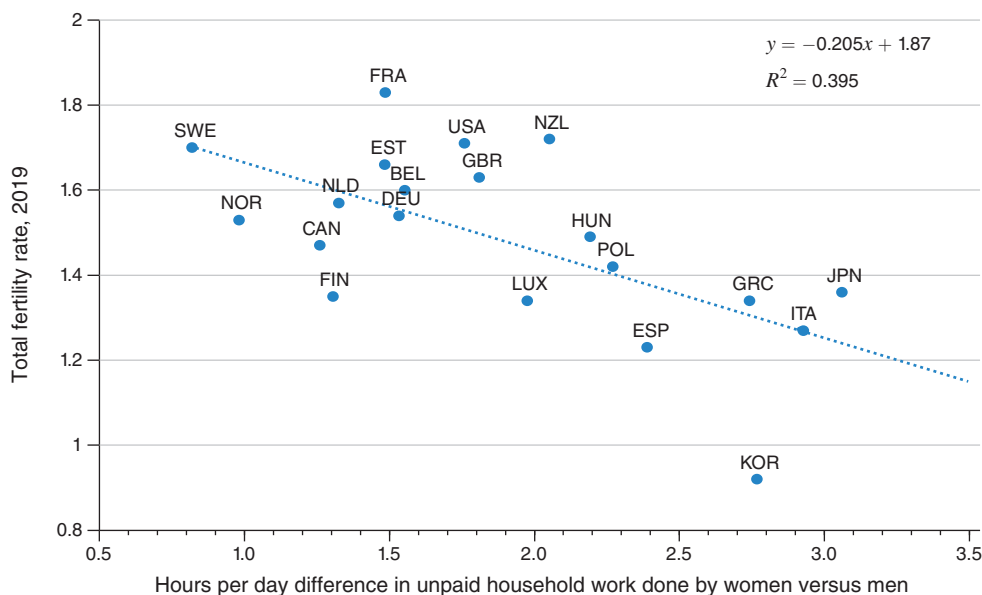


FIGURE 4. TOTAL FERTILITY RATE IN 2019 AND THE DIFFERENCE IN HOURS/DAY OF UNPAID HOUSEHOLD WORK DONE BY THE AVERAGE FEMALE AND THE AVERAGE MALE ACROSS 21 NATIONS

Notes: Only countries with data from 2009 to 2019 were used, and that restriction excludes eight OECD countries. Mexico was excluded due to noncomparable time-use data. The R^2 falls to about 0.20 including the eight countries (the R^2 is 0.33 without the outlier Ireland) and using the total fertility rate five years after the year of the time data.

Sources: Household work is from OECD Data Explorer and is for unpaid work for the “average” male and female. See <http://stats.oecd.org/index.aspx?datasetcode=TimeUse> and the OECD Gender Data Portal www.oecd.org/gender since the OECD frequently changes its website.

Since women do far more childcare than do men, one might have thought that lower fertility would serve to *decrease* the difference between their hours of unpaid work. Although this evidence is not causal, it reveals something important about the persistence of gender norms affecting the ability or desire of women to have children.

I began this essay with the fact that women’s employment rates are substantial in much of the world. But adult women in many countries today have increased their employment and labor force participation rates by working part time. Women in Denmark, Germany, the Netherlands, and the United Kingdom have a much smaller fraction of their employed female populations working full time than do women in Canada, Sweden, and the United States.

Japan provides a cogent example. Its women have greatly increased their labor force participation rate in the past decade. From 2013 to 2023 the labor force participation rate of women 25 to 54 years old in Japan increased from 74.2 percent to 82.6 percent and surpassed the fraction in the United States around 2015.¹⁴ But a

¹⁴Participation rates are from <https://fred.stlouisfed.org/series/LRAC25FEJPM156S> from October 2013 to October 2023. The rate has increased at least from the earliest date in the series, 1981. Because the US rate has fluctuated, I use the year when the rate in Japan was at least 75 percent for the year.

large segment of these women work low hours and are not in the lifetime company jobs that bring higher earnings, job security, and benefits, such as parental leave.

In the 1990s, the United States had the highest female participation rate among all OECD nations. The United States is now in the middle of the OECD pack with regard to women's labor force participation. But if participation or the employment to population ratio were expressed as full-time employment, at least 30 or 35 hours per week, the United States would be close to the top. Therefore, high rates of employment to population do not necessarily mean that women are employed to the same degree as are men. The intensive margin of hours is important in determining relative earnings of women and whether they can make it to the top ranks of business and professional occupations.

I have thus far explained how the female labor force expanded. The upward portion of the U rose initially in an evolutionary manner. But it became more revolutionary as women could better predict their eventual employment and could marry and begin their families later. Women greatly increased their human capital and embraced careers that spanned more of their lives.¹⁵ Most of my discussion has concerned quantities. I now turn to the other side of the economist's framework—prices—and discuss earnings, especially women's in relationship to men's.

II. The Gender Gap in Earnings

A. Trends and Measurement Issues

Everywhere in the world, women earn less than men—even among those with comparable levels of human capital and adjusting for various aspects of employment such as hours of work. Why does the pay gap exist?

To shed light on this question, I will dive into the standard time series for the United States, produced by the US Census Bureau, as given in Figure 5, from 1961 to the present. The statistic shown is the ratio of the median annual earnings of full-time, full-year female to male workers.¹⁶ The US Census Bureau calculates this statistic to adjust, to some degree, for usual hours of work and weeks worked in a year. In addition, by using the median rather than the mean, the metric is less influenced by outliers at the top of the income distribution mainly from the incomes of men.

As a summary statistic, this method of computing the gender earnings gap is a reasonable measure. But it does not enable the researcher to see what happens as individuals age, and it does not adequately control for various factors that we know affect earnings. Even full-time male workers are employed, on average, more hours than full-time female workers. Male workers generally have had more continuous work experience, more years of schooling, and college majors that were more relevant to the labor market. Importantly, many of these factors have radically changed across the past several decades. Education in years and the fraction with various professional and advanced degrees now favor women, and even college

¹⁵ Goldin and Katz (2018) demonstrate that these changes eventually led to a large increase in the employment of older women in the early 2000s.

¹⁶ Full-time in the United States is 35 or more hours per week, and full-year is 50 to 52 weeks per year.

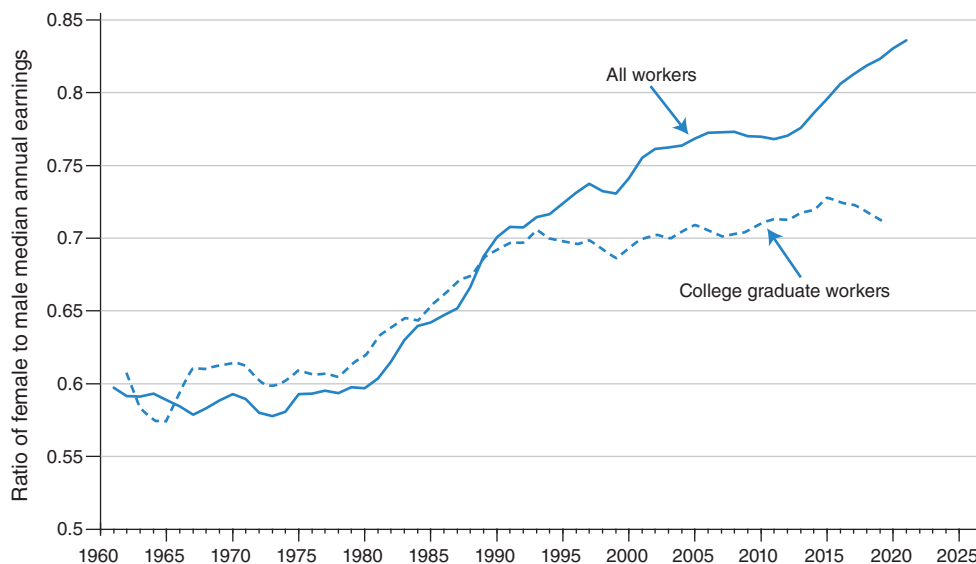


FIGURE 5. US FEMALE TO MALE MEDIAN ANNUAL EARNINGS RATIO, FULL-TIME, YEAR-ROUND WORKERS, 1960 TO 2022

Notes: Data have been extended to 2022 using the same sources and procedures. Three-year centered moving averages are shown.

Source: Goldin (2021), Chapter 8, Figure 8.1. See “Figures and Table Appendix” to Goldin (2021 p.248).

majors have largely equalized in various ways, although some of the STEM fields are still disproportionately male (including economics).

With those caveats in mind, the gender pay gap (actually the gender pay ratio) series is shown in Figure 5. It begins in the early 1960s with a curious and somewhat disturbing, initial period of stasis that lasted for two decades to around 1980. As employment levels for women rose, from the 1950s to around 1980, the median woman’s earnings relative to the median man’s did *not* change much.¹⁷ The persistence of the gender gap in earnings was, in large part, *due to* the increase in women’s labor market participation, not despite it. As participation rates increased, women, whose job experiences were somewhat distant and brief, were pulled into the labor force. That put downward pressure on the earnings of the average working woman relative to the average working man.

The stability of the gender gap in earnings given the increase in female labor force rates was a source of great frustration to those in the resurgent US women’s movement in the late 1960s and early 1970s. Banners at rallies decried the fact that women were working more, yet not being paid more relative to men. Most who interpreted the aggregate statistics as revealing a discriminatory process did not realize that the average job experience of working women was being depressed by the

¹⁷ Although I have produced estimates of earnings differences between men and women back to the early nineteenth century in the United States, demonstrating the very low levels in the preindustrial period, I will concentrate here on the post 1950s when the data are thicker.

entry of less experienced and generally older women.¹⁸ Yet there were also more complicated issues that were holding women back and depressing their earnings.

Beginning around 1980, the United States experienced the most remarkable narrowing of the gender pay gap in its history. The stubborn banner of 59 cents on the dollar suddenly turned into a banner of 65 cents on the dollar, and then to 75 cents, and more recently to 83 cents. Earnings differences began to narrow considerably as women's increased participation rates finally produced real gains in the job experience of the average female worker. Earnings rose both across and within cohorts. In addition, and of great importance, the new group of entrants were more educated absolutely and became more educated relative to men over the years.

B. The Big Question and Its Many Clues

The big question is what accounts for the remaining gap or log difference? The question is particularly puzzling because today, many of the determinants of earnings are nearly the same between men and women and some, in fact, favor women. If earnings in competitive labor markets are determined by pre-labor market characteristics (such as education and training) as well as those pre-job (such as experience in previous positions), and if these characteristics have become nearly identical by sex and some favor women, what remains?

Much of the best research on the gender earnings gap has demonstrated that even though the raw earnings gap by sex has greatly diminished, as is clear from the data on the ratio of female to male earnings in Figure 5, conventional human capital variables can no longer explain much of the remaining difference. In fact, the residual gap, using standard human capital variables, as a fraction of the total has increased.¹⁹ Perhaps that should not be surprising since, early on, a large part of the difference in earnings had been due to differences in human capital characteristics and these differences have been greatly diminished or even reversed, as in the instance of years of schooling.

Many clues exist that will reveal an answer to the big question. The first is that the gender earnings gap for college graduates, estimated in the standard Census Bureau manner just described, became larger than that for the non-college group around 1990 (see Figure 5 for the total group relative to college graduates), just about when the earnings distribution for college graduates relative to others began to greatly widen.²⁰

The second clue concerns changes to the gender gap in earnings across the life cycle. The standard way of measuring the gender gap in earnings does not consider changes across ages or across the life cycle as individuals complete their education, take a job, marry, have a baby, shift occupations, or change their residence.

¹⁸For a general discussion of this phenomenon, see Goldin (1989).

¹⁹Blau and Kahn (2017, Table 4) compare estimates from 1980 and 2010, a period that includes a substantial decrease in the gender earnings gap. In their human capital specification, they find that 71 percent of the gap is unexplained in 1980 but that 85 percent is in 2010. Conventionally measured human capital variables do not explain much of the gap even in 1980. Adding industry and occupation greatly reduces the unexplained portion, especially in 2010 but these are often choices that concern balancing family and job.

²⁰Blau and Kahn (2017, Table 1) report a similar finding. Hourly wage ratios for full-time workers at various percentiles in the (separate gender) wage distributions from 1989 to 2010 are larger at the fiftieth percentile than at the ninetieth percentile.

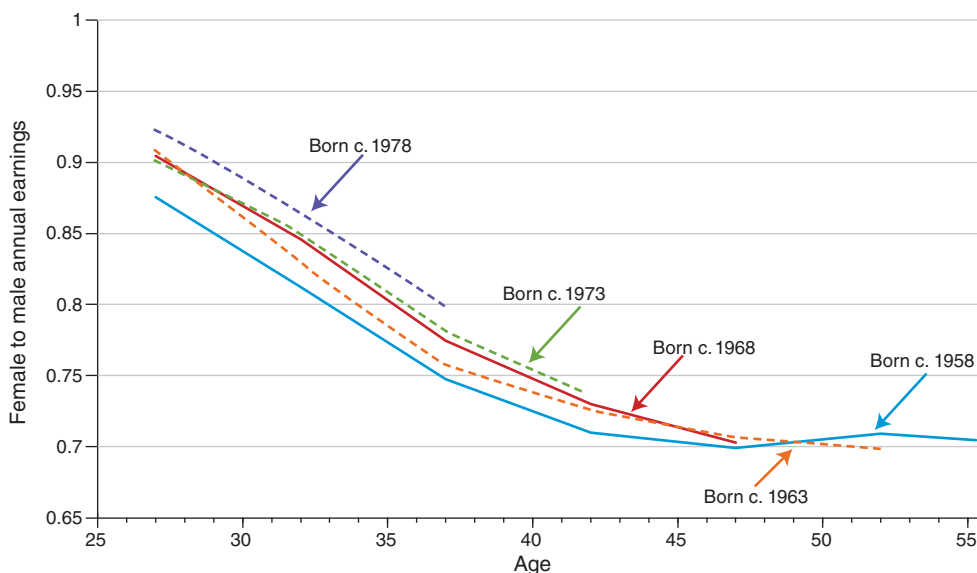


FIGURE 6. RELATIVE ANNUAL EARNINGS OF US COLLEGE GRADUATE MEN AND WOMEN: BORN 1958 TO 1978

Note: Earnings ratios correct for hours and weeks worked and education beyond college graduate.

Source: Goldin (2021), Chapter 8, Figure 8.2. See “Figures and Table Appendix” to Goldin (2021, p.249).

Women’s earnings relative to those of comparable men, in fact, largely *decrease* across their working lives, as shown in Figure 6. Earnings of women relative to those of men begin closer to parity (almost at 0.95 for the youngest age group in the most recent birth cohort), but that ratio decreases with age and thus with a host of other life cycle transitions. By their late thirties, the ratio for the most recent cohort shown is 0.8. The widening of the gender earnings ratio by years since college or professional school graduation is even steeper among higher income occupations, such as those in the corporate and financial sectors (see, for example, Bertrand, Goldin, and Katz 2010). Thus, a second clue is that the ratio of earnings by gender greatly widens by age or by some other dimension in the life cycle of an individual.

A third clue concerns how women’s hours of work and earnings change with a birth of a child and for many years after. Those differences have been termed a “motherhood penalty” and as “child penalties” (unfortunate terms for the gift of life). Moreover, these differences hold even for countries, such as Sweden, that have family-friendly policies. According to a large research literature, the impact of motherhood on women’s hours of work and earnings now accounts for most of the gender earnings gap among parents. Children appear to be the main culprit, although parental interactions regarding who takes care of the children are clearly central to the story. Furthermore, I will demonstrate that the labor market contributes to the child penalty in a host of ways that disadvantage with women with children.

The precise facts about the size of the penalty and how much of the total difference in earnings by gender it accounts for depend on the country, the years of the data, and the estimation procedure. But the weight of the evidence is that the earnings of women plummet with the event of a birth and do not recover. Furthermore,

most of the change comes from a reduction in hours of work or in participation, rather than from a reduction in earnings per hour, although that factor contributes somewhat.

In a birth event-study framework using US data from the Panel Study of Income Dynamics, Cortés and Pan (2023) find that the earnings of mothers relative to fathers decrease by 37 percent even ten years after the birth of their first child, where the effect includes zero earnings from leaving the labor force.²¹ In a related calculation, using a cross-section of their sample of parents, they find that the child penalty in the 2010s accounted for 70 percent of the earnings difference between mothers and fathers (relative to father's earnings). The earnings difference by sex in the 2010s was around 0.45 and thus the gender earnings ratio was 0.55.²²

Related research that I have done with coauthors uses longitudinal data for US women and men born in the early 1960s (Goldin, Kerr, and Olivetti forthcoming). We estimate that the parental gender ratio in annual earnings was only 0.45 when the women were in their early forties. A combination of a motherhood penalty and a fatherhood premium account for 60 percent of the gap between that and equality. The rest would have existed without children.

A final clue concerns differences in earnings between male and female workers by occupation and sector. It is important to realize that the majority of earnings differences by occupation are *within* rather than across occupations (given around 500 occupations and a sufficiently large dataset). So let's explore within occupation differences and understand why some occupations and sectors have large and some have small (log) differences in earnings given a set of standard observables.²³

I have categorized occupations by sector (e.g., health, business, tech, science) for college-educated individuals in medium- to high-wage occupations and have estimated residual sex ratios of annual earnings (as log differences) for each (see Figure 7 for sample restrictions and covariates included in the earnings regression). They are graphed in Figure 7 against male annual income. Every dot (or square or triangle or diamond) in the graph is an occupation (e.g., actuary, pharmacist, chemical engineer). Note that the ratio of female to male annual earnings in Figure 7 is in log terms and ranges from 0 to -0.45 , or from 1 (equality) to around 0.64 in terms of the more familiar ratio of female to male earnings, often termed the gender earnings gap. Note as well that the data used in the study are for around 2010.

Gender earnings gaps (meaning log differences) were generally greater (a larger negative number) in finance, banking, management, and other corporate and business occupations (the red squares). The (unweighted) mean value in the corporate and business group is -0.23 , which is a gender earnings ratio of 0.79. Gender earnings gaps were generally smaller (a lower negative number) in tech and science occupations (the triangles). The mean value for those is -0.094 , which is a ratio of

²¹ See Cortés and Pan (2023), Figure 3. The estimation method is from Kleven, Landais, and Søgaaard (2019) who analyze data from Denmark; see also Kleven and Landais, Posch, Steinhauer, and Zweimüller (2019) for child penalties for various countries. Angelov, Johansson, and Lindahl (2016) analyze data from Sweden.

²² They report a relative gender earnings gap for the 2010s of 0.45, where earnings include the zeros. Therefore, the ratio of female to male earnings would be 0.55.

²³ Blau and Kahn (2017, p. 827) find that occupation accounts for one-third of the gender wage gap in 2010 after including a true measure of work experience using the PSID, a fairly small sample and 21 occupations. I also find that three-digit occupations explain about one-third, but that within differences by occupation are far more important.

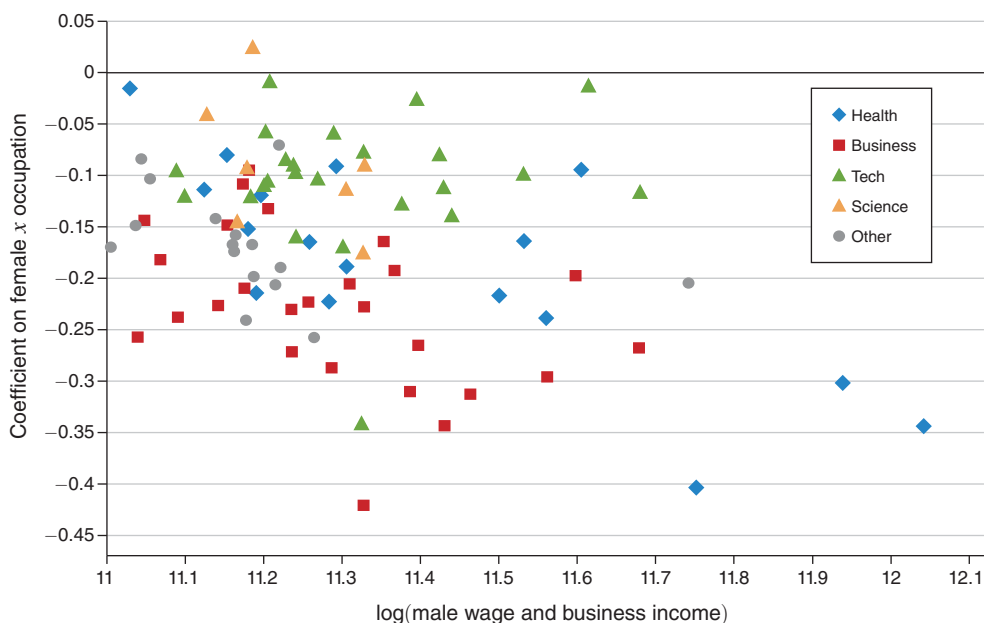


FIGURE 7. GENDER PAY GAPS (RESIDUAL) BY OCCUPATION FOR THE UNITED STATES, 2009–2011

Note: The vertical axis comes from a regression containing age in a quartic, race, log hours, log weeks, education levels, census year, all occupations (469), and an interaction with female and occupation.

Sources: See Goldin (2014a), notes to Figure 2a. The data are from the American Community Survey 2009 to 2011, for 25- to 64-year-olds working full-time full-year in the approximately 95 highest (male) income occupations (data are trimmed).

0.91. The many health fields (the blue diamonds) contain two groups. Occupations with substantial self-employment (e.g., dentists, podiatrists, chiropractors) have low gender earnings ratios (mean of 0.74) whereas those without much self-employment (e.g., audiologists, occupational therapists) have smaller gender earnings gaps and a higher ratio (0.87). (All occupation numbers are unweighted.)

Therefore, another clue about why there is a persistent (residual) gender gap in earnings concerns the large differences in earnings by sex across occupations. What accounts for those differences?

When mean hours worked by individual are included in the regression for annual earnings of full-time workers, the largest elasticities of earnings with regard to hours are for the business occupations and the smallest are for the science, tech, and health (without self-employment) occupations. That implies that earnings increase more with hours in business occupations than in the others. In related research, I show that lawyers who work more hours per week also bill more per hour. But what does that imply?

I have labeled occupations as “greedy” when the implicit hourly wage increases with hours worked or with the intensity of hours worked or with particular days or time of day worked. The earnings of these occupations are not linear in hours worked. Rather, earnings are convex with respect to hours. Earnings rise with hours more than proportionally.

Furthermore, the Bureau of Labor Statistics O*NET database reveals that the magnitude of the gender earnings gap by the occupations in Figure 7 is related to particular job characteristics. The occupations given by the red squares (the business group) in Figure 7 and those in the legal field have the largest gender earnings gaps. They also generally impose more time pressure, require more contact with others, reward interpersonal relationships, and have more structured work. The opposite is the case for the occupations given by the triangles (which are in tech and the sciences). The health occupations are a mixed group, as noted previously, depending on whether there is ownership, which increases responsibility, time, and the financial rewards. Therefore, occupations with larger gender earnings gaps generally have characteristics that impose substantial time demands on the employee, some from clients and some from coordinating with other employees.

C. Putting It All Together

We can now piece together the various clues—that the gender gap in earnings is largest for the most educated, that it widens over the life cycle, expands when women have children, and is greater for greedier occupations that pay more per unit time the more hours are worked.

Together, these clues tell a cohesive story. When workers are young, they may work long hours. But everything changes after the birth of a child or the advent of other care responsibilities. The greedier are some jobs (thus the more remunerative they are), the more likely a couple with care responsibilities will be to have one member take the greedy job and the other the more flexible job. In most (different sex) couples, the woman will, generally, take the more flexible, lower-earning job and the man the greedier, higher-earning job.

There are two ways to reduce the aggregate gender pay gap in this scenario. In the first way, husbands and wives could become equally likely to take the greedier, higher-earning job or the more flexible lower-earning job. But that solution may be unsatisfactory since there would still be inequity within couples. The second way is to change the structure of jobs.

Consider the depiction of the relationship between earnings and hours for two jobs given in Figure 8, panel A. One job is flexible (red line) and has a linear hourly wage with respect to hours. The other is not so flexible (blue line) and has a wage that rises with hours. A couple with children, or other care responsibilities, can not have both members work at the blue dot, the less flexible or greedy job. They *could* have both work at the red triangle, the flexible job, but if they did, they would be leaving a lot of money on the table. So, one works the flexible (less remunerative red) job and the other works the less flexible (more remunerative blue) job.²⁴

For many highly educated couples with children, she's a professional who is also "on-call-at-home," and he's a professional who is "on-call-at-the-office." In consequence, he earns more than she does. That gives rise to a gender gap in earnings. It also produces couple inequity. The labor market offers choices that entice

²⁴Figure 8 gives earnings for each job for a fixed number of hours, H. But the person who takes the less flexible job will work more hours than the person who takes the more flexible job, and not be able to keep the less flexible position working fewer hours. See the model in Goldin (2014a).

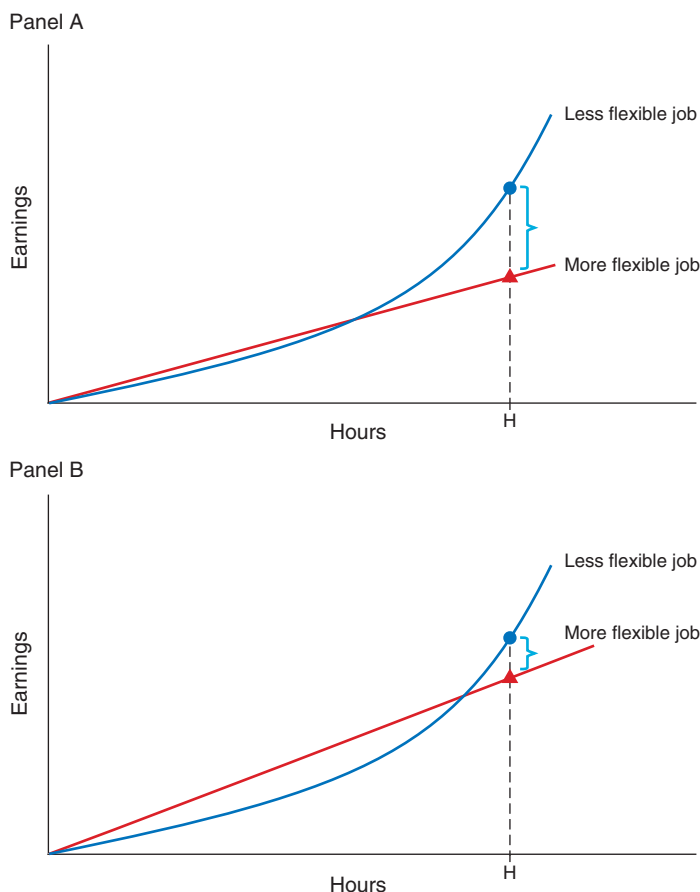


FIGURE 8. GENDER INEQUALITY AND COUPLE INEQUITY: TWO SCHEMATICS

couples to forego couple equity. When (different sex) couples give up couple equity, they generally increase gender inequality. And when couples increase couple equity, they generally advance gender equality.

If the flexible job could be made more productive as in Figure 8, panel B, the difference would be smaller and family equity would be less costly. Couples could purchase it and also reduce the gender gap, in their own families and in the aggregate.

The point is that the gender gap in pay is not simply an issue of workplace discrimination or biased supervisors. Workplace biases and disparities exist, to be sure. But even if the *labor* market were unbiased in all manners, a gender gap in pay would still exist and would be substantial. Gender gaps in pay are largely due to the greediness of jobs together with social norms and traditions around who is the on-call-at-home parent.

These differences exist even in unionized workplaces in which wages per unit time and other aspects of a job are identical between men and women in the same occupation. In these settings, extra pay for overtime, night shifts, and vacation work are chosen more often by men than by women resulting in higher earnings for men

even if wage scales are the same.²⁵ Therefore, the distinctions that have been made here concerning higher-wage jobs also apply to many at the lower end of the income distribution.

But what if there are children but just one parent in the household—the mother? I have modeled the issue of occupational choice and household production between two people. Yet around 14 percent of 30- to 34-year-old mothers (of children younger than 18 years old) are not currently married or partnered. In this group, 20 percent are not married or partnered among those without a college degree, and 5 percent are not married or partnered among those with a college degree.²⁶

Mothers who do not have a husband or a partner in their households have higher employment rates than do those with a husband or partner present. Among all 30- to 34-year-old mothers, the figures are 60 percent for those with a husband or partner versus 68 percent for those without. Among college graduates in that age group, the figures are 71 percent versus 85 percent.²⁷ The “single mother” not only takes care of the children, but she is also employed to a greater extent than the mother with a spouse or partner. The single mother does not have the luxury of specialization. Work for her isn’t greedy. Life is.

D. Some Solutions

How can the gender earnings gap be reduced? One part of a solution is to lower the cost of flexibility. The simplest way is to create virtual substitutes between workers. That has been done in various occupations that use IT to effectively pass information and hand off clients. Teams of substitutes could be created, as they have been in pediatrics, anesthesiology, veterinary medicine, personal banking, many tech jobs, primary care medicine, and pharmacy.

The case of pharmacy is instructive. The occupation of pharmacist in the United States today has almost no part-time earnings penalty and the earnings gap between male and female pharmacists is small. But that was not always the case. In the 1970s a substantial fraction of male pharmacists owned a pharmacy and many hired female pharmacists. The gender earnings gap was substantial.

Several changes occurred in pharmacy that greatly narrowed the gender gap in pay but that had nothing to do with gender issues. Technological changes enhanced substitutability among pharmacists, pharmacy employment in retail chains and hospitals increased, and independent pharmacies declined (Goldin and Katz 2016). Change in other occupations, such as pediatrics, did emanate from the demands of professionals who wanted to spend more time with their own children and formed group practices that facilitated substitutability.

²⁵ According to Bolotnyy and Emanuel (2022), women who are unionized public transportation workers earn 0.89 what men do in the same job because women demand more predictable and regular schedules and men elect to get more overtime and hardship pay.

²⁶ The computation uses the CPS ASEC (March) 2010 to 2019 and the variable *pecohab*, to identify unmarried mothers with partners in their households.

²⁷ Employment is defined as having positive wage income in the past year of at least half the federal minimum wage for 1,440 hours. See also the fixed effects estimates in Juhn and McCue (2016, 2017), which uses the SIPP Gold Standard File. They find that mothers without a spouse have greater annual earnings than do those with one, although estimates for the most recent cohorts in their data indicate approximate parity.

Note that creating effective substitutes does not mean commodifying the occupation. Only a few substitutes, or even just one, are needed to reduce the greediness of the job. Another part of the solution is to make flexible jobs more productive.

The astounding changes that COVID-19 wrought in the labor market have reduced the time demands of certain greedy occupations and enhanced the productivity of those who have flexible jobs. A silver lining to the dark times we lived through in the pandemic is that we have learned to use technology to work from home. And we also used technology to do handshakes and conferences remotely, separated by kilometers, miles, and oceans. Work from Home, as long as it does not become Work from Hell, has made the flexible job more productive. Remote business interactions have made the greedy job more flexible. Both changes have benefited caregivers, especially women.

III. Lessons from an Evolving Economic Force

Every generation, including ours, has looked at contemporaneous gender disparities in the labor market and pondered why there had been so little progress. It is understandable to reflect in that manner when gender differences remain and seem frustratingly unyielding. Yet, history reveals that there has been enormous progress. Even though differences remain, many have disappeared. Clouds have parted exposing the real reasons why women still earn less than men despite their greater years of schooling and higher college graduation rates than men.

I have described changes in the participation of women in the US labor force during the past two or more centuries in terms of two portions of a U-shaped function. As various economic markets expanded and as the physical distance between the place of employment and the home lengthened, a declining part of a U-shaped function was traced. It was set in motion by grand forces in the nineteenth century, termed the sectoral transformation, that shifted employment from agriculture to industry, from small businesses to larger firms, and from families to the market.

The other portion was the movement along the rising portion of the U-shape. That was also due, in part, to the sectoral transformation, in which the occupational distribution continued to shift in the twentieth century from industry into a wide array of services, including those in offices and various professions.

At the same time, the electrification of the household, central heating, and publicly provided clean water and sewerage systems, among other advances, enabled a host of labor-saving innovations that increased the opportunity cost of remaining at home. Fertility decreased secularly, although an increase in the 1950s and 1960s, known as the “baby boom,” returned levels to those of almost half a century earlier. Educational advances of the early twentieth century, especially the high school movement, enabled most groups to obtain higher-paying employment in sectors having various job amenities.

Although I have emphasized two portions of the U-shape in US history, the bottom or vertex can be a sticking point. Many nations have employment levels for married women that are extremely low given their income per capita (see, for example, Turkey, Saudi Arabia, India, and Bahrain in Figure 1). And the income levels of nations with hindered female participation are depressed because of these constraints.

A lesson from US history is that better jobs together with enhanced education enabled women, particularly married women, to enter the workplace. Social stigma regarding the employment of married women became less useful to society and more expensive to maintain. It faded, and the benefits for women, men, and the nation have been incalculable.

The story of the rise of women's employment in the United States, despite periods of great stigma and persistent social norms, raises several questions. What holds female employment back in many nations, and why do some get stuck at the bottom of the U?

History also shows us that when women initially enter the formal labor force, there is often resistance in many of the better occupations but also in those that are considered masculine. Women in the United States and elsewhere were subject to a host of restrictions for some time, including "marriage bars" in white-collar occupations, such as teaching and clerical work.²⁸ Although formal barriers and outright discrimination have mainly been eliminated there are still troubling differences between the earnings of men and women.

Why women continue to earn less than men has much to do with the division of labor in the home. Women work fewer hours after having a child and often continue to earn less for many years after. Although these decisions are made by individual couples, the labor market incentivizes them to specialize. I have emphasized how the labor market creates a set of incentives through the existence of greedy work that prevent couples with care responsibilities from truly sharing and achieving couple equity. Because there is a long history of women taking the more caring role, a reduction of couple equity implies increasing gender inequality among different sex couples.

In the period of the rising portion of the U, women came out from the shadows of the home, to work in the market and make their families and themselves better off. They then went the distance as their employment elongated through their lifetimes, to have more meaningful work and even real careers. Differences in productive characteristics between them and their male counterparts were greatly reduced. But the last mile, the last chapter, the final act of the gender gap saga can not be written until couples share more and until the world of work makes that a less costly thing to do.

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²⁸Marriage bars are discussed in Goldin (1991a). The history of protective legislation in the United States is in Goldin (2023). That employed women were often thought to dilute or "pollute" the prestige of men in various occupations is analyzed in Goldin's (2014a) "pollution theory of discrimination."

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