The Economics of Sex and STDs   by Taggert J. Brooks

References

Belot, M., & Francesconi, M. (2006). Can Anyone Be "The" One? Evidence on Mate Selection from Speed Dating. Institute for the Study of Labor.

Blanchflower, D. G., & Oswald, A. J. (2004). Money, Sex and Happiness: An Empirical Study. *Scandinavian Journal of Economics, 106*(3), 393-415.

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Annotated Reference List:

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> A combination of changing migration patterns and US immigration restrictions acted to shift the male-female balance in many ethnic groups in the early 20th Century. I use this variation to study the consequences of changing sex ratios for the children of immigrants. Immigrant sex ratios affected the second generation for a number of reasons, most importantly because immigrants and their children typically married in the same ethnic group. The results suggest that higher sex ratios, defined as the number of men per woman, had a large positive impact on the likelihood of female marriage. More surprisingly, second-generation male marriage rates were also an increasing function of immigrant sex ratios. The results also suggest that higher sex ratios raised male earnings and the incomes of parents with young children. The interpretation of these findings is complicated by changes in extended family structure associated with changing sex ratios. On balance, however, the results are consistent with theories where higher sex ratios increase male competition for women in the marriage market.

Bagnoli, M. and T. Bergstrom (1993). Courtship as a Waiting Game. **101:** 185-202.

> In most times and places, women on average marry men who are older than themselves. We propose a partial explanation for this difference and for why it is diminishing. In a society where the economic roles of males are more varied and specialized than the roles of females, it may be that the relative desirability of females as marriage partners becomes evident at an earlier age for females than it does for males. We study an equilibrium model in which the males who regard their prospects as unusually good choose to wait until their economic success is revealed before choosing a bride. In equilibrium, the most desirable young females choose successful older males. Young males who do not believe that time will not treat them kindly will offer to marry at a young age. Although they are aware that young males available for marriage are no bargain, the less desirable young females will be offered no better option than the lottery presented by marrying a young male. We show the existence of equilibrium for models of this type and explore the properties of equilibrium.

Belot, M. and M. Francesconi (2006). Can Anyone Be "The" One? Evidence on Mate Selection from Speed Dating, Institute for the Study of Labor.

> Marriage data show a strong degree of positive assortative mating along a variety of attributes. But since marriage is an equilibrium outcome, it is unclear whether positive sorting is the result of preferences rather than opportunities. We assess the relative importance of references and opportunities in dating behaviour, using unique data from a large commercial speed dating agency. While the speed dating design gives us a direct observation of individual preferences, the random allocation of participants across events generates an exogenous source of variation in opportunities and allows us to identify the role of opportunities separately from that of preferences. We find that both

women and men equally value physical attributes, such as age and weight, and that there is positive sorting along age, height, and education. The role of individual preferences, however, is outplayed by that of opportunities. Along some attributes (such as occupation, height and smoking) opportunities explain almost all the estimated variation in demand. Along other attributes (such as age), the role of preferences is more substantial, but never dominant. Despite this, preferences have a part when we observe a match, i.e., when two individuals propose to one another.

Blanchflower, D. G. and A. J. Oswald (2004). "Money, Sex and Happiness: An Empirical Study." Scandinavian Journal of Economics **106**(3): 393-415.

The links between income, sexual behavior and reported happiness are studied using recent data on a sample of 16,000 adult Americans. The paper finds that sexual activity enters strongly positively in happiness equations. Higher income does not buy more sex or more sexual partners. Married people have more sex than those who are single, divorced, widowed or separated. The happiness-maximizing number of sexual partners in the previous year is calculated to be 1. Highly educated females tend to have fewer sexual partners. Homosexuality has no statistically significant effect on happiness.

Charles, K. K. and M. C. Luoh (2006). "Male Incarceration, the Marriage Market and Female Outcomes." Unpublished Manuscript.

This paper studies how rising male incarceration has affected women, through its effect on the marriage market. Variation in the marriage market shocks caused by incarceration is isolated using two facts: the tendency of people to marry within marriage markets defined by the interaction of race, location and age; and the fact that increases in incarceration have been very different across these three characteristics. We find strong evidence that women have been affected by rising incarceration precisely as the standard marriage market model would imply. Higher male imprisonment has lowered the likelihood that women marry, reduced the quality of their spouses when they do, and caused a shift in the gains from marriage away from women and towards men. We find that women increase schooling and labor supply in response to these changes, but this investment has been insufficient to prevent an increase in female poverty.

Cherry, R. (1998). "Rational Choice and the Price of Marriage." Feminist Economics **4**(1): 27-49.

This paper accepts the thesis that marriage decisions reflect rational behavior based on weighing benefits and costs. It develops a concept of a marriage price that measures the excess services one spouse provides to the other when there are differences in the number of men and women seeking marriage partners. This price includes income, time allocation to household activities, and control over forms of intimacy and beauty styles. In contrast to Grossbard-Shechtman's strict choice model, this model highlights the patriarchal privileges of husbands. It identifies some of the factors which affect marriage price in the United States and assesses the impact of recent U.S. governmental initiatives to increase marriage rates, including the male employment proposals made by William Julius Wilson. The theoretical model developed here shows that proposals

that increase the personal value women place on marriage raise the marriage price they must pay, as well as increasing marriage rates.

Chesson, H., P. Harrison, et al. (2000). "Sex under the Influence: The Effect of Alcohol Policy on Sexually Transmitted Disease Rates in the United States." Journal of Law and Economics **43**(1): 215-238.

> This article presents evidence that sexually transmitted disease (STD) rates are responsive to increases in alcohol taxes and in the drinking age. The presumed relationship is that a more restrictive alcohol policy reduces alcohol consumption, which in turn decreases risky sexual activity. Reduced-form regressions of STD rates on state alcohol taxes for the years 1981-95 (with controls for state and year) indicate that a $1 increase in the per-gallon liquor tax reduces gonorrhea rates by 2.1 percent, and a beer tax increase of $.20 per six-pack reduces gonorrhea rates by 8.9 percent, with similar though more pronounced effects on syphilis rates. Quasiexperimental analysis of alcohol policy changes supports these findings and offers evidence that increases in the drinking age reduce STD rates among youth. The estimated external cost of alcohol-attributable STDs exceeds $556 million annually, a factor that could be considered in determining optimal alcohol policy.

Cunningham, S. and C. Cornwell (2007). "The Impact of Male Incarceration on Gonorrhea and Syphilis Incidence."

> By midyear 2005, an estimated 12 percent of all Black males and 1.7 percent of all White males were imprisoned. This number was not always so high|from 1980 to 2000, the incarceration rate of Black males aged 15-44 grew from 3.17 to 10.04 percent. We argue that the removal of Black men from relationship markets a ected the terms of trade in sexual exchange, increasing concurrency, which in turn speeding the spread of STIs in the sexual network. To test our proposition, we examine the e ect of male incarceration on gonorrhea and syphilis incidence. We examine gonorrhea and syphilis because they have short incubation spells, making incidence a good gauge for contemporaneous sexual behavior. Using panel data on state, age, sex and race-specic disease and incarceration over the 1981-2000 period, we find that male incarceration is positively associated with Black female incidence in most specifcations of the model. Increasing the Black male incarceration rate by 1 point caused between 37.6 and 88.3 new cases of gonorrhea (per 100,000) among Black women, and between 1 and 3.4 new cases of syphilis (per 100,000) among Black women. We also find that evidence that White male incarceration is associated with an increase in both White female gonorrhea incidence and syphilis incidence. When separated by age, we find the largest eect among 25-29 year olds|a 1-point increase in the Black male incarceration rate was associated with 51.1 new gonorrhea cases (per 100,000) and 6 new syphilis cases (per 100,000) among Black women. We also find evidence that underlying crack cocaine usage amplied gonorrhea and syphilis growth, as well as a negative relationship between contemporary AIDS mortality among males, with an eect that is considerably larger among males than it is among females|suggesting that AIDS mortality slows down STD transmission in male homo-sexual networks, but not in heterosexual networks. While

we nd that AIDS mortality reduced STI incidence among men, we consistently nd that it increased incidence among White females, suggesting either that the AIDS epidemic sent more White women to clin-ics for checkups, and thus increased physician diagnoses, or the AIDS epidemic caused infected men at the homosexual/heterosexual margin to substitute into sexual relation- ships with White women, and thus fueled the spread of STI among White females (?).

Damiano, E. and H. Li (2005). "Price Discrimination in Matching Markets." <u>Economic Theory</u>. This paper considers the problem of a monopoly matchmaker that uses a schedule of entrance fees to sort different types of agents on the two sides of a matching market into exclusive meeting places, where agents randomly form pairwise matches.We make the standard assumption that the match value function exhibits complementarities, so that matching types at equal percentiles maximizes total match value and is efficient. We provide necessary conditions and sufficient conditions for the revenue-maximizing sorting to be efficient. These conditions require the match value function, modified to incorporate the incentive cost of eliciting private type information, to exhibit complementarities in types.

Dee, T. S. (2005). "Forsaking All Others? The Effects of "Gay Marriage" on Risky Sex." <u>National Bureau of Economic Research Working Paper Series</u> **No. 11327**.
One of the conjectured benefits of establishing the legal recognition of samesex partnerships is that it would promote a culture of responsibility and commitment among homosexuals. A specific implication of this claim is that "gay marriage" will reduce the prevalence of sexually transmitted infections (STI). In this study, I present a simple 2-period model, which provides a framework for discussing the ways in which gay marriage might reduce (or increase) the prevalence of STI. Then, I present reduced-form empirical evidence on whether gay marriage has actually reduced STI rates. These evaluations are based on country-level panel data from Europe, where nations began introducing national recognition of same-sex partnerships in 1989. The results suggest that these gay-marriage laws led to statistically significant reductions in syphilis rates. However, these effects were smaller and statistically imprecise with respect to gonorrhea and HIV.

Delavande, A., D. P. Goldman, et al. (2007). "Criminal Prosecution and HIV-related Risky Behavior." <u>NBER Working Paper</u>.
We evaluate the consequences of prosecuting HIV+ people who expose others to the risk of infection. We show that the effect of aggressive prosecutions on the spread of HIV is a priori ambiguous. Aggressive prosecutions tax risky behavior and thus deter unsafe sex and limit the number of sexual partners. However, such penalties might also create unique incentives for having sex with more promiscuous partners such as prostitutes and consequently increase the spread of HIV. We test these predictions using unique nationally representative data on the sexual activity and prosecutions of HIV+ persons. We find that more aggressive prosecutions are associated with a reduction in the number of sexual partners and increased likelihood of safe sex.

However, they are also associated with increased likelihood of having sex with prostitutes and not disclosing HIV+ status. Overall, our estimates imply that doubling the prosecution rate could decrease the number of new HIV infections by 12% over a ten-year period.

Dupas, P. (2006). "Relative Risks and the Market for Sex: Teenagers, Sugar Daddies and HIV in Kenya." EHESS-PSE. Paris. Processed.

An information campaign that provided Kenyan teenagers in randomly selected schools with the information that HIV prevalence was much higher among adult men and their partners than among teenage boys led to a 65% decrease in the incidence of pregnancies by adult partners among teenage girls in the treatment group relative to the comparison. This suggests a large reduction in the incidence of unprotected cross-generational sex. The information campaign did not increase pregnancies among teenage couples. These results suggest that the behavioral choices of teenagers are responsive to information on the relative risks of different varieties of a risky activity. Policies that focus only on the elimination of a risky activity and do not address risk reduction strategies may be ignoring a margin on which they can have substantial impact.

Francis, A. (2006). "The Economics of Sexuality: The Effect of HIV/AIDS on Sexual Behavior, Desire, and Identity in the United States."

In this paper, I develop and test a simple economic model of sexuality. The key idea is that—taking the biological determinants of sexual preferences as given—social, cultural, and economic variables play a crucial role in the development and expression of sexual behavior, desire, and identity, which together characterize sexual orientation. I apply the theory to make predictions about the effect of AIDS on sexuality, since AIDS dramatically altered the cost of sexual activities. Using a nationally representative dataset on sexual behavior in the United States, I estimate the impact of AIDS. I employ an instrumental variables strategy, as well as examine the change in sexual behavior over time. I create an instrumental variable based on whether a person has a relative with AIDS. People who have a relative with AIDS, on average, have more knowledge, awareness, and fear of AIDS than those who do not. I argue that this variable is exogenous, as it is uncorrelated with a large number of individual background characteristics. The empirical results validate the economics of sexuality. I find that, at the margin, AIDS causes people to shift from less safe sexual activities to safer ones. I find that, at the margin, AIDS causes men to shift from homosexuality to heterosexuality, whereas AIDS causes women to shift from heterosexuality to homosexuality. Neither genetic nor hormonal theories of sexual orientation can explain these marginal effects. Therefore, biology is not the sole determinant of sexual behavior, desire, and identity. Both biology and economics shape sexual orientation.

Francis, A. (2006). "Sex Ratios And The Red Dragon: Using The Chinese Communist Revolution To Explore The Effect Of The Sex Ratio On Women And Children In Taiwan."

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In 1949, Mao Zedong and the People's Liberation Army defeated the Chinese Nationalist Army.Hundreds of thousands of mainland Chinese, including nearly the entire nationalist government and military, fled to the island of Taiwan. Men outnumbered women by a factor of four to one in this group. In this paper, I use the demographic consequences of the Chinese Communist Revolution and subsequent Taiwanese military policy to identify the effect of the marriage market sex ratio on women and children in Taiwan. I find that as the marriage market sex ratio rises and competition among men for scarce women intensifies, the spousal age gap, the spousal education gap, the bride price relative to the dowry, and measures of household welfare all increase. These results validate the economic theory of the marriage market. I also find that as the sex ratio rises, thus enhancing women's intra-household bargaining power, the fraction of female children in a family increases, the total number of children in a family decreases, and human capital investments in children increase. These findings confirm the notion that when bargaining power within the household shifts from men to women, children's welfare rises. Moreover, the incidence of selective abortion, infanticide, and neglect is inversely related to women's intra-household bargaining power. Empowering women, wives and mothers, reduces the number of "missing women."

Francis, A. and H. M. Mialon (2007). The Optimal Penalty for Sexually Transmitting HIV.
We develop an endogenous signaling model of sexual behavior and testing under risk of HIV infection to determine whether current criminal laws against exposure to HIV are efficient and to identify the socially optimal law. We consider a law to be socially optimal if it induces information revelation and thus minimizes unconsensual HIV transmission. We find that current HIV-specific criminal laws in the U.S., which stipulate a single penalty for knowingly exposing another individual to risk of HIV infection, are not generally socially optimal. The socially optimal law stipulates a single penalty for knowingly or unknowingly transmitting HIV, and no penalty for exposing another individual to risk of infection without transmitting the virus. The optimal expected penalty is estimated to be approximately 1-2 years of prison.

Gertler, P., M. Shah, et al. (2003). "Sex Sells, But Risky Sex Sell for More."
Each day close to 20,000 people become infected with the HIV virus worldwide; a large portion of which are infected through unprotected sex with commercial sex workers. While condoms are an effective defense against the transmission of HIV and other sexually transmitted infections, large numbers of sex workers are not using them with their clients. We argue that sex workers are willing to take the risk because clients are willing to pay more not to have to use a condom. Using a panel data set from Mexico, we estimate that commercial sex workers received a 24 percent premium for unprotected sex from clients who requested not to use a condom. However, this premium jumped to 47 percent if the sex worker was considered very attractive—an indication of her bargaining power. These results suggest that the current supply-side policies aimed at educating sex workers about risk and empowering them are insufficient to significantly increase condom use. Rather, complementary interventions aimed at reducing the demand for not using condoms are needed.

Gertler, P., M. Shah, et al. (2005). "Risky Business: The Market for Unprotected Commercial Sex." Journal of Political Economy **113**(3): 518-550.
> While condoms are an effective defense against the transmission of HIV, large numbers of sex workers are not using them. We argue that some sex workers are willing to take the risk because clients are willing to pay more to avoid using condoms. Using data from Mexico, we estimate that sex workers received a 23 percent premium for unprotected sex. The premium represents a value of one life year of between $14,760 and $51,832 or one to five times annual earnings. The premium jumped to 46 percent if the sex worker was considered very attractive, a measure of bargaining power.

Kahneman, D., A. B. Krueger, et al. (2004). "A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method." Science **306**(5702): 1776-1780.
> The Day Reconstruction Method (DRM) assesses how people spend their time and how they experience the various activities and settings of their lives, combining features of time-budget measurement and experience sampling. Participants systematically reconstruct their activities and experiences of the preceding day with procedures designed to reduce recall biases. The DRM's utility is shown by documenting close correspondences between the DRM reports of 909 employed women and established results from experience sampling. An analysis of the hedonic treadmill shows the DRM's potential for well-being research.

Kamdar, A. (2007). Male Incarceration and Teen Fertility.
> This paper argues that the increase in young male incarceration rates played a significant role in the decline in teen birth rates during the 1990s. Using 1980, 1990, and 2000 Census microdata, I show that incarcerating one additional white (black) male is associated with 0.26 (0.11) fewer births to low-income white (black) teens per year. Relative to the average number of teen births fathered by young white (black) males per year, this is 5 (1.1) times higher. My results imply that the observed increase in male incarceration between 1980 and 2000 led to a 6% percent decline in teen fertility. Teen fertility is negatively related only to the incarceration rates of males empirically likely to father the babies of teen mothers, such as 20 year-old males or males of the same race. The basic pattern of the results across ages, income quintiles, and racial groups suggests a causal interpretation of the relationship. Instrumenting for incarceration with court orders on jail overcrowding magnifies the negative relationship considerably. My results demonstrate that (1) incarceration may have important social consequences that extend beyond reducing crime and (2) models of bargaining power in mating markets should allow for heterogeneity in the types of male sexual partners.

Kane, T. J. and D. Staiger (1996). "Teen Motherhood and Abortion Access." The Quarterly Journal of Economics **111**(2): 467-506.
> We investigate the effect of abortion access on teen birthrates using county-level panel data. Past research suggested that prohibiting abortion led to higher teen birthrates. Perhaps surprisingly, we find that more recent restrictions in abortion access, including

the closing of abortion clinics and restrictions on Medicaid funding, had the opposite effect. Small declines in access were related to small declines among in-wedlock births; out-of-wedlock births were relatively unaffected. Both results are consistent with a simple model in which pregnancy is endogenous and women gain new information about the attractiveness of parenthood only after becoming pregnant.

Kendall, T. (2006). Pornography, Rape, and the Internet, The John E. Walker Department of Economics.

The arrival of the internet caused a large decline in both the pecuniary and non-pecuniary costs of accessing pornography. Using state-level panel data from 1998-2003, I find that the arrival of the internet was associated with a reduction in rape incidence. However, growth in internet usage had no apparent effect on other crimes. Moreover, when I disaggregate the rape data by offender age, I find that the effect of the internet on rape is concentrated among those for whom the internet-induced fall in the non-pecuniary price of pornography was the largest – men ages 15-19, who typically live with their parents. These results, which suggest that pornography and rape are substitutes, are in contrast with most previous literature. However, earlier population-level studies do not control adequately for many omitted variables, including the age distribution of the population, and most laboratory studies simply do not allow for potential substitutability between pornography and rape.

Klick, J. and T. Stratmann (2006). "Abortion Access and Risky Sex Among Teens: Parental Involvement Laws and Sexually Transmitted Diseases." Journal of Law, Economics and Organization.

Laws requiring minors to seek parental consent or to notify a parent prior to obtaining an abortion raise the cost of risky sex for teenagers. Assuming choices to engage in risky sex are made rationally, parental involvement laws should lead to less risky sex among teens, either because of a reduction of sexual activity altogether or because teens will be more fastidious in the use of birth control ex ante. Using gonorrhea rates among older women to control for unobserved heterogeneity across states, our results indicate that the enactment of parental involvement laws significantly reduces risky sexual activity among teenage girls. We estimate reductions in gonorrhea rates of 20 percent for Hispanics and 12 percent for whites. While we find a relatively small reduction in rates for black girls, it is not statistically significant. We speculate that the racial heterogeneity has to do with differences in family structure across races.

Lee, L., G. Loewenstein, et al. (2007). If I'm Not Hot, Are You Hot or Not? Physical Attractiveness Evaluations and Dating Preferences as a Function of Own Attractiveness.

Prior research has established that people's own physical attractiveness affects their selection of romantic partners. The current work provides further support for this effect and also examines a different yet related question: when less attractive people accept less attractive dates, do they persuade themselves that those they choose to date are more physically attractive than others perceive them to be? Our analysis of data from the popular website HOTorNOT.com suggests that this is not the case: less attractive

people do not delude themselves into thinking that their dates are more physically attractive than others perceive them to be.

Mechoulan, S. (2007). "Risky Sexual Behavior, Testing, and HIV Treatments." <u>Forum for Health Economics & Policy</u> **10**(2).

> This paper studies the impact of antiretroviral therapies (ARVs) on HIV testing and risky sexual behavior. I use data collected in San Francisco among a high-risk population from 1994 to 2002. The evidence supports the hypothesis of a causal link between the introduction of ARVs in late 1996 and the sharp increase in risky sexual behavior that ensued. Further, following ARVs, testers take more risks while non-testers take fewer risks. The proportion of testers remains stable, which was ambiguous a priori. To the extent that ARVs may induce changes in the composition of the testing and non-testing groups, such effects do not seem to affect the results.

Mialon, H. M. (2007). <u>The Economics of Ecstasy</u>, SSRN.

> This paper models lovemaking as a signaling game. In the act of love-making, a man and a woman send each other possibly deceptive signals about their true state of ecstasy. Each has a prior belief about the other's state of ecstasy. These prior beliefs are associated with the other's sexual response capacity, which varies in different ways for men and women over the life-cycle. The model predicts that love, formally defined as a mixture of altruism and possessiveness, increases the probability of faking ecstasy, but more so for women than for men. In addition, the model predicts that age has a greater effect on the probability of faking if the partners are in love than if they are not. These predictions are tested with data from the 2000 Orgasm Survey. Besides supporting many of the predictions, the data also reveal a positive relationship between education and the tendency to fake.

Miller, G., J. M. Tybur, et al. (2007). "Ovulatory Cycle Effects on Tip Earnings by Lap Dancers: Economic Evidence for Human Estrus?" <u>Evolution and Human Behavior</u>.

> To see whether estrus was really "lost" during human evolution (as researchers often claim), we examined ovulatory cycle effects on tip earnings by professional lap dancers working in gentlemen's clubs. Eighteen dancers recorded their menstrual periods, work shifts, and tip earnings for 60 days on a study web site. A mixed-model analysis of 296 work shifts (representing about 5300 lap dances) showed an interaction between cycle phase and hormonal contraception use. Normally cycling participants earned about US$335 per 5-h shift during estrus, US$260 per shift during the luteal phase, and US$185 per shift during menstruation. By contrast, participants using contraceptive pills showed no estrous earnings peak. These results constitute the first direct economic evidence for the existence and importance of estrus in contemporary human females, in a real-world work setting. These results have clear implications for human evolution, sexuality, and economics.

Ortona, G. (2007). "Why Most (but not all) Churches Hate Sex." <u>Evolutionary and Institutional Economics Review</u> **3**(2): 261-273.