Exchange and Risky Behavior in Sexual Relationships in Urban Kenya

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Introduction

The exchange of money for sex has occurred across historical time and place and has been studied by a range of social scientists. The emergence of the HIV/AIDS epidemic sparked renewed interest in the dynamics of prostitution, as these relationships are believed to be a launching site for more generalized epidemics. Condom use within commercial sexual relationships has been widely promoted, often with very positive results, ranging from slight increases in usage to near-total compliance (e.g., Ma et al. 2002, Alary et al. 2002, Ford and Koetsawang 1999, Wong et al. 1998). Nevertheless, in most settings, greater amounts of monetary exchange still appear to induce female prostitutes to forego condom use (Rao et al. 2003, Varga 2001, Wojcicki and Malala 2001, Bhave et al. 1995). These findings suggest that that a market for condom use continues to exist, and that sex workers trade-off higher income for agreeing to engage in unsafe sexual behavior.

The continuing spread of HIV/AIDS, particularly in sub-Saharan Africa, has prompted increasing attention toward the "informal" exchange of money or gifts for sex that takes place outside of formalized prostitution. These relationships are widespread in many African contexts and are believed to contribute to rising levels of HIV infection, particularly among adolescent girls. Numerous researchers have investigated these non-marital relationships, using a variety of expressions to describe them: "sugar daddy relationships" (Meekers and Calves 1997a, Silberschmidt and Rasch 2001, Gage 1998), "semi-prostitution" (Meekers and Calves 1997b), "informal sex work" (Wojcicki 2002), "noninstitutional" sexual exchange (Orubuloye et al. 1992), and "transactional sex" (Leclerc-Madlala 2003, Nnko and Pool 1997), among others.[1] In this paper, we use the term "informal exchange relationships" to designate non-marital sexual partnerships where material items are given by a male to his female partner.[2] We use the umbrella term "transfers" to describe the items that are given, whether monetary or non-monetary.[3] The major aim of this paper is to determine if a market for unsafe sexual activity

[1] Exchange also takes place within marriage, but this topic is beyond the scope of this paper.
[2] We use the terms "relationship" and "partnership" interchangeably in this paper. Both refer to sexual relations between a man and a woman that may vary from a one-time encounter to a more serious association.
[3] Our study focused on material or tangible items within informal exchange partnerships whose value could be quantified; we did not include other assistance, such as social support or job contacts (see Orubuloye et al. 1992).

exists among informal relationships, as has been shown among commercial relationships, with money and gifts traded for sex without a condom.

There are two opposing views in the literature as to whether informal exchange relationships operate like a market. One view posits that there is a strong link between transfers and condom use in informal relationships. Some observers believe that non-marital sexual relationships throughout sub-Saharan Africa have become commercialized to the point that the giving of money or gifts in exchange for sex is an accepted and expected practice (Nyanzi et al. 2000, Gorgen et al. 1998, Bohmer and Kirumira 1997, McLean 1995). Female partners understand that the receipt of a transfer means they must reciprocate by agreeing to the unsafe sexual practices demanded by their partners (Leclerc-Madlala 2003, Kaufman and Stavrou 2002, Gorgen et al. 1998). Adolescent girls are seen to be particularly disadvantaged within informal partnerships, where men can offer remarkably small amounts of money or gifts in exchange for sex without a condom (Fuglesang 1997). Nevertheless, the presence of market exchange implies that women and adolescent girls must still be compensated to some extent for engaging in risky sexual behavior.

The opposite view argues that there is *no* effect of exchange on sexual behavior because the nature of informal relationships is substantially different than those involving commercial sex workers, and the transfers are often non-monetary (Kaufman and Stavrou 2002). Exchange in non-commercial relationships represents gifting, where the transfer does not serve as a financial incentive to disregard condom use. An additional argument points to the prevailing norms of male dominance in sexual and reproductive decision-making throughout much of sub-Saharan Africa, which restrict women from influencing sexual activities in informal relationships in any case (Preston-Whyte 1994). Still others contend that females may actively seek to avoid condom use themselves, and thus transfers are not required to induce risky sexual behavior (Silberschmidt and Rasch 2001). Overall, this view posits that the decision to use a condom is not dependent on the occurrence or value of transfers within the partnership.

The evidence supporting these contrasting views about the role of transfers in informal sexual relationships stems largely from ethnographic work in sub-Saharan Africa. There has been no

statistical investigation, however, of the link between transfers and unsafe sexual behavior and if the effect is indeed more pronounced within partnerships involving adolescent girls. We use a unique data set on male non-marital sexual partnerships and transfers in urban Kenya to examine this relationship more rigorously. At first glance, this analysis appears to be a simple exercise that compares the probability of condom use across partnerships involving various levels of transfers. However, estimation of the transfer effect must take into account selection into sexual partnerships. It could be that men who give large transfers to their sexual partners are also the types who have a particular aversion to condom use, which is not measured by the data. In this case, large transfers merely proxy for men who are less likely to use condoms in any case, and a spurious correlation is obtained. Our strategy to avoid this selection bias is to use individual fixed effects analysis, which effectively looks at various levels of transfers and condom use across partnerships for the *same* man. There has been a wealth of studies on male sexual behavior in sub-Saharan Africa; very few of these take the issue of selection into account.

Our paper is divided into five sections. The second section lays out our conceptual framework of exchange in non-marital sexual relationships and further details the arguments both for and against a causal effect of transfers on condom use. The third section describes our empirical specification, data, and variables. The fourth section presents our estimates of the effect of transfers on condom use in three parts: (1) the overall effect of the level of transfers, (2) the effect of monetary and non-monetary transfers separately, and (3) the effect of transfers across female partners of different ages (adolescents versus adults). The last section concludes.

Conceptual Framework on Informal Exchange Relationships in sub-Saharan Africa

Many observers support the view that informal exchange partnerships represent "commodity exchange" within a market context, where two self-interested individuals bargain over goods and services (see Luke 2003b; Carrier 1991). The common assumption in much of the literature on

HIV/AIDS is that the male partner prefers unsafe sexual activities, such as unprotected sex (the nonuse of condoms and contraception), and the female prefers safe behavior. In order to induce women to accept riskier sexual activities, men must compensate them with a transfer. Transfers come in various forms in informal exchange relationships, including money, gifts, such as clothing and perfume, food, transport, and so on (Luke 2003a). According to this view, there is an explicit link between the transfer and sexual activity, and we would expect to find a negative correlation between the level of transfers and the probability of condom use across partnerships.

The "commodity exchange" view, in addition, predicts that the relationship between the level of transfers and condom use will vary across partnerships in the population. If a female has fewer outside options and hence less bargaining power within a partnership, then only a small transfer is needed to induce her to engage in risky behavior. For example, many observers believe that adolescent girls cannot demand as much on the sexual market as older women. Adolescent girls are often in great need of financial support to help them and their families survive, continue their education, or afford the luxuries they desire (Temin et al. 1999, Meekers and Calves 1997a, Nzyuko et al. 1997, Orubuloye et al. 1992). In addition, adolescent girls have even fewer alternative sources of income to meet these needs than adult females have (Nyanzi et al. 2000, Bohmer and Kirumira 1997, Webb 1997). Adolescent girls' lack of experience in sexual negotiations might also lead to less favorable outcomes for them (Nyanzi et al. 2000).[5] These arguments suggest that the effect of transfers on condom use will be greater among partnerships involving adolescent girls than among those involving adult females.

The contrasting view posits that there is no effect of transfers on condom use, which could arise for several reasons. First, the prevailing norms of male dominance in sexual and reproductive decision-making throughout much of sub-Saharan Africa constrain women from influencing sexual activities, especially condom use (MacPhail and Campbell 2001, McLean 1995, Preston-

[5] In contrast, others argue that adolescent girls should command more than adult females on the sexual market because they are men's preferred partners. Reasons for this preference may stem from the perception that adolescent girls are free of HIV/AIDS and other sexually transmitted infections, or because younger partners boost male prestige among their peers (Longfield et al. 2002, Silberschmidt and Rasch 2001, Haram 1995, Ulin 1992).

Whyte 1994). Men choose whether or not to use condoms unilaterally, based on *their* preferences and the level of transfers within the partnership has no effect on this choice.[6]

Second, the assumption that the male and female partners have conflicting preferences for condom use may not be satisfied in practice. For example, there are numerous examples in the literature where females have an incentive to disregard condom use. They may be interested in securing a longer-term relationship, whether marital or otherwise, and therefore will be unconcerned with or may actively seek pregnancy (Silberschmidt and Rasch 2001, Calves et al. 1996, Obbo 1995, Preston-Whyte 1994). In this case, the female does not require compensation for engaging in risky behavior and so the negative correlation between condom use and transfers will not be observed.

Finally, informal relationships may not involve commodity exchange at all. Instead, informal partnerships may represent "gift exchange," where two individuals are in a social relationship, and gifts are given by each partner to signify that the relationship is reaffirmed and extended (Kaufman and Stavrou 2002, Carrier 1991). Such gifts are not given on a one-to-one basis, and gift exchange does not involve bargaining between individuals over reciprocal expectations. For example, gifting is often part of dating relationships, where a meal or tickets to the cinema may serve as symbols of interest and the giver demands nothing sexual in return. In more serious relationships, gifts may signify love, affection, or continuing commitment, and have no connection to condom use.

Thus far in the discussion we have not addressed differences in the types of transfers that occur in informal exchange relationships. Commercial sexual relationships usually involve monetary payment for sexual activity. Informal exchange relationships involve both monetary and non-monetary transfers. Under the commodity exchange view, both types of transfers are traded off against condom use. Under the gift exchange view, neither monetary nor non-monetary transfers should be correlated with condom use.

[6] An alternative interpretation of this norm is that men can coerce women into engaging in risky behavior without offering any transfers in return.

Data and Methods

Estimates of the Effect of Transfers on Condom Use

The basic objective of the empirical analysis is to study the relationship between transfers and condom use. As noted, information is available on multiple partnerships for each man in the sample, so we will estimate linear probability (LP) regressions of the form:

$$\Pr(C_{ij} = 1) = \alpha TRANS_{ij} + X_{ij}\beta + \omega_i \qquad (1)$$

Where C_{ij} = 1if man i and partner j used a condom at last sexual intercourse and $TRANS_{ij}$ measures transfers in the partnership between man i and partner j. Under the commodity exchange view, $\alpha<0$, whereas under the gift exchange view, $\alpha=0$. X_{ij} is a vector of observed characteristics that describes the female partner and the nature of the partnership. In practice, X_{ij} includes the female partner's age (adolescent versus adult), her marital status, and the length of the partnership. ω_i collects the male partner's characteristics that determine condom use. Some of these male characteristics, such as age, education, and income, are observed by the researcher. Other characteristics, such as aversion to using condoms, cannot be observed. For the time being we will take it that ω_i cannot be observed.

The problem for consistent estimation of the transfer effect α is that certain types of men, who are independently less likely to use condoms, may also give larger amounts of transfers to their partners. In that case, $TRANS_{ij}$ and ω_i will be negatively correlated and the α estimate will be biased downward; it could appear as if transfers reduce condom use even when transfer effects are absent.

The standard approach to correct this statistical problem is to include male characteristics, such as age, education, and income, in the regression, thus controlling for ω_i. Nevertheless, there are many unobserved male characteristics that could have an important effect on condom use and are correlated with the level of transfers. We implement an alternative more robust approach that utilizes the data we have collected to estimate the condom use regression with male fixed effects. Using data on multiple observations for each man, all individual characteristics ω_i can be

differenced out. In this manner, the fixed effects procedure accounts for *all* male characteristics (observed and unobserved) that do not vary across partnerships. Effectively we are taking the average of each variable in equation (1) above, computed for each man, and subtracting it from the corresponding variable from in equation. Since ω_i is the same across all partnerships for man i, this term gets differenced out. Intuitively, we are seeing whether a partner who receives more than the average transfer for given man i is less likely to use condoms on average for *that* man.

While the fixed effects procedure controls for male characteristics, condom use also depends on female characteristics and the nature of the relationship. In this setting we expect that unobserved male characteristics are the main source of potential bias, but we will include observed characteristics of the female and the partnership in the regressions, as noted above. The duration of the partnership does affect condom use without fixed effects, but none of the female or partnership characteristics have a significant effect on condom use once the fixed effects are included.

Our empirical analysis is divided into three parts. In addition to the base LP model outlined above to study the effect of the level of transfers on condom use, we also explore differences in the effect of monetary and non-monetary transfers on condom use by including a variable for the amount of money given in the last month within each partnership.

$$\Pr(C_{ij} = 1) = \alpha TRANS_{ij} + \gamma MONEY_{ij} + X_{ij}\beta + \omega_i \qquad (2)$$

where $MONEY_{ij}$ is the monetary transfer from man i to partner j. Under the commodity exchange view, both monetary and non-monetary transfers influence condom use, and so $\alpha<0$, $\gamma=0$. Under the gift exchange view, in contrast, $\alpha=0$, $\gamma=0$.

Finally, we examine the effect of the female partner's age (adolescents versus adults) on the relationship between transfers and condom use. For this analysis we construct an adolescent dummy variable, with the cut-off separating adolescents and adults ranging from 17 to 22 years. The augmented condom use regression is now specified as,

$$\Pr(C_{ij} = 1) = \alpha TRANS_{ij} + \delta ADOL_j * TRANS_{ij} + X_{ij}\beta + \omega_i \qquad (3)$$

Note that X_{ij} includes the adolescent dummy $ADOL_j$. If condom use is more responsive to transfers among (vulnerable) adolescent girls, then $\delta<0$.

The LP model, with and without fixed effects, is used for most of the regressions that we report in this paper. The advantage of the LP model is that the coefficients are easy to interpret in terms of their effect on the probability of condom use. The LP model is also the first step in the nonparametric regression of condom use on transfers that we present in Figure 1. The potential drawback of the LP model is that the predicted probability of condom use is not constrained to lie in the [0,1] range. However, across all the regressions we present, less than 2.5 percent of the observations generate predicted values outside this range. In any case, we will verify that all the major results hold up with the alternative logit models later in Table 6.

Data

This paper uses data from Kisumu, Kenya, the capital of Nyanza Province and traditional home to the Luo ethnic group. Kisumu is a destination for many Luo migrants seeking educational and work opportunities as well as a central town on the highway from coastal Kenya into Uganda. In addition, Kisumu has one of the highest rates of HIV prevalence in Kenya, reaching 26 percent in 1997 (Glynn et al. 2001). We chose Kisumu as an interesting site for a wider study of the effect of marriage and exchange relations on individual behavior, including sexual activity and labor market outcomes, among a migrant population in urban Africa. The data consist of a random sample of 2661 Luo males ages 21-45 that were surveyed between July and September 2001. Kenyan Census Bureau enumeration areas were used as primary sampling units within Kisumu town. Of these, 121 were chosen for the survey through a systematic random selection procedure, and all households in each enumeration area were selected. In each household, all males of eligible age were interviewed by trained field-workers. Procedures of confidentiality and informed consent were followed.

A specific aim of the survey instrument was to gather information on male non-marital sexual behavior. In addition to background demographic and socioeconomic questions, respondents were asked the number of non-marital sexual partners they had in the last year, and information on the five most recent partners was also gathered.[7] Partner information included female partner ages, length of relationship, time of last sexual intercourse, condom use at last sexual intercourse, and material transfers respondents gave to each non-marital partner in the last month.[8]

For this analysis, the data set we use consists of recent non-marital sexual partnerships formed by male respondents that did not involve commercial sex workers.[9] Survey questions regarding non-marital sexual partnerships used a reference period of the last year, while the reference period for questions regarding transfers was the last month, pertaining to current or relatively recent partnerships. In order to ensure that our analysis captures only those partnerships that occurred in the last month and were at risk of involving transfers, we limit our sample to partnerships whose last act of sexual intercourse took place in the last month. Of the initial sample, 39 percent of men were sexually active in the last year and had at least one recent non-marital sexual partner who was not a commercial sex worker. Table 1 reports male characteristics for our final sample of 1033 men, and female and partnership characteristics for their 1531 recent non-marital partnerships, and, finally, information on the 1109 partnerships that involved some form of transfer in the last month.

The regressions that we will estimate study the effect of transfers on condom use. Since unobserved male characteristics could determine the level of transfers as well as the probability of condom use, we either use male fixed effects or observed male characteristics (age, education, income, and current marital status) as controls. In addition, we include observed female

[7] Of the men reporting non-marital sexual partners in the last year, 95% had 5 partners or fewer.
[8] Several steps were taken by the researchers to ensure the validity and reliability of reporting, particularly with questions regarding sexual behavior. The questionnaire was developed in a culturally-specific manner, and interviewers were trained to inquire about sensitive questions. Data on sexual partners was logged daily and examined to determine if any interviewer consistently gathered responses that greatly over- or under-reported the number of non-marital sexual partners. In addition, four percent of respondents were re-interviewed to check reliability of responses, and 96 percent of those re-interviewed reported the same number of sexual partners as they had in the survey.
[9] By dropping the commercial sexual partnerships, we are able to test the assumption that there is an effect of transfers on condom use for those relationships that are truly "informal" and not overtly commercial in nature. Commercial sex partnerships represent 5.3 percent of all men's recent non-marital partnerships.

characteristics (age and current marital status) and characteristics specific to each partnership (duration of the relationship). Construction and descriptive statistics for each of these variables are discussed below.

Dependent Variable

The main aim of our analysis is to study the effect of transfers on sexual behavior in non-commercial, non-marital sexual relationships. There are numerous measures of unsafe sexual behavior that are related to the risk of STDs and HIV that have been identified in previous work. These include the number of partners with whom an individual has had sexual intercourse; ever engaging in sexual relations with partners from specific risk groups, such as commercial sex workers or casual partners; and the frequency with which an individual uses condoms across all of his or her sexual experiences. A drawback to these types of indicators is that they measure an individual's cumulative risk behavior and do not take into account how risk behavior can vary across an individual's multiple partnerships. Our survey collected information from male respondents about their recent non-marital sexual partners and condom use at last sexual intercourse with each of these partners. Thus, the dependent variable in our analysis—condom use at last sexual intercourse—is a measure of risk behavior that is particular to each partnership. As shown in Table 1, 48.3 percent of recent non-marital partnerships included condom use at last sexual intercourse. Condom use is measured as a dichotomous variable coded 1 for yes and 0 for no.

Independent Variables

Transfers. Similar to previous work on risky sexual behavior, past survey questions on exchange in sexual relationships face several limitations (see Luke 2003a, 2003b). The standard survey question asks if a respondent has ever exchanged money or gifts for sex. Such questions regarding one-to-one exchanges involving sexual activities are viewed as prostitution in many settings and may lead to underreporting of these behaviors (Kaufman and Stavrou 2002).

Furthermore, this phrasing only captures relationships that explicitly demonstrate commodity exchange and may fail to elicit information for those relationships where the link between transfers and unsafe behavior is not so clear. Another limitation is that past surveys do not record items beyond money and gifts that are exchanged (for an exception see Orubuloye et al. 1992), nor specific transfers across an individual's multiple partnerships.

Our survey questions were constructed to capture an expanded characterization of material transfers across non-marital sexual partnerships in the Kisumu context. The survey question read: "It is common for men to give women gifts or other assistance when they are in a relationship. What have you given your partner(s) in the last month?"[10] The wording of this question was pre-tested extensively to ensure that the giving of transfers was not associated with stigmatized behavior and that the reported transfers occurred regardless of accompanying sexual activity. Response categories comprised the major types of transfers that were uncovered during pre-testing, specifically money and non-monetary items including gifts, meals and drinks, rent, and an open category where respondents could specify other types of assistance, such as tickets to the cinema or transportation. For each category of transfer, the amount of money or value of the items given was recorded in Kenyan shillings (US$1 approximately equal to Ksh70 at the time of the study). In order to ensure accurate recall about the specific types of assistance given and the value of that assistance, the question was limited to transfers that were given in the last month.

To construct a measure of the amount of transfers within each partnership, we totaled the value of each type of assistance reported by the respondent specific to each partnership.[11] As each partner could receive more than one type of transfer, we cannot simply designate a partnership as a monetary exchange relationship or a non-monetary one. Therefore, in order to compare the effect of monetary versus non-monetary transfers on condom use, we include a separate variable for the amount of money that was given in the partnership.

[10] The survey gathered information on the material assistance that adult men in Kisumu gave to their female partners. We did not inquire about material assistance that respondents received from their female partners, as we believed that men generally give more transfers to females than they receive. Several studies of male and female youth in various African settings reveal that young women receive more money and gifts than young men and that young women are more likely to engage in sexual behavior due to economic motivations than are young men (Matasha et al. 1998, Meekers and Calves 1997b, Konde-Lule et al. 1997).

[11] We drop the top one percent of total transfers as extreme outliers.

With respect to transfers, the findings in Table 1 point to the normative nature of informal exchange relationships in Kisumu. Approximately three-quarters of all recent non-marital partnerships included some form of transfer in the last month. The mean amount given per partnership is Ksh446 (approximately $6.40) in the last month. We will see below that mean monthly income for the men in our sample is roughly Ksh4800 (approximately $69). Thus, the transfer for one partner is approximately nine percent of men's mean monthly income, which suggests that informal exchange relationships are a considerable financial undertaking. Table 1 also reports transfers by type, and we see that most of the value of transfers is monetary: 51.2 percent is given in monetary assistance, 18.3 percent in gifts, 26.5 percent as meals or drinks, and the remainder as rent and other items, mostly transportation, such as bus fare. Numerous ethnographic studies report that young females often receive other items from their male partners, such as school fees or tuition and living expenses (Kaufman and Stavrou 2002, Calves et al. 1996). It appears that the men in Kisumu report items such as these as general monetary assistance, perhaps because cash transfers are subsequently allocated by the female partner for a specific purpose. As noted above, most surveys inquire only about money or gifts exchanged for sex, and it is interesting to note that approximately one-third of the value of items reported in Kisumu were uncovered by asking specifically about additional types of transfers. Thus, these items—meals and drinks, rent, and other miscellaneous expenditures—may otherwise have gone unreported.

Female and Partnership Characteristics. Our survey collected limited information on the characteristics of men's female sexual partners. We have reports of female age and marital status, however, which we believe are characteristics likely to influence condom use and transfers. Throughout sub-Saharan Africa, men's marital and non-marital partners are on average younger than they are (Luke 2003a). This is the case for the adult men in Kisumu, where we see in Table 1 that the mean age of men's non-marital sexual partners is relatively young, 20.1 years. As noted in our conceptual framework, adolescent girls are believed to be particularly disadvantaged in exchange relationships because they have less bargaining power than older women and fewer outside options. Moreover, the ethnographic literature describes how many young, single women are in weaker positions vis-à-vis their male partners

(Silberschmidt and Rasch 2001, Komba-Malekela and Liljestrom 1994). This implies that both condom use and the level of transfers will depend on the female partner's age and marital status. Both these variables will thus be included as controls in the regressions that we report.

Age ranges for adolescents differ by study, and we have chosen to designate females less than 20 years of age as adolescents, which is common in the literature. We label women ages 20 and over as "adult females." In order to test the robustness of this age cut-off in further analysis, we also construct categories for adolescent girls less than 17, 18, 19, 21, and 22 years. As seen in Table 1, almost half of the female partners of the adult men in our sample are adolescents: 48.7 percent are females less than 20 years old. In addition, the majority of men's non-marital partners are reported to be currently single (84.6 percent), 3.9 percent are currently married, and 7.9 percent are divorced, separated, or widowed women. For the remainder of female partners (3.6 percent), current marital status is unknown.

The survey also recorded the length or duration of each partnership in months, which we include as a specific partnership characteristic. The average length of men's non-marital partnerships in Kisumu is approximately 14 months. Several studies find that partnership duration is associated with condom use, and as partners know each other longer, trust between them increases and condom use decreases (Kaufman and Stavrou 2002, Outwater 2000). We may also expect that men could reduce transfers as a relationship continues. Thus, partnerships of longer duration may be associated with lower transfers and lower probabilities of condom use. In sum, omitting any of these female and partnership controls from the regression analysis could potentially distort the true underlying relationship between transfers and condom use.

Observed Male Characteristics. While our preferred specification of the condom use regression includes male fixed effects, we will also experiment with regression specifications that include observed male characteristics that could determine both condom use and transfers, such as age, education, income, and current marital status. With respect to age, we see in Table 1 that the mean age of men in our sample is 26 years, which reflects the young age structure of the urban migrant population in Kisumu. We may expect younger ages to be associated with higher probabilities of condom use, as past studies have found that HIV/AIDS prevention campaigns

have reached the youngest members of the population (Ahmed 2001). In addition, younger men are less likely to be employed and earning high incomes, and therefore are unable to provide larger transfers to their sexual partners than older men are (Webb 1997). A spurious negative transfers effect could thus be obtained if the man's age was not included in the condom use regression.

Higher socioeconomic status, measured by educational attainment and income, have also been found to be associated with increased condom use in Africa, where it is believed that condom promotion and other HIV/AIDS prevention programs have successfully modified behavior among the higher status population (Hargreaves et al. 2002, Fylkesnes 2001, Lagarde 2001). Higher socioeconomic status also provides the potential for giving larger transfers, which would bias upward the transfers effect if education and income were not included in the regression analysis. The mean years of education in our urban sample is 10, and the mean income in the last month is Ksh4824 (approximately US$69). We use a variable for the mean income in the last month as the potential pool from which transfers to female partners in the last month are taken.

With respect to current marital status, 59.1 percent of the men in our sample are single, 36.4 percent are married, and the remaining 4.5 percent are divorced, separated, or widowed. Previous studies in Africa have found that married men are less likely to engage in risky sexual behavior than single men are (Carael 1994). We may also expect that married men are less able to give large transfers because of their family obligations. Thus, if marital status is not included in the condom use regression, a spurious transfers effect could once more be obtained.

Results

Estimates for Condom Use by Level of Transfers

The first part of our analysis examines the effect of the level of transfers on condom use at last sexual intercourse, and the results are presented in Table 2. We run three sets of regression models. In each set, the first model is a LP regression with observed male characteristics as

controls and the second model is a LP regression that includes male fixed effects. Observed male characteristics include age, education, income in the last month, and current marital status. All regression specifications, with and without fixed effects, also include the age of the female partner (adolescent versus adult) and the length of the partnership in months.

The first set of models in Table 2 is our base specification, which includes the variables listed above as well as the level of transfers within partnerships in the last month. The second set of models includes the same base variables and adds a quadratic term, the total amount of transfers squared, in order to test for nonlinearities in the transfers effect. The third set of models includes the base variables as well as a variable for the female partner's current marital status in an attempt to control further for female characteristics. Here, we drop those partnerships where the current marital status is not reported, and thus our sample is restricted to 1476 partnerships. In all our models, we divide income and amount of transfer by 1000 for ease of exposition. Standard errors that allow for correlated residuals across partnerships for the same individual are reported in parentheses beneath the coefficients.

Looking across the results for the LP regressions in Table 2, we see that the male partner's age is not associated with condom use. With respect to socioeconomic status, the male partner's education level is positively and significantly associated with condom use. For each additional year of educational attainment, the probability of condom use at last sexual intercourse decreases by approximately 3.3 percent. The male partner's income, however, is not significantly associated with condom use. With respect to current marital status, currently single and married men are both significantly more likely to use a condom than the category of divorced, separated, and widowed men. The probability of condom use increases by approximately 18 percent for single men, and the probability of condom use increases by approximately 20 percent for married men.

Having an adolescent female partner does not have a significant effect on condom use in any of the LP or fixed effects models. This finding runs contrary to the popular belief that adolescent girls are particularly at risk in sexual relationships. The current marital status of the female partner is marginally related to condom use in the LP Model 5, such that currently married

women are approximately 13 percent less likely to use a condom in their non-marital sexual partnerships than those divorced, separated, or widowed. This difference is, however, no longer significant when we control for male fixed effects in Model 6. The length of the partnership is negatively and significantly related to condom use in all the LP models before we control for fixed effects. For every month that a relationship has continued, the probability of condom use decreases by approximately three percent. Nevertheless, this effect does not retain significance in the fixed effects models.

With respect to transfers, Table 2 shows that the relationship between the total amount of transfers and condom use is negative and insignificant across two of the three LP models without fixed effects. The effect becomes greater (more negative) and significant in the fixed effects regressions. For every Ksh1000, the probability of condom use decreases approximately 15 to 25 percent. We also find that the quadratic term for transfers is positive and significant in Model 3 but loses significance in the fixed effects regression Model 4.

To visualize the nonlinearity in Model 4, we estimate a kernel regression corresponding to that specification in Figure 1. Since individual fixed effects and other controls are included in Model 4, we begin by differencing the estimated fixed effects and the controls (multiplied by their estimated coefficients) from the dependent variable. The modified condom use variable is then regressed nonparametrically on the transfers variable, using the Epanechnikov kernel smoothing function. While we could in principle have used the estimated linear and quadratic coefficients on the transfers variable in Model 4 to plot the relationship between condom use and transfers, the advantage of the kernel regression is that it picks up local variation in this relationship as well. We see in Figure 1 that condom use is monotonically declining in the level of transfers, despite the positive quadratic transfers coefficient in Model 4.

Overall, the results from the analysis in Table 2 show that there is indeed a significant negative effect of transfers on the probability of condom use within men's non-commercial non-marital sexual partnerships, and the magnitude of the effect is not trivial. This result suggests that a market for risky sexual activity exists, where even a small transfer can affect the probability of condom use substantially.

It is important to note that the coefficients on most of the female and partnership variables alter considerably between the LP and fixed effects models. In particular, the coefficients on the value of transfers become stronger and significant, while effects of the other variables become insignificant. Thus, while male education and current marital status have a strong effect on condom use, these standard variables are not sufficient to control for unobserved male heterogeneity. Our conclusions regarding the effect of transfers and other important characteristics on condom use would have been quite different if the fixed effects estimation procedure was not implemented.

Estimates for Condom Use by Type of Transfer

We investigate the relationship between the type of transfers—monetary versus non-monetary—and the probability of condom use at last sexual intercourse in Table 3. In addition to the variables in our base model, we include a variable reporting the total value of monetary transfers within the partnership. The first model in Table 3 is a LP regression, and the second includes male fixed effects. In both models, income and amount of transfer are divided by 1000 for ease of exposition.

The coefficients on the male, female, and partnership controls in Table 3 are similar to those in Table 2. With respect to transfers, we see in Model 1 that the total amount of monetary transfers has a negative and significant effect on condom use, which implies that non-monetary exchange has a weaker effect. However, in the fixed effects Model 2, the monetary effect weakens and is no longer significant. Thus, the results in Table 3 indicate that in urban Kisumu, there is no significant difference in the effect of transfers by type, and non-monetary transfers function as a trade-off for lower condom use in the same way that monetary compensation does.

Estimates for Condom Use by Age of Female Partner

The final part of our analysis examines the differential effect of transfers on condom use for partnerships involving adolescent girls versus adult females. We begin with descriptive statistics in Table 4 that compare the characteristics of partnerships and transfers for the two age groups of female partners (with 20 years as the cut-off separating the two groups) using t-tests to assess significance. With respect to condom use, there is no significant difference between partnerships involving adolescents and those involving adult females, which contradicts the perception that adolescent girls are particularly vulnerable to male preferences for unsafe sexual activity. Regarding transfers, male partners gave some form of material assistance to their adolescent female partners in a great majority (69.3 percent) of cases in the last month. This figure is significantly lower, however, than the proportion of adult partnerships that involved a transfer (75.7 percent). Looking within informal exchange relationships, we find that the mean value of transfers in adolescent partnerships is Ksh508 (approximately $US7.25) for adolescent girls, which is significantly less than Ksh707 (approximately $US10) received on average by adult females. There are slight differences in the type of transfers given in adolescent and adult partnerships as well. In adolescent relationships, approximately one-half of the value of all transfers is given in monetary assistance, 20.5 percent in gifts, 26.7 percent as meals or drinks, less than one percent as rent, and 2.2 percent as other items. Adults receive significantly less in gifts and slightly more in rent and monetary transfers, although the latter difference is insignificant.

The differences in the prevalence, value, and type of transfers are consistent with the general perception that adolescent girls have less bargaining power in their sexual relationships. Since condom use is the same for both groups of females, these results taken together also imply that fewer transfers are required to induce adolescent girls to forego condom use. These descriptive statistics do not, however, account for differences in the characteristics of male partners of adolescent girls and adult women. Indeed, we find in the lower portion of Table 4 that male characteristics are significantly different between the two groups. For partnerships involving adult females, the mean age, education, and income of male partners are higher than in partnerships involving adolescent girls. We now turn to Table 5 and the results of the LP models

using male fixed effects to determine whether transfers affect condom use differentially by the age of the female.

The fixed effects regressions in Table 5 include the same variables as in our base model: age group of female partner, length of partnership, and amount of transfers. Because we wish to examine the differential effect of transfers and condom use for adolescent partners compared to adults, we interact the age group of the female partner with transfers. To test for robustness, we include six different cut-offs for the upper age of adolescents, each of which is included in a separate model. We only include the results of the fixed effects regressions to save space; the coefficients with observed male characteristics as controls are similar to what we obtained earlier in Table 2.

Across all models Table 5, the effect of age group of female partner and length of the relationship are insignificant as in our analyses in Tables 2 and 3. The magnitude and significance of the coefficients for the level of transfers are similar to our previous findings as well. With respect to the additional effect of the female partner being an adolescent, we find that the interaction term with the amount of transfers is insignificant across all models. These findings indicate that the effect of transfers on condom use does not vary between adolescents and adult females, contrary to the popular perception.

Logit Regressions

We verify the robustness of the LP results reported in Tables 2, 3, and 5 with the alternative logit model in Table 6. We present three sets of regression models that correspond to the three major components of our analysis. The first set of models is our base specification, which includes the level of transfers within partnerships in the last month as the regressor of interest. The second set of models includes an additional variable reporting the total value of monetary transfers within the partnership to examine the differential effect of monetary versus non-monetary transfers. The third set examines the effect of transfers by the female partner's age (adolescents versus adults) by including an additional term interacting the age group of the female partner and

total amount of transfers. As in our previous analysis, the first model in each set is a regression with observed male characteristics as controls and the second model is a regression that includes male fixed effects. The logit fixed effects model only includes those men who report different values on the outcome variable (condom use) across their partnerships, which explains the decline of observations (partnerships) in those regressions.

Overall, the results in Table 6 match our earlier findings. Male education and marital status as well as the length of the partnership are significantly associated with condom use in the logit regressions. The effect of the length of the partnership remains significant in the logit fixed regressions, however, in contrast with the results obtained earlier with the LP model. Most importantly, we see that the effect of the level of transfers on condom use is negative and significant in the fixed effects regressions, just as we saw earlier with the LP fixed effects models. Finally, we find no effect of monetary versus non-monetary transfers on condom use (Models 3 and 4) and no differential effect of adolescent versus adult female partners (Models 5 and 6) after controlling for male fixed effects as before.

Conclusion

The major aim of this paper is to test the assumption that a market for unsafe sexual activity exists among informal sexual relationships, where money and gifts can be traded for sex without a condom. The exchange of money for sex without a condom is well known within commercial sexual partnerships, but it is unclear from the previous qualitative evidence if transfers in informal relationships can induce a similar response. We use new data on male non-marital sexual partners and transfers from Kisumu, Kenya, to explore the effect of transfers on condom use.

We find a strong negative relationship between transfers and condom use in informal relationships after controlling for male fixed effects and other important female and partnership variables. We also find that non-monetary transfers, such as gifts and meals, have the same effect as monetary transfers on condom use. Furthermore, the results reveal that the trade-offs

between transfers and condom use do not differ between partnerships involving adolescent girls and adult females; in other words, the same value of transfer induces the same response in women of different ages.

Our results have implications for policies aimed at decreasing unsafe sexual behavior in non-marital partnerships. Women, and adolescent girls in particular, are often portrayed as "vulnerable victims" in the literature on sexual behavior, who unknowingly or unwillingly participate in unsafe activities dictated by their male partners (Luke 2003a). The finding that a market for unsafe sexual activity exists in Kisumu, where higher amounts of transfers can be traded for sex without a condom, suggests otherwise: that adolescent girls and older women are active social agents who make a conscious trade-off between the risks and the benefits of an informal exchange relationship. These findings suggest that policies that aim to increase female bargaining power within sexual relationships are key, or alternatively providing income-generation opportunities to alleviate women's reliance on transfers from informal exchange relationships in the first place.

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Table 1. Summary statistics

	Mean	Standard deviation
Condom use and transfers within partnerships		
Proportion condom use at last sexual intercourse	48.3	
Proportion with transfer in last month	72.6	
Amount of transfers in last month (Ksh)	445.7	762.1
N	1531	
Partnership characteristics (conditional on transfers)		
Proportion of transfer value in money	51.2	
Proportion of transfer value in gifts	18.3	
Proportion of transfer value in meals/drinks	26.5	
Proportion of transfer value in rent	1.2	
Proportion of transfer value in other items	2.8	
N	1106	
Female and partnership characteristics		
Age	20.1	3.6
Proportion adolescents (<20 years)	48.7	
Proportion currently single	84.6	
Proportion currently married	3.9	
Proportion divorced, separated, widowed	7.9	
Proprtion marital status unknown	3.6	
Length of partnership (months)	13.7	17.1
N	1531	
Male partner characteristics		
Age (years)	26.1	5.3
Education (years)	10.0	2.6
Income in last month (Ksh)	4824.3	5339.9
Proportion currently single	59.1	
Proportion currently married	36.4	
Proportion divorced, separated, widowed	4.5	
N	1033	

Table 2. Linear probability and fixed effects regressions of condom use at last sexual intercourse within male non-marital partnerships

	Linear probability (1)	LP fixed effects (2)	Linear probability (3)	LP fixed effects (4)	Linear probability (5)	LP fixed effects (6)
Male partner characteristics						
Age (years)	-0.004		-0.004		-0.005	
	(0.004)		(0.004)		(0.004)	
Education (years)	0.033 ***		0.034 ***		0.031 ***	
	(0.006)		(0.006)		(0.006)	
Income in last month (Ksh/1000)	0.002		0.003		0.003	
	(0.003)		(0.003)		(0.003)	
Current marital status (div/sep/wid=ref)						
Single	0.179 *		0.180 *		0.191 **	
	(0.072)		(0.072)		(0.072)	
Married	0.193 **		0.196 **		0.206 **	
	(0.071)		(0.071)		(0.071)	
Female partner characteristics						
Adolescent (ref=adult)	-0.014	0.002	-0.016	-0.002	-0.015	0.005
	(0.029)	(0.065)	(0.029)	(0.065)	(0.030)	(0.070)
Current marital status (div/sep/wid=ref)						
Single					-0.051	0.019
					(0.048)	(0.105)
Married					-0.129 +	0.022
					(0.074)	(0.132)
Partnership characteristics						
Length of partnership (months)	-0.003 ***	-0.003	-0.003 ***	-0.003	-0.003 **	-0.003
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Total amount of transfer in last month (Ksh/1000)	-0.019	-0.149 *	-0.088 *	-0.254 *	-0.018	-0.147 *
	(0.019)	(0.069)	(0.039)	(0.107)	(0.019)	(0.071)
Total amount of transfers squared ($x10^{-8}$)			1.80 *	3.03		
			(0.900)	(2.000)		
N	1531	1531	1531	1531	1476	1476

***p<0.000; **p<0.01; *p<0.05; +p<0.10; standard errors in parentheses

Standard errors are robust to heteroscedasticity and clustered residuals across partnerships for each individual

Table 3. Linear probability and fixed effects regressions of condom use at last sexual intercourse within male non-marital partnerships

	Linear probability (1)	LP fixed effects (2)
Male partner characteristics		
Age (years)	-0.004	
	(0.004)	
Education (years)	0.033 ***	
	(0.006)	
Income in last month (Ksh/1000)	0.002	
	(0.003)	
Current marital status (div/sep/wid=ref)		
Single	0.178 *	
	(0.073)	
Married	0.195 **	
	(0.071)	
Female partner characteristics		
Adolescent (adult=ref)	-0.016	0.005
	(0.029)	(0.065)
Partnership characteristics		
Length of partnership (months)	-0.003 ***	-0.003
	(0.001)	(0.002)
Total amount of transfer in last month (Ksh/1000)	0.017	-0.132 +
	(0.026)	(0.075)
Total amount of transfers in money in the last month (Ksh/1000)	-0.099 *	-0.032
	(0.049)	(0.143)
N	1526	1526

***p<0.000; **p<0.01; *p<0.05; +p<0.10; standard errors in parentheses
Standard errors are robust to heteroscedasticity and clustered residuals across partnerships for each individual

Table 4. Characteristics of men's recent non-marital partnerships by age group of female partner

	Partnerships involving adolescent girls (<=19 years)	Partnerships involving adult females (20+ years)	
Partnership characteristics			
Condom use at last sexual intercourse (%)	48.0	48.7	
Partnership with transfer in last month (%)	69.3	75.7	**
N	746	785	
Partnership characteristics (conditional on transfers)			
Mean transfers in last month (Ksh)	507.7	706.9	**
Value of transfers by type (%)			
Money	49.9	52.4	
Gifts	20.5	16.4	*
Meals/drinks	26.7	26.3	
Rent	0.7	1.7	+
Other	2.2	3.3	
N	514	592	
Male characteristics			
Mean age of male partner (years)	23.7	27.6	***
Mean education of male partner (years)	9.5	10.3	***
Mean income of male partner in last month (Ksh)	3887.4	5261.3	***
N	746	785	

***p<0.000; **p<0.01; *p<0.05; t-tests

Table 5. Fixed effects regressions of condom use at last sexual intercourse within male non-marital partnerships, alternative adolescent age group cut-offs

	Adolescent < age 17 (1)	Adolescent < age 18 (2)	Adolescent < age 19 (3)	Adolescent < age 20 (4)	Adolescent < age 21 (5)	Adolescent < age 22 (6)
Female partner characteristics						
Adolescent (adult=ref)	-0.024	0.001	0.007	-0.040	0.006	0.060
	(0.099)	(0.079)	(0.070)	(0.069)	(0.067)	(0.081)
Partnership characteristics						
Length of partnership (months)	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Total amount of transfers in last month (Ksh/1000)	-0.175 *	-0.164 +	-0.162 +	-0.220 +	-0.217 **	-0.183 *
	(0.080)	(0.085)	(0.086)	(0.085)	(0.082)	(0.083)
Total amount of transfers * age group of female	0.078	0.037	0.029	0.115	0.087	0.045
	(075)	(0.097)	(0.093)	(0.078)	(0.067)	(0.086)
N	1531	1531	1531	1531	1531	1531

***p<0.000; **p<0.01; *p<0.05; +p<0.10; standard errors in parentheses

Standard errors are robust to heteroscedasticity and clustered residuals across partnerships for each individual

Table 6. Logit and fixed effects logit regressions of condom use at last sexual intercourse within male non-marital partnerships

	Logit (1)	Fixed effects logit (2)	Logit (3)	Fixed effects logit (4)	Logit (5)	Fixed effects logit (6)
Male partner characteristics						
Age (years)	-0.016		-0.015		-0.016	
	(0.016)		(0.016)		(0.016)	
Education (years)	0.142 ***		0.142 ***		0.142 ***	
	(0.027)		(0.027)		(0.027)	
Income in last month (Ksh/1000)	0.010		0.011		0.010	
	(0.012)		(0.012)		(0.012)	
Current marital status (div/sep/wid=ref)						
Single	0.855 *		0.862 *		0.855 *	
	(0.377)		(0.380)		(0.378)	
Married	0.914 *		0.933 *		0.914 *	
	(0.374)		(0.376)		(0.374)	
Female partner characteristics						
Adolescent (ref=adult)	-0.062	-0.231	-0.071	-0.242	-0.050	-0.420
	(0.122)	(0.347)	(0.122)	(0.351)	(0.138)	(0.404)
Partnership characteristics						
Length of partnership (months)	-0.015 **	-0.025 *	-0.015 **	-0.025 *	-0.015 **	-0.024 *
	(0.004)	(0.010)	(0.004)	(0.010)	(0.004)	(0.010)
Total amount of transfer in last month (Ksh/1000)	-0.080	-1.445 **	0.077	-1.536 **	-0.069	-1.766 **
	(0.083)	(0.439)	(0.111)	(0.564)	(0.101)	(0.575)
Total amount of transfer in money (Ksh/1000)			-0.449 +	0.229		
			(0.240)	(0.789)		
Total amount of transfers*age group of female					-0.030	0.648
					(0.160)	(0.693)
N	1531	272	1526	270	1531	272

***p<0.000; **p<0.01; *p<0.05; +p<0.10; standard errors in parentheses

Standard errors are robust to heteroscedasticity and clustered residuals across partnerships for each individual

Figure 1: Transfers and Condom Use