Men's revealed preferences regarding women's promiscuity

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ABSTRACT

Men have evolved to exhibit a desire for chastity and sexual fidelity and an abhorrence of promiscuity in long-term mates. We investigated whether these preferences manifest themselves even in an unlikely situation (prostitution) by observing men's behavior. We considered 8817 prostitutes under age 45 who worked in Indonesian cities in 2002–2004. We measured female promiscuity by experience in prostitution and applied OLS to determine whether clients paid more to less experienced prostitutes. After controlling for a set of characteristics of prostitutes and clients, we found that compared to prostitutes with an experience ≤1 year, prostitutes with an experience of 2–4 years earned 4.2% less, and those with an experience >4 years earned 7.7% less. The difference is great because a value of 4.2% is just under the daily expenditure per capita on food. The relationship was more pronounced for prostitutes of high fertile age and for prostitutes with greater negotiability. It seems that the preferences are strongly built in men's psychology.

1. Introduction

Men and women face different probabilities of parenthood. Since women conceive internally, their maternity is guaranteed. Men, however, can never be sure of their paternity. Ovulation is concealed in women, so men must seclude their mates from other men for a period of months to be certain of their paternity. Even if their mates do not want to bear other men's offspring, rape always poses a threat to certainty in paternity. Male sexual jealousy helps men guard their mates and dissuade other men from inseminating their mates, thereby presenting one solution to the problem of paternity certainty (Daly, Wilson, & Weghorst, 1982).

Another solution is mate preferences, such as a desire for chastity and sexual fidelity and an abhorrence of promiscuity (Buss & Schmitt, 1993). These male preferences have typically been discussed in the context of long-term relationships, and they have been supported by subjective data (for a review, see Buss, 2003). If evolution is involved in developing these preferences in men, however, men would exhibit the preferences even in an unlikely situation; for instance, a one-time encounter between two parties who know that a future re-encounter and reproduction are unlikely. This assessment is of great interest because it indicates how strongly the evolved preferences are built in men. In addition, what people say is not necessarily the same as what they do. When the stakes are low, people can say anything. For example, a man may say that he does not care about female virginity for a long-term mate, even when he does. This can happen if he wants to conform

to social norms. Therefore, it is more convincing to analyze behavioral, rather than subjective, data to understand human preferences.

To the best of our knowledge, no study has used behavioral data to investigate whether the preferences manifest themselves even in a very unlikely situation: prostitution. Prostitution involves a short-term and mostly one-time relationship, while (male) clients are aware that reproduction is unlikely. Furthermore, because prostitutes' goal is to maximize earnings, they have every reason to lie to clients if doing so increases their earnings. For example, if a client pays more to an inexperienced prostitute than to an experienced prostitute, although they are the same age, an experienced prostitute would lie that she is inexperienced. On the other hand, knowing that prostitutes prevaricate regarding experience in prostitution, clients have to resort to their instinct and act upon it. If we observe the preferences even in this extremely tough situation, we can claim that the preferences are strongly built in men's psychology.

There are more reasons why prostitution provides an interesting case. First, men buy sex, so one can directly observe what they do rather than what they say. If the stakes are low, what men do may not reveal their true preferences. However, the stakes in Indonesian prostitution are never low. For example, according to Indonesian female prostitutes aged 18–44 who reported positive prices for the last act of commercial sex, the median price for sex was Rp. 100,000 in each of 2002, 2003, and 2004. This figure is about two thirds of the average *monthly* expenditure per capita on food in urban areas in these years; alternatively, it is as great as that in rural areas. Second, prostitution primarily concerns money, so it is relatively easy to determine the value placed by men on some attribute of a sexual partner. Using monetary values is more precise than asking men how important a certain attribute is and receiving vague answers like "very important," "important," or "unimportant."

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If prostitution is illegal, we would observe only selective choices, which may cause bias in analysis. For example, if cautious men do not buy sex, we would observe only careless men's behaviors, and it is difficult to generalize these results to all men. In addition, illegality forces men to limit themselves to certain behaviors, so we would observe a limited range of male behaviors. One may wonder whether money paid for sex correctly reflects the value that the client places on a certain attribute of the prostitute. In this regard, examining prostitution in Indonesia is appealing because its institutional settings ameliorate these concerns. Prostitution in Indonesia is quasi-legal, and the prostitution market is competitive (Hull, Sulistyaningsih, & Jones, 1998). Prostitution is quasi-illegal because local governments themselves (in collaboration with military authorities) operate official red-light districts called lokalisasi, which are clusters of brothels along one or a few streets. Because prostitution is quasi-legal, we can observe a large pool of men and their free choices. Violence in prostitution in Indonesia is almost non-existent. Of 11,504 prostitutes under 45 years of age in Pisani's (2008) study, only 399 prostitutes (3.5%) said that they had been forced to have sex even though they did not want to and were not paid by clients in the previous *year*. Indonesian prostitutes are also mobile; 42.5% of our sample worked outside their provinces of origin. Considering the voluntary nature, high mobility, and low entry barriers to prostitution, prostitution in Indonesia operates in a competitive market. The competitive nature of the market means that the client does not need to pay more than what he values. If a prostitute demands more than he values, he can buy the same service from another prostitute at the "right" price. Therefore, the price of sex in the data is close to the value that the client places on the service. More interestingly, the competitive nature forces prostitutes to do their best to look inexperienced because, as shown below, that is what clients want. Therefore, it is difficult for clients to correctly identify prostitutes' experience. Even without these explanations, since commercial sex is simply another service on sale and both parties know that reproduction is unlikely, clients have little incentive to pay more than what is necessary. Otherwise, they would enjoy fewer acts of sex.

We analyzed clients' responses to prostitutes' length of time in prostitution to determine whether men behave in a consistent manner dictated by their preferences (i.e., desire for chastity and sexual fidelity and abhorrence of promiscuity). The idea is that less experienced prostitutes are analogous to potential mates with more chastity, more sexual fidelity, and less promiscuity. Prostitutes sell sex to earn money, and to earn more money, they have to serve more men; more experience in prostitution mechanically involves more men. If this analogy is reasonable and men follow the preferences, we would observe that the price of sex decreases with the prostitute's experience in prostitution. This is indeed what we observed. This main finding was robust to specification changes and was not driven by some idiosyncrasies in our dataset. Our dataset is unique even in research on prostitution in that it covered a minimum of 10 main cities and concerned three years. The range of prostitutes was wide enough to include cheap prostitutes on the street and expensive prostitutes in bars, and the range of clients was also wide enough to include local residents and foreigners. The large sample size (N = 8817) enhanced estimation precision. Sohn (forthcoming) analyzed this dataset to determine whether clients paid more to younger prostitutes, and we extended his analysis. Considering the male preferences discussed above, we hypothesized that clients paid more to less experienced prostitutes of the same age.

2. Data

Our main dataset is the Behavioral and Drug-Taking Risk Behavior among Female Sex Workers and Men in Mobile Occupations in Indonesia, 2002–2004. The dataset and explanations on it are publically available at http://thedata.harvard.edu/dvn/dv/pisani. The title of the dataset indicates that it concerns behavior. And a client paid following his preferences, which is behavioral; he did not say about his preferences, which is subjective. In addition, the prostitute reported her client's behavior, which presumably enhances the objectivity of the behavioral information.

In 2002, the Indonesian Ministry of Health took over a program monitoring the behaviors of people in groups at a high risk of HIV infection. Surveys were performed by the Indonesian Bureau of Statistics with the help of NGOs, with technical support from Family Health International, and with funding from USAID. Two rounds of surveillance were performed in 2002–2003 for 10 cities and in 2004 for 15 cities. Sample locations were first identified, and respondents at the sampling locations were selected as randomly as possible. Importantly, interviews were conducted after a number of local approaches, including rapport building, were undertaken; this was intended to ameliorate the concern that the prostitutes being surveyed might not be honest with strangers. Thus, it may be of less concern that they intentionally lied about their experience in prostitution. This is more so because, as the title of the survey suggests, the survey mainly concerned epidemiology, not their demographics. However, the nature of the survey limited our range of covariates.

The dependent variable of interest was the amount of money received by the prostitute during the last act of commercial sex. Because the OLS error is assumed to be normal and the natural log of the price of sex was more normally distributed than the untransformed one, we placed the natural log of the price of sex on the left hand side of the specification. By referring to the last act, the survey attempted to reduce recall bias and measurement error in the price since recalling the last transaction is easier and more accurate than recalling all transactions for a certain period, say, a month or a year. This is particularly the case because, unlike workers in the legal sector, prostitutes do not receive formal statements of wages. It is unclear whether the price of sex included the pimp's share. However, this is not a great concern because even if the share was included in the reported price, thereby exaggerating the price, prostitutes managed by pimps typically receive free accommodations, free meals, regular medical check-ups, loans at low interest, and assistance related to their line of work (e.g., laundry and security). Hence, exaggeration in the price, if any, is probably small.

In the first round, prostitutes in Jakarta, Riau, and Sumut were asked about payment from non-regular clients, but no distinction between regular and non-regular clients was made for the other cities in the first round and all cities in the second round. We controlled for city and year fixed effects to alleviate concerns stemming from this inconsistency. Although we were constrained by the nature of the survey, we selected as many covariates as possible to account for factors that could confound the relationship between experience in prostitution and the price of sex. Outliers reduce estimation precision and bias estimation. In the original data, the maximum age was 99, followed by 80, 75, and so on. If true, these old ages are outliers in prostitution; probably, they are recording errors. In addition, regardless of age, men prefer women of high fertile age, and these women dominate prostitution; our data agreed. We thus excluded women aged 45 +, the cutoff being the 95th percentile of age in the original data. When we excluded observations with missing values, we were left with 8817 prostitutes.

This dataset has three important advantages over other datasets; none of these is unique in itself, but the combination is. First, the sample size was larger than other samples of prostitutes. For example, Rao, Gupta, Lokshin, and Jana (2003) examined 608 prostitutes; Gertler, Shah, and Bertozzi (2005) 1029, Arunachalam and Shah (2008) 2925 in Ecuador and 1083 in Mexico, and Cunningham and Kendall (2011) 395–521 (using an online survey with a response rate lower than 5%). Second, our sample included various types of prostitutes. They broadly comprised direct prostitutes (e.g., prostitutes who work in brothels and on the street) and indirect prostitutes (e.g., prostitutes who work in hotels, massage parlors, and bars). These two groups were proportionately balanced and were further divided. By contrast, Rao et al. (2003) considered only prostitutes working in brothels, and Cunningham and Kendall (2011) considered only prostitutes who