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IN THIS ISSUE

Why Do Women Outnumber Men in College?

It is fairly well known that women today outnumber men in American colleges. In 2003, there were 1.35 females for every male who graduated from a four-year college and 1.3 females for every male undergraduate. That contrasts with 1960, when there were 1.6 males for every female graduating from a U.S. four-year college and 1.55 males for every female undergraduate. How come this switch?

In **The Homecoming of American College Women: The Reversal of the College Gender Gap** (NBER Working Paper No. 12139), authors **Claudia Goldin, Lawrence Katz,** and **Ilyana Kuziemko** offer some explanations for the change. In the post-World War II era, they note, the financial return to women of higher education greatly increased. At first, from the late 1950s to the early 1970s, women tended to pursue female-intensive occupations such as teaching and social work after graduation. So, they majored in education, English, and literature, perhaps, and they often aimed at finding suitable mates in college.

Indeed, these female college graduates had a high fertility rate after marriage, being the mothers of the Baby Boom generation. In 1960, the labor force participation of female college graduates in their twenties and thirties was low: only 39 percent of 30-to-34-year olds were employed and 47 percent of those employed were teachers; 73 percent had children at home. A decade later, only 49 percent of the 1970 graduates were employed at ages 30 to 34, and 55 percent of those with jobs were teachers.

But beginning in the late 1960s and early 1970s, young women's expectations of their future labor force participation changed radically. Rather than follow in their mothers' footsteps, they aimed to have careers, not just jobs. These careers were often outside of the traditionally female occupations for women. In high school, they took more science and math courses. As a result, their twelfth grade math and reading test scores increased relative to those of boys. For the college graduates of 1980, when they reached 30-to-34 years of age, 70 percent were employed, only 36 percent of those employed were teachers, and 60 percent had children at home. The authors figure that about 30 to 60 percent of the increase in the female-to-male ratios of college graduates from the 1970s to the 1990s can be explained by these changes.

Another relevant factor in the gender shift, the age of female college graduates' first marriage, increased by about 2.5 years in the 1970s. Whereas from the 1950s to the early 1970s women had tended to marry a little more than a year after graduation, by 1981 the median age of marriage for college-educated women was 25. This delay allowed many women to be more serious students and less concerned about securing a husband while pursuing an undergraduate degree.

Adding to the possibility of a greater investment in professional careers was the availability of the contraceptive "pill." Women could better plan their futures. With a resurgence of feminism, young women also felt more empowered. They had greater guarantees by the government that job discrimination by employers against women would not be tolerated. They anticipated a more even playing field with respect to men in terms of access to high-paying careers for college graduates and to professional and graduate college programs, the authors note. Since 1980, the wage premium for a college degree has risen, especially for women. Over a lifetime, many women have taken time out from work to look after their children full time. But more recently, their participation in the labor force has begun to resemble that of men. "The jury is still out concerning whether the full lifetime economic returns to college are greater for women than for men," the authors write.

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One sign of rising expectations by women is shown in the fact that women earned 45.1 percent of bachelor's degrees in business in 1984–5 and 50 percent by 2001–2, up from only 9.1 percent in 1970–1. Similar large increases in the female share of BAs also have occurred in the life sciences, physical sciences, and engineering since the early 1970s.

It also could be that the rise in divorce rates since the 1960s and women's greater responsibility for children have prompted women to see an investment in college as an insurance policy for their future financial lives.

Another aspect in the reversal of the college gender gap, rather than just its elimination, is the persistence of behavioral and developmental differences between males and females. Boys often mature more slowly than girls. In grades K–12, boys tend to have a higher incidence of behavioral problems (or lower level of non-cognitive skills) than girls. Girls spend more time doing homework than boys. These behavioral factors, after adjusting for family background, test scores, and high school achievement, can explain virtually the entire female advantage in getting into college for the high school graduating class of 1992, the authors figure. It allowed "girls to leapfrog over boys in the race to college." Similarly, teenage boys, both in the early 1980s and late 1990s, had a higher (self-reported) incidence of arrests and school suspensions than teenage girls.

The "homecoming" in the authors' title to their paper refers to the fact that by 1980 the gender balance in college had returned to its pre-1930 level in the United States, although the levels of college attendance were almost six times higher in 1980 than in the 1920s for both men and women. The number of male-to-female undergraduates was about at parity from 1900 to 1930. Many females were attending teacher-training colleges in those days. The highpoint of gender imbalance in college attendance was reached in 1947, after the return of men from World War II then eligible for educational subsidies through the GI bills, when undergraduate men outnumbered women 2.3 to 1. Women's relative numbers in college have increased ever since the 1950s, with a pause when many men went to college to avoid serving in the Vietnam War. The decline in the male-to-female ratios of undergraduates in the past 35 years is real, and not primarily due to changes in the ethnic mix of the college-aged population or to the types of post-secondary institutions they attend, the authors assert. The female share of college students has expanded in all 17 member-nations of the Organization for Economic Cooperation and Development in recent decades, so much so that women now outnumber men in college in almost all rich nations.

— David R. Francis

Does Child Abuse Cause Crime?

Child maltreatment, which includes both child abuse and child neglect, is a major social problem. According to the U.S. Department of Health and Human Services, over a million children are victims of maltreatment annually. Over half a million children suffer serious injuries, and about 1500 children die, making child maltreatment the leading cause of deaths from injuries in children over a year old. In addition to this appalling immediate toll, child abuse is thought to have many harmful long-term consequences.

In **Does Child Abuse Cause Crime?** (NBER Working Paper No. 12171), authors **Janet Currie** and **Erdal Tekin** focus on the effect of child maltreatment on crime using data from the National Longitudinal Study of Adolescent Health (Add Health). They focus on crime because it is one of the most socially costly potential outcomes of maltreatment, and because the proposed mechanisms linking maltreatment and crime are relatively well elucidated in the literature.

The authors find that child maltreatment roughly doubles the probability that an individual engages in many types of crime. This is true even if we compare twins, one of whom was maltreated when the other one was not. It is useful to put this result in perspective by comparing it to other estimates of the effects of factors related to crime. For example, using time-series data from New York, previous researchers found that a single percentage point decline in unemployment generates only a 2.2 percentage point decline in burglaries, and that a 10 percent increase in the minimum wage leads to about a 3.5 percent decrease in robberies in New York City.

The authors cite various studies that show that having access to a gun at home increases the propensity to commit a variety of crimes, by about 30 percent among adolescents. Decreases in gun ownership over the 1990s can explain up to a third of the decline in crime over the same period. Exposure to firearm violence approximately doubles the probability that an adolescent will engage in serious violence over the subsequent two years, so that effects of maltreatment are similar to those of exposure to gun violence.

One potential explanation for the large effects is that children who experience maltreatment start engaging in crime earlier, an explanation that appears to be supported by studies the authors highlight. Abused or neglected children are more likely to be arrested as both juveniles and as adults. Starting to engage in criminal behavior early may increase illegal human capital by raising experience in criminal activities, and decrease human capital in legitimate activities, such as schooling or being in the labor market. This would further increase criminal propensities.

Estimates suggest that the crime induced by abuse costs society about $6.7 billion per year at the low end and up to $62.5 billion at the high end. The estimates depend on the social costs attributed to crime, and specifically, whether those costs include estimates of willingness to pay to avoid crime.

It would be interesting to compare these figures to the cost of preventing maltreatment, but few intervention programs have been proven to be effective in rigorous studies. The sole exception is randomized trials of nurse home-visit programs that start in infancy, which have shown that they can reduce the incidence of substantiated cases of maltreatment by 50 percent. At a cost of about $4,000 per child, the total cost of providing this service to all children would be about $16 billion. Given that the crime induced by abuse is only one of the social costs of maltreatment, these estimates suggest that such a home visiting program might well pay for itself in terms of reducing social costs, even based on conservative estimates of the costs of crime. If society attaches some benefit to improving the lives of poor children (beyond the value we attach to saving people money), then the cost-benefit analysis of prevention programs begins to look even more favorable.

The authors provide evidence that the apparent negative effects of maltreatment on children's propensity to engage in crime are real and not simply artifacts of other features of dysfunctional families. They find that being maltreated approximately doubles the probability of engaging in many types of crime and that the effects are worst for children from low socio-economic status backgrounds. Perhaps

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unsurprisingly, boys are at greater risk for increases in criminal propensities than girls. Sexual abuse appears to have the largest effects on crime, perhaps justifying the emphasis on this type of abuse in the literature and in the media. Finally, the probability of engaging in crime increases with the experience of multiple forms of maltreatment as well as the experience of involvement with Child Protective Services. These findings suggest that criminal behavior increases not only with the incidence of maltreatment but also with the severity of maltreatment.

— Les Picker

Global Diversification Through Multinational Shares

Numerous studies have established that investors are biased against foreign securities and tend to undervalue them when assembling their portfolios. In **International Diversification at Home and Abroad** (NBER Working Paper No. 12220), **Fang Cai** and **Francis Warnock** show that if the basis for defining a "foreign" firm is changed from the location of the firm's headquarters to the locations of its operations, the home bias seen in many studies is reduced considerably. By studying a unique dataset, Cai and Warnock in fact show that institutional investors overweight domestic multinationals (MNCs) relative to purely local domestic firms. That is, such investors exhibit a bias in favor of the domestic firms that may provide the greatest international diversification benefits.

This is significant in that evidence for investors' diversification motives is hard to come by. It is generally accepted that investors overweight the familiar (domestic securities) at the expense of less familiar (foreign securities). Even within their foreign portfolios, investors seem to prefer the stocks of foreign countries that are closer and whose equity markets are most nearly correlated with their own. Within foreign countries, investors prefer large, familiar stocks. Even within their domestic portfolios, investors much prefer the familiar and tend to avoid stocks that are less correlated with the rest of their portfolios — exactly those stocks that would provide the greatest diversification benefits.

Cai and Warnock's study reaffirms that investors favor the familiar. Moreover, their evidence reveals that foreign investors overweight large firms, those that trade the most, and those with foreign operations — in other words, firms with the highest profiles. But most importantly, the authors find evidence of the international diversification motive. They find that domestic institutional investors show a decided preference for domestic multinationals. Even after controlling for familiarity, size, inclusion in major indexes, product tradability, and turnover, Cai and Warnock find that the bias for domestic firms with overseas operations remains.

The researchers' finding of a diversification motive arises from their analysis of the security-level U.S. equity holdings of domestic institutions (from SEC data) and, for the first time, foreigners' holdings (obtained from comprehensive benchmark surveys). Cai and Warnock are able to rethink how holdings of "foreign" equities are typically calculated, and in doing so, they conclude that the home bias puzzle is overstated by quantifying the foreign exposure U.S. investors obtain through the holdings of U.S. multinationals.

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Statistics on international equity positions are not designed to capture these indirect foreign holdings. One way to compute the foreign exposure obtained from holding domestic MNCs is to reconsider the notion of "country" and to redefine the term "foreign." A firm's country is typically determined by the location of its corporate headquarters. Procter & Gamble, for example, is viewed as a U.S. firm because its headquarters is in Cincinnati. But one could also define a firm's country by the location in which it operates. For many firms, these two methods of definition would yield the same result. But based on the distribution of their operations around the world, some firms would be residents of many countries. By this definition, for example, Proctor & Gamble, with about half of its sales originating from U.S. operations, would still be primarily a U.S. firm, but would also be "part Filipino, part Argentinian, and a bit of the other 67 countries in which P&G operates."

The preference for domestic MNCs implies that U.S. investors achieve substantial international diversification through their holdings of U.S. multinationals. This is confirmed using an international factor model that indicates that, while U.S. factors are more important for the returns of U.S. firms, the influence of foreign factors increases with the extent of the firm's foreign sales. Cai and Warnock use the relationship between foreign sales and foreign beta to form their estimate of the dollar value of home grown foreign exposure — the foreign exposure U.S. investors obtain by holding U.S. equities. The amount of home grown foreign exposure is comparable in dollar value to direct foreign exposure (through holding foreign equities), implying that the international diversification of U.S. investors has been substantially underestimated.

Cai and Warnock caution that while their results suggest the typical measures overestimate the extent of home bias, even with their adjustments a substantial underweighting of foreign equities remains. They suspect this arises mainly from the lack of investor protection regulations in many countries and from the fact that the typical shareholder in many countries is a large insider. Foreigners' investments in U.S. equities are not restricted by U.S. laws, but because the typical foreign country lacks an established class of equity shareholders, foreign investment in the United States are limited. Similarly, U.S. investors might fear investing in countries where the rules are not designed to protect outside shareholders. If investor protection regulations were strengthened, Cai and Warnock believe, and if more countries developed a class of equity shareholders, then the home bias would likely decrease in both directions.

— Matt Nesvisky

Police Pay and Performance

"Crime doesn't pay" may be a debatable axiom, but new evidence strongly suggests that the more crime-fighters are paid, the better they will combat crime. In **Pay, Reference Points, and Police Performance** (NBER Working Paper No. 12202), **Alexandre Mas** maintains that when police officers are awarded salaries below their desires and expectations, both arrest rates and average sentence length will decline, but when police receive their salary demands, arrest rates will rise.

Mas analyzes data on final offer arbitration rulings in compensation disputes between police bargaining units and major New Jersey cities from 1978 to 1996. (In 1977, New Jersey law mandated that wage disputes of police and fire fighters be submitted to final offer arbitration; about 9 percent of such disputes during the years of the study went to arbitration.) His dataset encompasses some 383 arbitration cases from 225 cities, and the study reveals that the employers won only 34 percent of their cases. The apparent "success" of the police bargaining units, however, may be explained by the possibility that union negotiators are more risk-averse than city negotiators and therefore submit more conservative pay demands.

What does seem clear from the researcher's analysis is that workers are unsatisfied not just with low wages, but with wages below a reference point that they consider fair. Mas uncovers just such a phenomenon when he compares data on the New Jersey arbitration awards and subsequent police performance.

The main measure of police performance in Mas's study is the number of crimes cleared by arrest monthly per 100,000 residents in a municipality. The number of arrests may be affected by the amount of overtime put in by police, by police absenteeism, or simply through the portion of the workday devoted to actual policing. Arrests represent costly effort in crime solving, in the arrest procedure, and in the subsequent paperwork. Police departments often base their own internal evaluations on the number of arrests. Therefore, Mas compares the average number of clearances in the months prior to arbitration of police wage disputes to the average in the months after arbitration.

Police performance, Mas finds, declines sharply when officers lose arbitration cases. The per capita number of crimes cleared (crimes resulting in arrests) is 12 percent higher in the months following arbitration rulings in favor of police officers. Felony arrests in cities where police unions lost in arbitration are also associated with lower incarceration probabilities and shorter jail sentences, suggesting that police may reduce their efforts and cooperation with prosecutors following arbitration losses. That is, the police expend less energy in gathering evidence, or at least in presenting evidence to prosecutors. In addition, police bargaining unit losses are associated with a 5.5 percent increase in reported crime rates in the months following arbitration rulings, suggesting less active policing.

Mas finds that the change in performance of New Jersey police officers depends not only on the amount of the pay raise but also on the counter-offer that was proposed but rejected. Comparisons of pay raises to counterfactuals, Mas says, influence police effort when the police lose in arbitration, but such comparisons are not relevant when police win, suggesting that these workers are subject to a form of loss aversion. The degree to which performance declines after an arbitration loss also depends on whether the loss was anticipated, suggesting that whether an arbitration decision is considered a win or a loss depends on employee expectations prior to arbitration. "On the whole," he surmises, "these results highlight the importance of managing and, in particular, lowering employee expectations prior to manipulating wage policy in organizations."

The author adds that it is well known that final offer arbitration awards are viewed as low quality because they are not the result of negotiations. He says his study shows that final offer arbitration can have additional inefficiencies in terms of the resulting response of participants to unfavorable judgments. In this regard, models of final offer arbitration can be developed to take into account the effect of differential rulings on productivity, for example, by employers managing worker expectations to minimize the behavioral costs arising from not meeting those expectations.

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Mas suggests that additional work is needed to determine whether productivity responses to arbitration are exacerbated by the fact that the arbitration rulings in his study represent group-level outcomes. That is, are the effects of failing to achieve a reference point increased when the resulting disappointment affects an entire group of workers?

Finally, Mas says that additional studies should consider whether or not the behavioral responses associated with the differential arbitration outcomes observed in this study represent a general phenomenon relating to allocative mechanisms that clearly distinguish winners from losers, such as negotiations that involve a single and discrete high-stakes issue.

— Matt Nesvisky