Spinning the Top:
Gender, Games and Macro Outcomes

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Reaching the top, the theme of this conference, seems like an excellent goal. But it does require some careful thinking about what the top is exactly or, more generally, which direction it lies in. “Up” is perhaps the obvious answer, but as any mountaineer can tell you, it may mislead, since the path to the summit often winds around many smaller peaks. In more mathematical terms (the preferred currency of my profession) a local maximum is not necessarily a global maximum. It will perhaps seem implausible to many highly skilled professionals that aspirations to top management of the Fortune 500 companies could represent less than a global maximum.

But that is the conclusion to which this winding paper leads.

Following my instructions, I focus on the impact of women’s current labor market situation on the “economy at large,” defining that economy to include the value of non-market work and non-market assets such as human and social capital. My answer to the question, “Do existing organizational and cultural practices have a productivity payoff?” is “yes, compared to many other alternatives.” But much depends on the counterfactual. Existing organizational and cultural practices create perverse incentives that may have negative economic effects outside the relatively-easily-measured world of market outcomes.

“Does the status quo reduce national production and income?” The answer to this second question depends entirely on how national production and income are defined. Efforts to assign a monetary value to non-market activities such as child care, volunteer work, and, more broadly, the intrinsic value of human capabilities, profoundly modify our economic accounts. It is important to ask how to improve women's chances of success within our current institutional environment. But the goal of this paper is different. It argues that women should play a leadership role in redefining our measures of success.

I begin with a discussion of gender differences, their possible impact on gender inequality, and their implications for analysis of our larger economic system. Next, I show how a closer look at the relationship between gender differences and economic competition can help explain a number of serious coordination problems that reduce the overall efficiency of our economic system. Finally, I argue that we need to develop a system of social accounting that values non-market assets and treat investments in human capital as what they are—investments.

Gender and Earnings Inequality

In his vivid account of working for Salomon Brothers in the 1980s, *Liar's Poker*, Michael Lewis describes the challenges to a new employee handed a pair of telephones on the trading floor: "If he would make millions of dollars come out of those phones, he became that most revered of all species, a Big Swinging Dick."[1] He explains that everybody wanted to be a Big Swinging Dick, "even the women." His very next anecdote, however, details the humiliation of a female trainee.

In management, as in other fields, considerable debate centers on issues of similarities versus differences between men and women. It is an irritating debate, sometimes making us feel as though we are being reduced, boiled down to a binary gender assignation. Few of us want to choose between simplistic me-too-ism ("girls can do anything boys can do") and sarcastic self-righteousness ("women who want to be like men lack ambition”). The debate becomes much more interesting if we back off from polarity, acknowledge a multidimensional continuum between masculinity and femininity, ask how we might be nudged in different directions along it, and why.

What Women Supply

Economic explanations of earnings inequalities between women and men often neatly fall into one of two categories, demand-side approaches that emphasize the discriminatory or exploitative behavior of employers, and supply-side approaches that emphasize differences in the quantity or quality of labor that men and women supply. These two approaches are not mutually exclusive. Indeed, demand-side and supply-side forces may interact in ways that help explain the uneven pace of change: if employers systematically discriminate, women have less incentive to invest in the kinds of human capital that they reward. Institutional inertia, information problems, and cultural norms may also contribute to a kind of circular causality of self-fulfilling expectations.

Still, it is useful to look more closely at individual gears in this clockwork and study their articulation with one another. Setting aside issues of employer demand, what factors explain differences in the supply of male and female labor to the market? Mainstream neoclassical economics, exemplified by the early work of Jacob Mincer and Gary Becker, emphasizes that women make rational and informed decisions about the allocation of their time. With full knowledge of the costs to their future career trajectory and lifetime earnings, they choose to devote considerable time to family or community priorities. Although their earnings may be lower as a result, they would not make such decisions if they were not fully compensated by the resulting non-pecuniary benefits.

Lately, however, this "compensating differentials" approach has been called into question.

The Motherhood Penalty

Economists who are less willing to take individual tastes and preferences as a "given" challenge the notion that women's decisions to allocate more time to nonmarket work than men are entirely "free choices." Women are constrained by outmoded institutional arrangements that make it difficult for them to choose the preferred combination of market and non-market work. This argument has been popularized by Sylvia Ann Hewlett in *A Lesser Life* and Ann Crittenden in *The Price of Motherhood* (a note to Bostonians: both these authors will be participating in a "Meet the Author" session at the upcoming meetings of the Population Association in Boston in early April).[2] Professional economists and managers may be more familiar with Laura D'Andrea Tyson's comments on these issues in her regular *Business Week* column. Last October she cited the National Parenting Association's estimate that 49% of women earning more than $100,000 a year are childless and a Catalyst report claiming that a third of professional women not yet in the most senior leadership positions don't want promotions because of fears of interference with family life.[3]

Strong scholarly support for the significance of this supply side constraint comes from a variety of sources. Claudia Goldin's historical research reveals how difficult it has been for women college graduates to successfully combine family and career.[4] Law professor Joan Williams explains how the structure of high-wage employment is premised on an "ideal worker" who cannot effectively fulfill job requirements without the assistance of an "ideal spouse" providing backup and assistance.[5] Women often lack the bargaining power they need to persuade men to offer more support work and take on more family responsibilities (though the concept of the “trophy husband” has now reached the business press).[6] Detailed econometric studies by Heather Joshi, Jane Waldfogel and others document differences in the size of the “motherhood penalty” across countries.[7] A new book by public policy experts Janet Gornick and Marcia Meyers explains why the structure of paid employment is Northwestern Europe is more “family-friendly” and explains how the United States could move in this direction (and what it would cost to do so).[8]

Of course, the relative importance of these institutional constraints is not completely clear. To really sort out the complex causality, randomized experiments would be required (anyone willing to volunteer their daughters?) But the optimal strategy for a woman who wants to maximize chances of professional and economic success is probably not to have children. For a woman who wants to maximize happiness the best strategy may be not to *want* to rear children.

Some preferences lead to better economic outcomes than others. And many preferences broadly related to gender have economic implications.

The Dating Market

Motherhood leads to obvious differences in the supply of male and female labor. But femininity itself, a rather more abstract concept, also seems to have effects. In her empirical research on labor market inequalities between gays, lesbians, and “straight” counterparts with similar levels of education and experience, my colleague Lee Badgett learned that while gay men pay a wage penalty, lesbian women seem to enjoy a slight wage advantage. They seem to be more willing than heterosexual women to enter non-traditional occupations (gay men likewise, but non-traditional occupations for men generally promise lower, not higher earnings). [9]

Her finding prompted two explorations of the possibility that heterosexual women might shy away from high paying jobs because of fears of a loss of "femininity" that would hurt their chances in the dating and the marriage market.

The Austrian economist Doris Weichselbaumer conducted a simple experiment using the personal advertisements published in a free newspaper in Western Massachusetts. She placed ads by two fictive single white females who differed significantly only in the gender conformity of their occupation (one described herself as a nurse, the other as an electrician):

> SWF, 31, good looking, slender nurse. Enjoys x-country skiing and films. Financially stable. Would like to meet a man for a lasting relationship.
>
> SWF, slim, attractive, electrician 30, financially stable, likes movies and rollerblading, seeks man for lasting relationship.

The ads ran for five weeks. The nurse received 77 responses, the electrician 39. Lee and I explored this asymmetry further using factorial surveys, asking groups of college students to rate ten short vignettes describing personal advertisements that randomly varied characteristics such as occupation.[10] Our results support the hypothesis that choice of gender-nonconforming occupations, controlling for status, education, and other factors, is likely to reduce the pool of potential suitors.

Individuals who hold "traditional" attitudes towards appropriate gender roles impose a higher penalty on non-conformity than others. The penalties are particularly high for women who enter traditionally masculine jobs that do not require educational credentials and do not offer relatively high status or prestige. A female orthopedic surgeon, for instance, is penalized less than a female electrician. Men as well as women in gender-atypical occupations are considered less attractive–but their earnings power matter more than their gender conformity. Higher earnings have a strong "halo" effect on perceptions of men's attractiveness in every dimension.

As a result, men who invest in market-specific human capital enjoy two positive payoffs–one in the labor market and one in the dating market. Women also enjoy a positive payoff in the labor market (though it may be lowered by discrimination) but their payoff in the dating market is much reduced if they enter what is considered an "unfeminine" occupation. It is as though men are competing in two races that both require similar training (e.g., the general aerobic conditioning that contributes to success in running a 15K race and a marathon), while women are competing in two races that require very different training (e.g. a sprinter's 100 yard dash and a marathon). It is no wonder that we describe women who successfully combine family and highly successful careers as "superwomen."

Concepts of gender-appropriate occupations change over time. But such cultural changes have been far more apparent at the high end than the low end of the labor market. Highly educated women probably pay a higher price for motherhood than other women, because of the high opportunity cost of time withdrawn from career. But it seems likely that less-educated women pay a higher price for conformity to feminine ideals, because it is harder for them to reconcile these with the better paying jobs within their reach.

Public policies to promote better work-family balance could perhaps ameliorate both kinds of penalties. But attention to the dating market suggests that gender inequality has much deeper sources than the absence of paid maternity leave, or limits to the length of the working day, because it is embedded in cultural norms of masculinity and femininity that place women at a disadvantage. It is difficult to explain why women conform to such costly norms without looking more closely at possible differences in men's and women's preferences.

Gender and Preferences

Economists tend to sidestep questions about preferences, especially about systematic differences in preferences among groups of people. Yet common sense suggests that part of the supply side problem is not just that it is harder for women than for men to "have it all" (as institutionalist approaches suggest) but also that women *want* more than men to "have it all." This argument raises feminist hackles, especially when framed as a suggestion that highly educated women should spend more time devoting themselves to family care (as with Lisa Belkin's inflammatory article in the *New York Times* last October, entitled "The Opt-Out Revolution."[11] But whether we like it or not, we must consider the possibility that women simply have more expensive preferences than men when it comes to children.

This hypothesis is consistent with the insights of evolutionary biology. Differences in the size and quantity of gametes males and females produce, combined with the physiological cost of gestation, nursing, and prolonged nurturance have significant implications. Mothers have more invested in individual offspring and more to lose (in terms of reproductive fitness) from loss of a child. Women lose their reproductive capacity at a much younger age than men, and mothers bond more closely and more quickly with offspring than fathers do.[12] As a result, fathers are in a stronger position than mothers to make a credible threat to abandon offspring.

The biology of gender differences implies that a different set of evolutionary pressures operates on males and females. Natural selection rewards males who improve their mating effort, increasing their sexual access to females. But natural selection rewards females who increase their parenting effort, improving the likelihood that their offspring will successfully reach maturity. Female parenting effort may take the form of bargaining with males for increased support of offspring.[13] In other words, many centuries of evolution may have favored females willing to sacrifice some of their own consumption and leisure on behalf of their children more strongly than males with the same preferences.

These evolutionary pressures may also have implications for the broader development of male and female capabilities and preferences. Physical strength becomes an advantage for males in competition with other males. Selection for mating effort tends to place males in “winner-take- all” games that reward risk-taking behavior. If they fail to mate, their long-term success helping nurture offspring becomes irrelevant. Selection for parental effort places females in strategic environments more likely to reward cooperation. Rather than facing a shortage of potential partners, they face substantial long-term risks of being unable to raise highly dependent offspring to maturity. As a result, men and women have evolved very different sets of innate and culturally determined preferences, with implications for their relative social and economic position.[14]

This concept of gendered preferences is also consistent with experimental evidence. In carefully controlled laboratory settings playing games that involve transfers of money, women behave in more generous and also more risk-averse ways than men. [15] Women are particularly cooperative when paired with another woman.[16] Another recent set of experiments compared the productivity of men and women under different systems of compensation (piece-rates vs. competition). The findings show that men and women are about equally productive under a piece-rate system, but that men become more productive with competitive payments, because they try harder (perhaps as a result of greater confidence in their potential success).[17]

Many more experiments of this type will be required to persuade me that these differences have significant implications for daily life. But I am intrigued by the thought experiment. What if it *were* true that women tended to be less competitive than men? Should we try to change our preferences (and those of our daughters and students) and not just try to *behave* but also to *feel* more like men? Or should we perhaps reconsider the role of competition within our economic system?

COMPETITION AND COOPERATION

In the world of neoclassical economics, competition rewards those who successfully pursue their own self interest and everyone benefits from the resulting alignment of incentives and rewards. Competition is generally viewed in the same short-run terms as what evolutionary biologists describe as male preoccupation with "mating success." It is often remote from the longer run benefits of rearing the next generation, or what evolutionary biologists describe as "parenting success." Institutional and behavioral economists describe a different world in which individual pursuit of self-interest can backfire, making everyone worse off, as in Prisoner's Dilemma games.[18]

We all live in both worlds, relying on both competition and cooperation. But men have been more likely to live in the first, and women in the second, world. Furthermore, the boundaries between these two worlds are changing. In my book, *The Invisible Heart: Economics and Family Values* I argue that traditional patriarchal systems evolved as a way of reducing competition between men and women and creating strong economic incentives to invest in children.[19] As these traditional patriarchal systems shift and loosen, women gain increased individual freedom, but economic success begins to be defined in increasingly narrow, ultimately unsustainable terms.

Here, I want to offer a new way of thinking about competitive pressure as a device for encouraging positive economic outcomes, and suggest that more competitive pressure is not always better (or worse).[20] Rather, the relationship between competitive pressure and positive economic outcomes may be positive in a certain range, and negative beyond that point. There is little reason to believe that our current economic institutions situate us at the optimal level. Indeed, while other economic systems may have suffered from insufficient competition, we may suffer from too much.

Further, the optimal level of competitive pressure may vary in different economic contexts. It is probably lowest in the traditionally feminine "care sector" of the economy that includes the paid and unpaid work of caring for dependents, and highest in the more traditionally masculine "physical output" sector of the economy where goods are easily substitutable, and quantity and quality are more easily measured and monitored. Some types of work have intrinsic characteristics that make it difficult to rely on competition as a motivational device.

Intensity of Competition

Thomas Schelling, great innovator in strategic modeling, was fond of what he called the "inexorable mathematics of musical chairs."[21] This game offers a simple way to explore the relationship between intensity of competition and economic outcome. Individuals parade around a group of chairs as music plays. When the music stops, they must sit in a chair. Those who fail are eliminated from the game, but for every person eliminated, a chair is also removed. In the final round, two persons compete for a single chair.

Imagine that in a game of musical chairs, individuals are doing something economically productive rather than simply parading around to the music. The competitive structure of the game urges them to pay close attention to what is going on and try as hard as they can to grab a chair when the music stops, subject to the requirements of common courtesy. The intensity of the competition is determined partly by the number of players relative to the number of chairs and partly by the cost of losing.

When the stakes are low, the game is light-hearted. But if, say, those who grab chairs are guaranteed lifetime job security while the others are relegated permanently to the unemployment line, the competition can become intense.

In this metaphorical game, will increasing the number of competitors and the relative level of the reward always led to more positive economic outcomes? It is not difficult to imagine a situation in which, if the stakes became too high, individuals might be sorely tempted to violate common courtesy and engage in kicking, shoving, pinching and eye-gouging. A paranoid inhabitant of the modern-day world could even imagine a situation in which embittered players strap explosives to themselves in order to blow up the chairs. Much depends on how effectively the rules and civility of the game can be enforced. But holding these constant and simply increasing the intensity of competition, there is likely to be some point at which the benefits begin to decline.

A more poignant real-world example of the negative aspects of competitive pressure is offered by the use of steroids and other performance-enhancing drugs in competitive sports. Such drugs pose serious long-term but uncertain health risks to those who use them, but the short-run pressures to use them are enormous—as are the rewards of winning the competition. Without regulation and strict enforcement of rules through blood-testing, drug use can become endemic in a competitive sport. This end result neutralizes the competitive benefit any one person would have derived from drug use.

Robert Frank offers a compelling account of the adverse social consequences of winner-take-all tournaments whose scope is increasing as a result of changes in information technology.[22] He argues that deregulation and other social policies have allowed the intensity of competition to get out of hand in the United States, incorporating many insights from behavioral economics and psychology, including individual tendencies to evaluate their welfare in relative terms, and to overestimate their chances of success in competition. He urges us to think less about individual performance within a given competitive game, and more about the design of the game itself.

Many high-paying professional careers, including those of top-level academics, lawyers, and managers, are organized in winner-take-all tournaments. As a result, both men and women often face a high price for devoting time to family and community, even if they have legal access to parental or family leave. Issues of short term vs. long term, as well as difficulties of measurement, come into play. As two policy wonks known as Al and Tipper Gore put it, "At any given moment when a decision between work and family must be made, the workplace has a much stronger ability to quantify and express the immediate cost of neglecting work."[23] Like resorting to steroids, working long hours is a competitive strategy that offers no individual advantage if everyone adopts it. What Frank calls "winner-take-all" competition can lead to a serious misallocation of time away from family and community.[24]

Incentives to Cheat

The corporate accounting scandals of the last few years offer another example of negative effects of excessive competitive pressure. In the 1990s, business school theorists like Michael Jensen argued that rewards for corporate managers did not sufficiently reward performance. But as stock options were introduced, the temptations to bad behavior apparently grew. In 1994 so-called "green capitalist" Paul Hawken presciently observed that "the demand to perform has become so overwhelming that, according to a recent poll, 20 to 30 percent of middle managers in the largest corporations confess that they have written memos or progress reports to their superiors that were dishonest."[25]

Forms of executive compensation that were thought to represent "optimal contracts" proved distinctly suboptimal because they encouraged opportunism.[26] Although I know of no systematic analysis of gender differences in such behavior, it has been noted that women were well-represented among the key whistle-blowers.

Sherron Watkins helped topple Enron's house of cards; Noreen Harrington, a former executive with Stern Asset Management, exposed mutual fund misconduct.[27] Women who engaged in suspicious behavior were generally held to a higher standard, and subject to more public criticism than men. Martha Stewart is the classic example--last year she appeared on the cover of *Atlantic Monthly* as a witch being burned at the stake.

For all the media attention devoted to corporate scandal, there has been remarkably little attention to who is actually harmed (or by how much), when cheating and malfeasance become endemic. Of course, any infraction of official rules such as those governing insider trading or mutual fund transactions undermines investor confidence. But the costs are almost certainly higher when workers and consumers are adversely affected. In this area, the poster child for misbehavior is not Enron, or Dynegy, or Putnam, but Tenet Healthcare, the nation's second largest for-profit hospital chain: In 1997, following a long chain of lawsuits in which they admitted to defrauding both insurance companies and the federal government, they agreed to pay $100 million to about 700 former patients who contended that the company and its affiliated doctors illegally imprisoned them in psychiatric hospitals in order to obtain their insurance benefits.[28]

Nor are the ill-effects of intense competition limited to the private sector. With the introduction of "performance-based" incentives into the public sector, evidence of opportunism has grown. Some econometric research shows that the introduction of high-stakes testing in public schools led to significant increases in cheating by teachers and administrators.[29] According to newspaper accounts, school districts in both Houston and

New York recently reported large numbers of students as “transfers” rather than “dropouts” in an effort to improve aggregate measures on which they were being judged.

Competition in the Care Sector

Empirical research could help clarify the differential effects of competitive pressure on different kinds of economic activity. If experimental laboratory games can reveal differences in male and female behavior, they might also reveal differences in propensities to violate the “rules of the game” and how they are affected by factors such as consumer sovereignty, institutional transparency, monitoring costs, substitutability of inputs, and measurement of output.

I hypothesize that intense competitive pressures are likely to have particularly adverse effects in situations in which consumer sovereignty is limited, as with the Tenet Healthcare abuses described above. If consumers know what they want, have perfect information, have adequate economic resources (or opportunities to acquire them) and are offered a range of choices, they can be expected to protect themselves against many abuses. But conditions of consumer sovereignty do not firmly hold in market-based care services such as health, education, and nursing homes. Consumers are often too sick, young, feeble, powerless, or poor to exercise sufficient choice.[30]

In discussions of corporate governance, the term “transparency” has come into vogue. If investors can “see” what is going on, they will have more confidence in the results. But transparency is very hard to deliver. The problem is not lack of information, but the excess and complexity. Despite a Ph.D. in economics I find it extraordinarily difficult to meaningfully compare the health insurance policies available to me as an employee of the Commonwealth of Massachusetts. In my opinion, the firms offering these policies fail to provide clear, easily comparable options because it is not in their competitive interest to do so. Our health care system as a whole is prone to inefficiency and fraud. Partly as a result, we spend far more health care for less satisfactory results than most other developed nations.

The process of caring for dependents has complex emotional and personal dimensions, and includes many non-cognitive inputs and outputs that are difficult to quantify. The job of a health care provider is not merely to cure an illness, but to promote lifelong health. The job of a teacher is not merely to improve test scores, but to encourage a love of learning. The job of an elder care worker is not merely to prevent bedsores but to make patients feel cared for. Incentives to improve performance in the measurable dimensions of these tasks can have the effect of reallocating effort away from those that are less easily measured.

In many care services, so-called “peer effects” and “neighborhood effects” play a significant role. Advocates of voucher-based school choice systems insist that student mobility has the effect of disciplining schools, forcing them to provide better services. They hold competition forth as the best way to improve school quality. But recent empirical work suggests that students who opt out of bad schools are the ones who would have been most likely to succeed had they stayed, and when they leave, the performance of students who remain is worsened.[31] Elite colleges can charge high tuition not only because they provide better services, but also because they screen students, purposefully limiting their admissions to create excess demand. They compete with one another on the basis of the “selectivity” of their students populations. The resulting bidding war for the very best students reduces the financial aid available for those with limited resources—as well as those who might be late bloomers.[32]

The "care sector" of the economy encompasses unpaid work in the home as well as the paid services of care workers. Much of this unpaid work could be replaced by the purchase of services—housekeepers, gardeners, nannies with wages determined by the forces of supply and demand in competitive markets. But while such commodified services may provide adequate substitutes for some family work, they do not provide substitutes for personal commitments and family-specific skills.[33] Competition emphasizes performance, not identity; it requires a common standard of success.

Social scientists have been known to suggest that parenting could be "rationalized" by offering more self-interested incentives. James Coleman argues that parents should enjoy a public reward based on a calculation of how much better their children perform than might be expected based on their objective characteristics.[34] Shirley Burggraf argues that instead of taxing the younger generation as a whole to support the elderly, we should give parents a legal claim to a percentage of their children's earnings.[35] Would daughters then become less desirable than sons, because they earn less?

Apart from the pathology of thinking about children in such instrumental terms, the "quality" of children cannot be reduced to measures of their future earnings. Families don't merely produce "human capital"; they also produce human capabilities of much greater and more intangible worth. Every child is helplessly and powerfully unique. As the Texas populist Jim Hightower puts it, "it's easier to count the seeds in the apple than the apples in the seed."

Surely these factors are relevant to a consideration of the optimal level of competitive pressure in the economy as a whole. They are also relevant to efforts to derive better estimates of the overall value of care services provided outside the market.

ACCOUNTING FOR CARE

National income accountants don't get as much scrutiny as corporate accountants these days. Principles of "due diligence" are not nearly so well defined. One could argue that national accounts matter less, because they are not informing decisions to buy and sell. But political regimes compete on the basis on certain indicator measures, among them the rate of growth of Gross Domestic Product. And national income accountants provide basic benchmarks for the measurement of economic success.

These measures exclude consideration of the value of non-market work. Imagine a corporation—or a non-profit firm--that benefits from a large supply of volunteer labor. Since this labor costs nothing, it need not be entered as a cost. It is nonetheless affecting the value of the output. Furthermore, if the supply of this volunteer labor changes over time, it is altering the relationship between priced inputs and output. This is exactly why many organizations that benefit from volunteer labor treat it as an "in-kind contribution" and estimate what its replacement cost would be.

We all know that the movement of women into paid employment is one of the most significant trends of the twentieth century. When women reallocate their time and energy from home and family care to paid employment, they move from traditionally unmeasured into measured activities. This movement across the accounting boundaries probably overstates the rate of economic growth and misrepresents levels of economic welfare. Many countries, including the U.S. are now pursuing strategies to develop so-called "satellites" to the conventional national accounts to address this problem. But while progress is being made, many conceptual problems remain.

Valuing Non-Market Work

The battle for empirical attention to non-market work has a long and fascinating history, punctuated by protests from women's groups. My favorite example is a letter sent to Congress by the Association for the Advancement of Women in 1878, complaining of the Census Bureau's failure to acknowledge the productive value of the home and woman as home-keeper. The letter failed to sway federal legislators, but presented a point of view shared by the Massachusetts Bureau of Labor Statistics, which began collecting data in 1865 on the number of adults engaged primarily in housework. A few men (less than 1%) fell under this rubric, and the small number of married women who engaged in neither paid nor unpaid work were categorized as "wives, merely ornamental." [36]

The English economist Alfred Marshall advised census-takers in Britain to adopt the practice of terming married women "dependents" and excluding them from estimates of the labor force, because this would make Britain appear to be more productive. Despite shifts to this terminology, early national income accountants tended to argue that household services represented productive work. In 1921, the National Bureau of Economic Research published a landmark study of income in the United States that calculated the value of household services based on estimates of the number of women ages 16+ primarily engaged in housework without monetary remuneration. Assuming that the proportion of "housewives" to the total population remained constant, and that the average value of their services in 1909 was about equal to the average income of persons engaged in the paid occupation of Domestic and Personal Service, they calculated that the value of housewives' services amounted to 30.7% of market national income in 1909 and 25% in 1918.[37]

Within academia, the emerging field of "home economics" created a platform for research on such topics. The first surveys in the U.S. utilizing time diaries were administered to small samples of farm wives in the 1920s.[38] National income accounting, however, moved in a different direction. The economist A.C. Pigou insisted that national income should be defined only in terms of goods and services that could be brought "directly or indirectly into relation with the measuring rod of money" and discouraged the application of such a measuring rod to household work.[39] In the early 1930s, two women economists published comprehensive studies of the economics of household production.[40] But not until the 1990s, under pressure from women's groups, did most countries move toward serious efforts to measure the value of non-market work.

Satellite Accounts

The strategy adopted by most countries for measuring non-market work is to measure the inputs of time, using time-diary surveys of a representative sample of the population. The inputs of time can be multiplied times the wage that would be paid if someone were hired to do work of comparable quality (replacement cost); alternatively, it can be valued at opportunity cost (the wages that the person providing the service would have received). Results in hand from Australia, Canada, Finland, Norway, Sweden, and the United States show that non-market activities valued solely on the basis of labor inputs account for a sizeable proportion (between 40% and 60%) of the total value of all output.[41] These are termed “satellite” accounts because they are added onto the existing accounts, which remain intact.

This year, the U.S. Bureau of Labor Statistics fielded the American Time Use Survey, which will become a regular feature of the Current Population Survey, providing time-use diaries from one member of a representative sample of households. A panel of experts has been convened by the National Academy of Sciences to consider how best to assign a value to non-market work and health. I have had the honor of participating on this panel, which is in the process of writing its final report.

In general, we found it easy to agree on methods of valuing non-market work that have obvious market substitutes, such as cooking and cleaning. More serious problems emerge in consideration of more personal forms of work, such as family care. For instance, time use diaries capture the *activity* of caring for children better than the more diffuse *responsibilities* for child care, which often constrain parents’ activities.[42] But the empirical problems (though daunting) are small compared to more conceptual ones. Time devoted to the care of children and other dependents can be treated simply as a form of “consumption” and valued at what it would cost to hire someone else to provide the service. But as the metaphor of “investment in human capital” suggests, we could also value the activity from the other direction—measuring the net present discounted flow of services from the capital asset.

Who Produces Human Capital?

Despite widespread rhetorical use of the term “human capital,” economists continue to interpret it narrowly. On the input side, it is often assumed that the actual physical production of children, along with their early nurturance, is not of an economic nature. Only investments in formal education are typically "counted" as investments in human capital. Yet a growing literature documents the significant influence of early childhood experiences on both motivation and acquisition of cognitive skills later in life.[43]

On the output side, economists typically estimate the value of human capital as the net present discounted value of future lifetime earnings.[44] But can the "services" that children provide really be reduced to earnings? By this measure, a daughter is worth less than a son, and neither Jesus nor Van Gogh was worth much, since they enjoyed no commercial success. The capabilities that children develop have profound implications for our own sense of fulfillment, for our ability to govern ourselves, and for our ability to respond to the unforeseen challenges of the future. In technical terms, they have many "spillover" effects, "externalities" that are not captured by market valuation.

The analogy with issues of environmental accounting is a telling one. We took the services of Mother Nature for granted until they began to seem vulnerable to depletion and disruption. Likewise, we took the services of wives, mothers, and other female caregivers for granted until the likelihood of reductions in their supply became apparent. Of course, population growth has been seen, at least since Malthus, as an example of a negative, rather than a positive externality. But we now live in a world, unlike that of Malthus, in which global fertility rates are declining rapidly.

Most of the advanced industrial countries rely on pension systems (private and public) based on assumptions about the age structure of the workforce that are rapidly becoming obsolete. Countries like Japan, Italy, and Spain with fertility rates far below replacement levels have serious cause for economic concern. The U.S. has a long tradition of immigration that will almost certainly buffer it from any ill effects, but new attention is being devoted to "generational accounting" issues. We currently tax the working age population in order to provide support for the elderly population. Yet our pension systems reward paid employment (or long-term marriage to a covered employee) rather than the effort of raising the next generation of tax payers.[45]

I have long argued that our public policies redistribute resources from parents in general (and mothers in particular) to non-parents.[46] Berkeley economist and demographer Ron Lee explores similar themes, offering specific estimates of the size of fiscal and other externalities.[47] We have "socialized" the economic benefits of childrearing more extensively than we have socialized the costs. Fertility decline has provided important economic benefits. But reductions in the time and energy devoted to the next generation, like competitive pressure (and perhaps as a result of it) can go too far.

CONCLUSION

Women may have different norms and preferences than men because we have had different responsibilities. Gender differences may be based to some extent in biology as well as culture. Yet we have attained the power to change both biology and culture, along with the very meaning of femininity. I believe that we have changed that meaning, for the most part, in positive ways. But I also believe that we have entered a Prisoner's Dilemma game in which we are offered a choice between adopting traditionally masculine priorities and being denied access "to the top." If we focus too narrowly on the optimal strategy of individual choice, we will lose our collective opportunity to change the rules of the game.

We need to develop ways of controlling competitive pressures in the economy as a whole. So called “rat-race” and “squirrel cage effects,” like “arms race dynamics” weaken families, communities and long run sustainability. We need to think more carefully about the institutional organization of the paid care sector of the economy, providing more guarantees of high quality care for children, the sick, and the elderly. We need to move beyond the margins of conventional economic theory to develop better social accounting systems. If we don’t, we may reach the top of the mountain only to see it crumble beneath us.

The path I advocate is a daunting one. The dwarf Gimley’s words anticipating the final battle in *Return of the King* seem relevant: “Small chance of success. Certain death. What are we waiting for?” But it is Eowen, after all, who vanquishes the Lord of the Nagul.

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