Income, Income Shocks, and Transactional Sex

Katherine LoPiccalo
University of California, Santa Cruz
klopicca@ucsc.edu

Jonathan Robinson
University of California, Santa Cruz
jmrtwo@ucsc.edu

Ethan Yeh
World Bank
eyeh@worldbank.org

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Abstract

Transactional sex is an important factor in the spread of HIV, particularly in Sub-Saharan Africa. In this chapter, we review empirical evidence on the economic incentives which influence the decision to supply transactional sex, and discuss several policies which may affect supply decisions. While the primary motivation for entering the transactional sex market is the large income premium relative to other jobs, unexpected income shocks also affect sexual behavior. Based largely on a set of studies in Western Kenya, we show that women are more likely to supply unprotected sex when they experience unexpected income shocks. We also show that sex workers receive informal insurance transfers from regular clients when shocks occur. Such support may induce some women into supplying sex. We conclude with a discussion of possible policy options, including providing conditional cash transfers, giving information on health risks, and introducing risk coping mechanisms such as insurance or bank accounts.

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1. Introduction

Transactional sex — the exchange of sex for money, goods, or services — has long been identified as a key factor influencing the spread of HIV, particularly in Sub-Saharan Africa (UNAIDS, 2010; Plummer et al., 1991). For example, in 2009, sex workers and their clients made up over 14 percent of new infections in Kenya, 10 percent in Uganda, and 32 percent in Ghana (UNAIDS 2010). Though difficult to quantify, the risk of infection for sex workers themselves is very high: among formal sex workers in Sub-Saharan Africa, HIV prevalence is significantly higher than for the general population (UNAIDS 2010; NAAC 2005; UNAIDS 2004; Morison et al. 2001).

Despite these health risks, many women continue to supply transactional sex (i.e., Vandepitte et al. 2006; Morison et al. 2001). This is particularly true in Africa, where transactional sex is present in many types of relationships, including marriage. Why do so many women do this? This question is of vital importance given the continued scope of the HIV epidemic in Africa, where 22.5 million people are living with HIV (UNAIDS 2010). While the rate of new infections has slowed, 70% of the 2.7 million new infections worldwide in 2010 were in Sub-Saharan Africa (UNAIDS 2011).

This chapter reviews evidence on microeconomic factors affecting the supply of transactional sex, particularly unprotected sex. We first briefly review evidence from a number of studies on the income premium to supplying sex. These studies show two robust empirical regularities. First, sex workers earn a large income premium, relative to other women with similar characteristics in other professions. Second, risky sex pays more: women receive larger payments for unprotected sex, as well as for anal sex. Both of these results suggest a significant

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2 In this chapter, we focus on economic incentives. While other factors such as stigma related to sex work, condom availability, social or cultural preferences for condom use, or sexual violence are potentially also important, we do not focus on these here.
compensating differential to entry into transactional sex as well as foregoing condom use, likely due to the stigma and health risk of sex work.

We then present results from three related studies in Western Kenya among a sample of sex workers, which focus more specifically on how unexpected income risk affects sexual decision-making. The studies take place in Busia District, an area on the Ugandan border which is known as a hotspot for commercial sex. First, we find that women are unable to use other mechanisms (such as savings or insurance) to cope with a variety of unexpected income shocks, even if those shocks are relatively small. Lacking other options to deal with shocks, women increase their labor supply in response: the women in our sample are more likely to have sex, and are less likely to use a condom while doing so, when facing an income shock. Second, we find that sex workers develop long-term relationships with “regular” clients, and that women rely on these clients as a primary source of insurance when shocks occur. On the margin, this suggests that women may enter into sex work not only to increase their average income, but also to access this informal insurance network. Though this research does not definitively show that women enter sex work to access client transfers, suggestive evidence from a cross-sectional survey suggests that it may well be an important motivation.

Though these results are specific to sex workers, they fit into a much broader literature within development economics that examines the ability of households to cope with risk – and the costs of failing to do so. When hit with shocks, households who cannot cope in other ways may have to reduce caloric intake (Bhattacharya et al., 2003; Maccini and Yang, 2009), pull children out of school (see Ferreira and Schady, 2009 for a review article), work more (Kochar 1995, 1999), or sell off productive assets such as livestock (Rosenzweig and Wolpin, 1993). The increase in risky sex we observe in response to shocks is a similar strategy, which may be quite costly in the long run given the health risk of contracting HIV or other sexually transmitted diseases. It is also an important public health issue given the negative spillovers to the broader population to unprotected sex.
In addition to these ex-post responses, households who know that available risk coping mechanisms are insufficient will adjust their behavior ex-ante. Households may choose to smooth income rather than consumption (Morduch 1995), which may lessen income risk but may reduce long-term earnings. For example, households may choose a portfolio of crops to lessen risk at the cost of average income (Rosenzweig and Binswanger, 1993; Dercon 1996). Our finding that women enter sex work in part to access informal insurance is a related ex-ante coping strategy, which may lower vulnerability but at the potential stigma or health cost of entering sex work.

On the whole, our results suggest that sex workers – just like many poor people in developing countries – are vulnerable to income risk, and must take actions to reduce that vulnerability and deal with income shocks when they do occur. This set of results is particularly important because sex work is quite common in this part of Kenya – in fact, we estimate that 12.5% of adult women in the area of the study work as formal or informal sex workers. Though this is likely higher than in other countries, or even in Kenya as a whole (since the area is a known hotspot for commercial sex), the results are relevant for a substantial number of women.

This chapter is organized as follows. Section 2 presents a simple framework to motivate the discussion. Section 3 presents some evidence on the income premium to sex work and the additional price premium for unprotected sex. Section 4 discusses the effect of risk on sexual behavior, drawing primarily on our prior work in Western Kenya. Section 5 presents some evidence on various policy options, and Section 6 concludes.

2. Conceptual Framework

In this section, we lay out a basic framework to motivate the empirical section. This framework is meant only to be illustrative, and could be modeled in other ways. We start with a simple one-period model. A woman has three choices: have unprotected sex, have protected sex, or not have sex. We do not model the demand side of the market but assume that men are willing to pay for sex, and are willing to pay more for unprotected sex. Women receive an income $I_u$ for having
unprotected sex, $I_p$ for having protected sex, and $I_n$ for not having sex. We assume an additive disutility of $D_u$ and $D_p$ to having each type of sex, where $D_u > D_p$. Thus, utility is $u(I_u) - D_u$ if a woman has unprotected sex, $u(I_p) - D_p$ if she has protected sex, and $u(I_n)$ if she doesn’t have sex.

Women will be more likely to have sex the higher is the ratio of $I_u$ and $I_p$ to $I_n$. Similarly, women will be more likely to have unprotected sex the higher is the ratio of $I_u$ to $I_p$. As we will discuss later, this simple setup is consistent with the large premium to having transactional sex and to forgoing condom use.

In this chapter, we are particularly interested in the effect of income risk on labor supply and sexual behavior. First, the actual realization of shocks may affect behavior. A simple model of inter-temporal labor supply (i.e. MaCurdy 1981) yields the basic implication that labor supply will not respond to transitory shocks that are small relative to lifetime income, but will respond to larger shocks. However, in poor countries where insurance, credit, and savings are limited, people may be unable to effectively inter-temporally smooth consumption. Thus, women may adjust labor supply in response to even small, short-term shocks.

Furthermore, even the expectation of such shocks may affect behavior in at least three ways. First, women may choose to enter sex work because it pays more and so allows them to save up against future income shocks. Second, since sex work pays more, the disutility of an uninsured income shock is less costly at higher income levels. Third, client relationships developed through sex work may also mitigate the effect of income shocks. Sex workers may develop relationships with “regular” clients, who provide them financial support when shocks occur.

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3 The disutility could be thought of as a stigma cost as in Della Giusta, Di Tommaso and Strom (2008), a proxy for reduced marriage market possibilities as in Edlund and Korn (2002), or an expected health cost (perhaps most relevant to our focus on HIV).
With this simple setup in mind, we now turn to the empirical evidence. We start by briefly summarizing the evidence on the income premia to sex work and to unprotected sex, and then discuss in more detail our previous research on the effect that income risk has on sex work (based on our own work in Western Kenya).

3. Evidence on Income Premia

3.1 Premium to Transactional Sex

Numerous studies find evidence of a sizeable income premium to transactional sex. Table 1 summarizes several of these studies. These include Arunachalam and Shah (2008) in Ecuador and Mexico, Gertler et al. (2005) in Mexico, and Pickering and Wilkins (1993) in the Gambia.

The difficulty with evaluating an income premium is that sex workers differ in various characteristics from other women. However, compared to women with similar demographic characteristics who work in other occupations, it is evident that sex workers earn a sizeable income premium. Table 1 shows that the estimated premia are quite large, ranging from 32-37% in Ecuador and Mexico to over 200% in The Gambia. Though our study in Kenya did not include a comparison group of women, the premium appears to be very large there as well: the average sex worker makes around $11 a day, compared to around $2.50 per day for female market vendors. Sex worker incomes are much closer to that of shopowners, who make around $10 per day, and who are considered something like “middle class” in a country like Kenya (figures from Dupas and Robinson 2010).

The range in estimated premia is due to a variety of supply and demand factors, and so are not directly comparable across studies. However, the general pattern is clear – sex workers earn substantially more than other women with similar characteristics in other jobs.

3.2 Premium to unprotected sex
Similarly, numerous studies find a sizeable price differential to unprotected sex. Table 2 includes a number of these studies: Rao et al. (2003) in India, Gertler et al. (2005) in Mexico, Arunachalam and Shah (2008) in Ecuador, Pickering and Wilkins (1993) in the Gambia, Adriaenssens and Hendrickx (2011) in Belgium and the Netherlands, and Robinson and Yeh (2011) in Kenya. The estimated premia are large, ranging between 7.1% in Kenya to 66% in India. As we discuss below, it is likely that this price premium is a compensating differential for the additional risk of contracting STIs or HIV from unprotected sex.

These studies employ a variety of methodologies for estimating the premium for risky sex. Rao et al. (2003), for example, use multivariate regression on a cross-sectional dataset. To deal with potentially unobservable characteristics that differ across women, they include a host of characteristics to try to deal with omitted variable bias. By contrast, Gertler et al. (2005), Robinson and Yeh (2011), and Arunachalam and Shah (2011) use panel data to identify the premium, using variation over time for each particular woman. Adriaenssens and Hendrickx (2012) match transactional-level data from online client questionnaires to individual sex workers.

While these premia strongly suggest that having unprotected sex requires a compensating differential, it is also possible that some omitted factor drives the relationship between unprotected sex and higher prices (for example, that clients who are willing to pay more for sex also happen to have a stronger preference for unprotected sex). However, several other pieces of evidence suggest that such an alternative is unlikely. Arunachalam and Shah (2011) use transactional-level data and biological STI markers from sex workers to show that locations with lower disease prevalence exhibit a lower premium for unprotected sex. Since the risk of contracting an STI is lower in areas with lower prevalence, women demand a lower premium. That the premium responds to the risk of illness is strong evidence that the compensating differential is rational.

A second piece of evidence is based on the fact that certain sex acts are riskier. For example, the risk of contracting HIV from unprotected anal sex is much higher than from
unprotected vaginal sex (Gray et al. 2001; Mastro and de Vicenzi, 1996). If women are rational, then the premium to unprotected anal sex should be higher. Though there are few studies that look at the premium to specific sex acts, those that do tend to find evidence in favor of this. Table 3 shows the additional premium associated with unprotected anal sex (relative to protected anal sex) from two studies. In both cases, the premium to unprotected anal sex is higher.

4. The Effect of Risk on Sexual Behavior

In this section, we will consider in more detail the evidence on risk and sexual behavior, focusing in particular on our work in Busia District, Western Kenya. Section 4.1 will briefly summarize the larger literature on risk coping in poor countries, Section 4.2 will describe the setting in which our data was collected, and Section 4.3 will discuss the evidence from three studies with the Kenyan sample.

4.1. Background on Risk Coping in Developing Countries

Income and consumption risk are a way of life in many developing countries. Formal insurance, savings and credit systems typically do not exist or are inadequate, leaving households vulnerable to adverse shocks. Though households have developed relatively sophisticated ex-post insurance and consumption-smoothing mechanisms, these are typically not able to provide full insurance.

The absence of formal safety nets will affect household decision-making in various ways. First, since households will not be able to fully insure consumption against shocks, they may have to take costly actions when shocks occur. These types of ex-post mechanisms may include reducing food consumption (Bhattacharya et al. 2003, Maccini and Yang 2009) at the possible expense of long-term health outcomes, taking children out of school (Jacoby and Skoufias 1997, Ferreira and Schady 2009, Thomas et al. 2004), or selling off productive assets (Rosenzweig and
Wolpin 1993), which may reduce longer-run income. Households may also respond to shocks by working more (Kochar 1995, 1999).

In the context of transactional sex, we will examine whether women increase their supply of unprotected sex in response to shocks. We will examine this issue both in response to very short-term shocks (namely, a household illness) and for the bigger but still relatively small (compared to lifetime income) shock of the economy-wide crisis in early 2008 which occurred after the disputed 2007 Kenya Presidential election.

The second way that risk may affect decision-making is that households may adopt ex-ante techniques to reduce fluctuations in income and consumption. Since households cannot efficiently smooth consumption ex-post, they may instead choose to smooth income ex-ante (see Morduch 1995 for a discussion of this issue). Often, these strategies are costly because they involve accepting a lower mean level of income to reduce income variability. For example, Rosenzweig and Binswanger (1993) find that Indian farmers in riskier environments choose investment portfolios which are less susceptible to weather variation but also less profitable. Similarly, Dercon (1996) investigates the role that crop choices play in the risk management of Tanzanian households. He finds that farmers often offset lower liquid asset holdings by planting more sweet potatoes — an extremely low-risk, low-yield crop. Keats (2012) finds that Kenyan entrepreneurs choose occupations in part to minimize risk.

In the context of the sex worker studies in Kenya, we will examine whether women enter sex work in part to reduce exposure to income risk. The mechanism for this is that sex workers have regular clients who insure them against unexpected income shocks – thus, at the margin, women without other ways of coping with income risk may enter sex work not only to earn a higher income, but to access this informal insurance mechanism.

4.2 Background on Transactional Sex Market in Busia, Kenya
Our data on income risk and transactional sex were collected in and around the semi-urban town of Busia, Western Kenya. As a border town along a major trucking route, Busia is a hub for transactional sex. Partly as a result, Busia had one of the highest HIV prevalence rates in Kenya around the time of this study: 9.8 percent, compared to the national average of 6.7 percent (CBS 2004).

To identify women engaged in transactional sex, we partnered with an organization that had previously been supported by the Strengthening STD/HIV Control Project in Kenya (SHCP). SHCP was a Kenyan organization associated with the Universities of Manitoba and Nairobi that had been conducting HIV education and condom promotion activities with thousands of formal and informal sex workers across Kenya since 1999. SHCP worked with these sex workers through a peer group model.

The line between sex work and other types of sexual relationships is blurry in this population, since (as discussed above) transactional sex is present in a variety of relationships. To capture this ambiguity, SHCP classified a “sex worker” as any single, widowed, divorced, or separated woman, aged 18 or older, who had multiple concurrent sexual partners. We adopted this same classification in our study. While this definition may seem inappropriate in other contexts (for example, in the US), it is appropriate in Kenya – all of the women we sampled for this study did in fact have sex for money (see Dupas and Robinson, 2012a).

At the start of our work in 2005, all peer group members (approximately 400) were asked to list all women in the community who were single, widowed, divorced, or separated, aged 18 or older, and who had multiple concurrent sexual partners (SHCP’s definition of a sex worker). We identified 1,205 women using this type of snowball sampling methodology. Though it is likely that we missed some women at the margins of sex work, the number of women identified in this manner was surprisingly large.5

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5 As previously stated, 1,205 women were identified during the process. Since the estimated population of Busia was about 44,196 (Central Bureau of Statistics, 2001) around that time, this corresponds to an
To identify a representative sample and to ensure accurate data quality, the SHCP field coordinator (a trained nurse) and several original peer group educators were hired as enumerators. Since these women had worked closely for several years with the SHCP program, sex workers felt comfortable with them and were more willing to share extremely sensitive and detailed information about their sexual behavior.

4.3. Diary Study

Of the 1,205 women identified, 248 were randomly selected to complete daily “diaries” from 2005-2006. All 248 women who were sampled reported that they did in fact exchange sex for money (or for in-kind payments), and 45% of the sample was in a peer group. Thus, our sample is not restricted to those who voluntarily chose to participate in the groups. The “diary” (actually a pre-printed survey) included questions on income, expenditures, transfers, and shocks. The diaries also included details on each encounter with a client, including the specific sexual activities that were performed, the price, and whether a condom was used. In total, of the 248 women selected to participate in the project, 192 (77%) completed diaries (over two separate 3-month data collection periods).6

4.4. Post-Election Survey

On December 27, 2007, Kenya held Presidential elections between the incumbent Mwai Kibaki and challenger Raila Odinga. Despite widespread reports of electoral fraud, Kibaki was announced the winner after a delay of several days on December 29. The announcement sparked widespread unrest, and led to a state of emergency that essentially shut down many roads and

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6 Of the remaining women, 7 refused to participate and another 49 dropped out before data collection was finished.
markets. The civil conflict lasted until late February 2008, when a power-sharing agreement was signed.

The violence is estimated to have resulted in about 1,200 deaths and the displacement of 500,000 or more people (Gibson and Long, 2009). While the area of study - Busia - did not experience direct human casualties, market activity was seriously disrupted, leading to large declines in income, expenditures, and consumption across a wide part of the population (Dupas and Robinson 2010).

As the shock likely had a large effect on the income of sex workers, we designed a survey to measure the effect of the crisis on income, expenditures, consumption, and sexual behavior. To do this, a survey was administered to the original sample of 248 women. The survey also included a number of questions on how women coped with the shock, as well as more descriptive questions on the effect of the crisis on the price of sex and related outcomes. Of the 248 women in the original sample, 240 were successfully found (97%). Fourteen women were no longer engaged in transactional sex and were dropped from the sample, leaving a final sample of 226 women.

For each outcome, respondents were asked to recall the amount for an average week in November 2007, December 2007, February 2008 and March 2008. Since the crisis was particularly severe in early January, respondents were asked for a detailed week-by-week account for January 2008. A rough estimate of the effect of the crisis could therefore be estimated by simply comparing pre- and post-crisis levels.

A possible concern with this type of pre-post analysis is that other seasonal trends may account for some or all of the effect. To address this, women were re-interviewed in March 2009 and administered the same questionnaires (asking about the November 2008 to March 2009 time period). This makes it possible to perform a difference-in-difference analysis, by using the 2009

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7 See Dupas and Robinson (2010) for a detailed graphical depiction of the changes in income and consumption over the time period of the survey.
survey to difference out seasonal trends. Unfortunately, however, only 147 (65%) of the 226 original women could be traced for the 2009 survey.

4.5 Results

4.5.1. Response to small health shocks

As discussed previously, the diaries showed a large premium for unprotected sex, especially for riskier activities such as anal sex. Overall, unprotected sex garnered a premium of approximately 9.3%. Vaginal sex increased the price by about 10.8%, while not using a condom for vaginal sex raised the price an additional 6.8%. Consistent with the compensating differential being rational, the premium for anal sex was much higher – anal sex increased the price by about another 28.7%, while not using a condom raised that premium a further 16.4%. Since women earn more for riskier sexual activities, the first question we explore is whether women switch to these riskier activities to make up for income shortfalls in response to relatively small income shocks.

In Robinson and Yeh (2011), we find significant evidence of sexual behavior responses to two types of small shocks: (1) the illness of another household member (typically a child), and (2) the illness of the sex worker herself. In the former case, we would expect a woman to adjust labor supply immediately. In the latter, since she cannot work while she is sick, we would expect an adjustment only after her recovery (to make up the income she lost).

In response to household health shocks, women were 3.1% more likely to see a client, 19.1% more likely to have unprotected sex and 21.2% more likely to have anal sex. Experiencing an STI is also associated with riskier sex. STI illness is a substantial income shock, since it makes it hard or difficult for sex workers to earn income. After recovering, women may choose to make up these income shortfalls, and we find that women are 7.6% more likely to see a client and 51% more likely to have unprotected sex.
4.5.2. Regular clients as insurance

Over time, women engaged in transactional sex may develop relationships with so-called “regular” clients. Regular clients differ from “casual” clients in that they tend to have longer-term relationships with a particular woman. Though women may have one or more regular clients at a time, these relationships often extend beyond just sex; in our qualitative work, many regular clients were described as boyfriends or lovers, and it was not uncommon for women to plan to marry regular clients.

Anecdotally, women described the importance of these regular clients in providing financial support when needed. In the words of one of the SHCP peer counselors, regular clients often must “act like husbands” in providing support for rent, school fees, or funeral expenses as needed. We examine the extent of financial support from regular clients more rigorously using the diary data in Robinson and Yeh (2012).

We find that client transfers increase by 67% to 71% on the days around own illness, which amounts to approximately 25 percent of the total shortfall caused by the time lost working. Clients also provide significant support for likely the biggest income shock facing people in Kenya – funeral expenses for a friend or relative. Transfers increased by 124%-125% around a funeral, amounting to almost 20% of total funeral expenses.

Though client transfers only cover a fraction of the cost of these shocks, they are substantially larger than other support women receive from friends or family. Consistent with this, 70% of women report that clients are the primary source of assistance they receive, and an additional 28% report that they are the secondary source. Though it’s possible that clients simply crowd out other sources of insurance (such as from family members), these findings do suggest that such assistance is an important part of sex workers’ risk-coping strategy (keeping in mind of course that the previous study showed that client transfers are not enough to fully insure women from having to adjust labor supply).
Potentially, women may enter sex work to access this insurance network, as an ex-ante coping strategy. To shed evidence on this definitively, we would need a representative sample of women and then examine whether those who are most vulnerable are most likely to enter sex work. Since our sample includes only sex workers, however, we instead rely on semi-structured interviews with sex workers. In these interviews, women were asked to list the various reasons why they joined sex work. Questions were asked in two ways: by asking women to list reasons without prompting, and then to have the surveyor read out options to which the women could agree or disagree. Though speculative, the results are suggestive. While all women report that the income premium to sex work is a major factor, a substantial fraction also list insurance as a motivation. When unprompted, 21% cite assistance with shocks as a reason to enter sex work; when prompted, this rises to 97%.

A final result from this analysis is that a large fraction of women report income shocks as a reason to enter sex work in the first place (as an ex-post response). Between 78% and 99% of women report an adverse income shock as a reason that they entered sex work. While it is difficult to know how much weight to put on these statements at face value, they are again at least suggestive.

4.5.3. Post-election crisis

How do women respond to somewhat larger shocks? The 2008 post-election crisis had a large impact on incomes in the January and February, 2008: Dupas and Robinson (2012a) find that self-reported weekly income declined by 89% in the first two weeks of January 2008 (compared to November 2007). Income remained below 50% of its pre-crisis level for the rest of the month.

While such an income decline is clearly much more significant than a single day’s illness, the magnitude is actually still quite small relative to lifetime income and so could potentially have been coped with through savings. Yet, just as with the diary study, women responded by
significantly increasing their supply of unprotected sex. Though it was hard to find clients during the crisis due to the market disruption, conditional on finding a client women were much more likely to have unprotected sex - the probability of having unprotected sex with a client increased nearly 100% during the crisis.

After the crisis ended in February and markets went back to normal, behavior change persisted. Since it was now much easier to find clients, the total amount of risky sexual activity increased. In March, women had nearly 54% more unprotected sex acts and were still 22% more likely to have unprotected sex when they found a client (relative to November 2007). Both of these effects are robust to differencing out seasonal trends using the 2009 survey.

One reason why the post-election crisis was particularly bad for sex workers is that it was an aggregate shock, affecting everyone in Kenya (including clients). Thus, while women could normally rely on clients to provide some help with idiosyncratic shocks, clients likely had nothing to give during this crisis.

5. Policy Implications

The evidence we have presented from these studies suggests that certain policies, especially those that recognize the economic incentives women face, might be effective in reducing risky sexual behavior. In this section, we review some evidence on policy options. We do not attempt a systematic review of the literature (for a more comprehensive review, see Dupas 2011a), but instead focus on several interventions which seem most relevant to transactional sex: giving out conditional cash transfers, providing information on the risks of HIV/STIs, and providing more formal risk coping mechanisms.

5.1. Conditional Cash Transfers

Substantial evidence in recent years has shown that conditional cash transfer (CCT) programs can be effective in influencing behavior. CCT programs typically transfer cash to
households, so long as households meet certain conditions (such as their child attending school). CCT programs have been successfully implemented in many countries around the world, with most initiatives targeting schooling or child health outcomes, such as Oportunidades (formerly called PROGRESA) in Mexico, Chile Solidario in Chile, and the Bolsa Escola Program in Brazil. In general, CCTs have been quite successful in incentivizing the behavior on which the condition depends. For example, Oportunidades / PROGRESA had large effects on school attendance (i.e. Shultz, 2004) as well as child health, both of which were related to conditions for receiving transfers (Gertler 2004).

Potentially, such programs could have effects on sexual behavior. For example, a CCT based on school attendance may keep girls in school longer, which may delay sexual debut and marriage. Further, if the transfer is large enough, it may affect sexual behavior though an income effect, by making transactional sex a less attractive option. A recent randomized controlled experiment by Sarah Baird, Craig McIntosh, and Berk Ozler examines these issues in Malawi. The experiment had three treatment groups: a group which received a CCT (of US $10 per month on average), conditional on satisfactory school attendance, a group which received an unconditional cash transfer (UCT) of the same amount which was paid whether the girl attended school or not, and a control group. Though the CCT was more effective in improving school attendance and test scores (Baird et al. 2011), both interventions led to important differences in HIV prevalence: Baird et al. (2012) find that both conditional and unconditional cash transfer programs reduced HIV and herpes simplex type 2 (HSV-2) infections.8 Overall, the results suggest that the income effect may be very important in influencing behavior in this context.9 The implication of this research is that providing income support can help young women substitute away from sex or marriage as a form of support.

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8 For some other measures of sexual activity (marriage and pregnancy), only the UCT had an effect. See Baird et al. (2011) for more detail.
9 Consistent with the Kenya context, the authors note (in a footnote) that about a quarter of young women who were sexually active at baseline reported that they entered into a sexual relationship because they “needed his assistance” or “wanted gifts/money.”
The Malawi research measured outcomes over a 2 year period. Thus, an open question from that study is whether the results would persist, or if the treatment groups would eventually “catch up” to the control group in terms of HIV/STI prevalence. Duflo, Dupas, and Kremer (2011) provide longer-term evidence on the effect of a similar randomized experiment in Western Kenya. The experiment had two main treatments, interacted with one another: (1) providing free school uniforms, a significant expense to educate a child in Kenya, and (2) training teachers in the government’s HIV curriculum. There are therefore four treatment groups: those that received the uniforms alone, those that received education alone, those that received both concurrently, and the control group. To measure longer-term impacts, the authors measure HSV2 prevalence after 7 years (HIV prevalence is too low to provide power to test for treatment effects).

The authors find that the uniform increased school enrollment and reduced childbearing, but had no effect on HSV2 – a result which suggests that the long-term effects of a CCT might be smaller than the short-term effect. By contrast, even though the education program increased students’ knowledge of the disease, the program had no effect on any outcome. Finally, the programs interacted with each other: girls who received both treatments had significantly lower HSV2 prevalence (though a smaller change in fertility than the uniform only group).

Another strand of the literature has moved towards using CCTs to incentivize safe sex directly. The basic design is to make payments to individuals if they do not show symptoms of STIs. In Tanzania, de Walque et al. (2011, 2012) conducted randomized controlled trials in which treatment individuals were offered a US$60 financial incentive to individuals to stay free of STIs over 12 months. The CCT had a substantial impact, as those eligible for the program were 25 percent less likely to have STIs than a comparison group. In Malawi, Kohler and Thornton (2011) offered financial incentives (ranging from zero to approximately 4 months’ earnings) for individuals to maintain their HIV status for one year. Though the study is not powered to look at HIV incidence (of those negative at baseline, less than 1% of the entire sample contracted HIV over the sample period), they do find an effect of actually receiving a payment on sexual
behavior. Of those who received the payout for staying STI-free, men were 9 percentage points more likely to engage in risky sexual behavior, while women were 6.7 percentage points less likely. These payments were received at the end of the study, at which point future behavior was no longer incentivized. The payments therefore represent the effect of an income shock on sexual behavior, rather than an incentive effect, and are therefore generally consistent with the literature summarized above.

5.2. Information

The motivating framework presented above is one in which women understand the risks that they face, yet take them because the return to doing so is high. This seems quite plausible among the sample of sex workers in Western Kenya, where the women were very knowledgeable about HIV (Robinson and Yeh, 2011). However, with other populations and other behaviors, it may be true that these risks are less well known. In this section, we summarize several studies which look at the effects of information on health behavior (though many of these studies do not focus on sexual behavior, they are likely relevant to HIV as well). Our reading of this literature is that most information campaigns have limited effects. Only those which convey very specific information, or which devote significant resources to encourage sustained behavior change, appear able to lastingly affect behavior.

A number of studies provide basic information to households about the costs or benefits of specific behaviors, and then examine the effect of information on demand for health products. On the whole, these show limited effects (see, for example, Kremer and Miguel 2007; Kremer et al. 2011; Meredith et al. 2012). Similarly, Ashraf, Jack, and Kamenica (2011) show that providing information has no effect on the level of demand but does affect the elasticity. Dupas (2009) shows that making health more salient through a script has no effect on demand.

On the other hand, providing specific, localized information on health risks might be effective. For example, Madajewicz et al. (2007) find large effects in Bangladesh of informing
households of high arsenic levels (and their associated health risks) in their local well water. Informing households that their well water has an unsafe concentration of arsenic increases the probability that the household changes to another well within one year by 37 percent. Here, the immediacy of the danger, and the magnitude of the health risk, appears enough to induce people to change their behavior.

Several studies in Western Kenya focus on HIV. As discussed earlier, Duflo, Dupas, and Kremer (2011) find no effect of Kenya’s HIV education curriculum on STI prevalence. The curriculum, which emphasizes total risk avoidance, appears ineffective. By contrast, Dupas (2011b) provided information to young women that older partners are more likely to have HIV than younger ones. Teenage girls given this information substituted away from older men to same-age partners. The program induced a 28 percent reduction in teenage pregnancy.

Another set of studies combine education with relatively intense programs to change behavior. In Pakistan, Luby et al. (2004, 2005) randomly selected 36 low-income neighborhoods to receive weekly visits that promoted hand-washing, as well as to receive plain soap and information campaigns designed to highlight the particular health risk of diarrhea for infants and children under 5. This intensive program was very effective – infants in treatment households spent 39 percent fewer days with diarrhea. Cairncross et al. (2005) evaluate a multi-pronged intervention in India that included intensive education and mobilization campaigns, in addition to the construction of sanitation equipment such as latrines. They find lasting impacts of the program on hygienic practices.

On the whole, it seems that information can be effective, but only if the information is of great salience (such as arsenic levels in a specific local well), or if it is done particularly intensively. Simply providing basic information seems unlikely to have major effects on its own.

**5.3. Formal Risk-Coping Mechanisms**
Formal risk coping mechanisms are largely absent in many developing countries. The set of studies with Kenyan sex workers strongly suggests that providing better formal risk coping mechanisms could affect the intensive and extensive margins of the transactional sex market. To our knowledge, there are no studies that examine the effect of providing risk-coping mechanisms on sexual activity. There have, however, been a number of recent studies which look at different outcomes which we summarize here.

First, several recent studies have looked at the effect of providing weather insurance to farmers. Though several of those studies show limited demand in some contexts (i.e. Giné and Yang, 2009 in Malawi and Cole et al., 2012 in India), a recent study in Ghana (Karlan et al., 2012) finds relatively high demand at actuarially fair prices (40-50%). Additionally, the authors find that treatment farmers increase investment, as well as the riskiness of investments, a result that suggests that households do not take advantage of profitable investments because of the associated risk (as discussed in Section 4.1).

Another strand of research has examined the effect of providing savings accounts on behavior. Such accounts could make households better able to cope with risk directly by giving them a safe place to save and dissave, or indirectly by allowing them to save up for bulky items that could increase incomes.

In Kenya, Dupas and Robinson (2012b) show that entrepreneurs (particularly female market vendors) have a demand for even very basic savings accounts, and that these allow them to grow their business. In a related study with Rotating Savings and Credit Associations in Kenya, Dupas and Robinson (2012c) find that several simple interventions can improve household’s risk coping ability. In that study, ROSCA members were offered very simple savings products. Two of those products are most relevant for this chapter: a simple lock box with a key (called a “Safe Box”), and a health savings account. The Safe Box allowed people to deposit small sums on a daily basis, and easily withdraw if the money was needed. The health savings account was managed by the treasurer of the ROSCA. People could save money in their account
in any amount, but the money was earmarked so that it could only be withdrawn in the case of emergency. Take-up of these simple products was very high: after one year, 71% of respondents took up the Safe Box while 97% took up the health savings accounts. Further, these devices allowed people to better cope with shocks – those offered the health savings accounts were 12-14 percentage points less likely to be unable to afford medical expenses over the past 3 months (on a base of 31 percentage points in the control group). Those in the Safe Box group were 8-10 percentage points less vulnerable, though that effect was not statistically significant.

In a recent experiment in Nepal, Prina (2012) also finds evidence that simple savings options can be helpful for women. She finds that female household heads who were offered savings accounts saved about 9% of their weekly income in the accounts and increased monetary assets by 40%. Such households ended up spending more money on medicine, and less on hospital stays, potentially suggesting that they were better able to treat illnesses earlier.

6. Conclusion

HIV continues to infect millions of people a year, most of whom live in Sub-Saharan Africa. Transactional sex is responsible for many of these infections, so understanding the nature of this market is an important issue. In this chapter, we have reviewed evidence to understand why so many women engage in transactional sex when the health risk of doing so is so high. Perhaps unsurprisingly, the primary motivation is that sex work pays more – numerous studies show a large income premium to providing transactional sex. There is also a premium to forgoing condom use, likely to compensate for the health risk of unprotected sex.

This chapter has drawn heavily on our work with a sample of sex workers in Western Kenya, which focuses not on the level premium to sex work, but on the effect that unexpected income risk has on sexual behavior. We find evidence that sex workers switch to riskier, better paying sexual activities in response to even very small income shocks. On the extensive margin, entering sex work allows women to form relationships with regular clients, who act as a major
source of informal insurance when adverse shocks occur. In Kenya, where the risk of HIV infection is high, these strategies are very costly, and put sex workers at increased risk of contracting and spreading HIV.

While most of our evidence is from Western Kenya, the basic finding that income risk affects sexual behavior has been documented in other contexts as well. Using panel data from South Africa, Dinkelman et al. (2008) show that girls in households exposed to negative economic shocks are less likely to use condoms. Similarly Weiser et al. (2007) find evidence from Botswana and Swaziland that women suffering from food insecurity are less likely to use condoms consistently, are more likely to engage in sex exchange, and are more likely to have intergenerational sexual relationships.

These results suggest that certain policies may be effective in affecting sexual behavior. Raising incomes or incentivizing protected sex through conditional cash transfers appear promising. Similarly, providing formal risk coping mechanisms such as insurance or savings accounts could also be effective.

An important consideration in thinking about such interventions is that the vast majority of existing research has been conducted in partial equilibrium, while only a few have looked at the general equilibrium effects of events which affect the entire economy. For example, a negative economy-wide shock will tend to increase the supply but decrease the demand for transactional sex, making the overall effect on quantities unclear. To the extent that sex workers are more vulnerable than their clients, however, it seems possible that supply will increase more than demand will fall. Indeed, the few studies which do exist seem to suggest such a pattern. The post-election crisis studied in Dupas and Robinson (2012a) was an aggregate shock in which quantities ultimately rose. Burke et al. (2012) use drought incidence to explore the relationship between community-level economic shocks and HIV prevalence for 21 Sub-Saharan African countries. They find evidence that poor rainfall shocks increase HIV prevalence, which they argue is due to an increase in transactional sex, again suggesting that women increase their supply
more than men decrease their demand. Finally, Wilson (2011S) finds that an exogenous increase in income due to a copper price boom in Zambia decreased the prevalence of transactional sex, multiple sex partners, and pregnancy and marital rates among young adults in Zambian mining cities. In all three studies, supply responses outstripped demand, at least suggesting that economy-wide interventions might benefit women (both because they appear to be more vulnerable, and because conditional on having sex such interventions will induce price increases). More research will be needed to investigate these issues more definitively.
7. References


### Table 1. Income Premium for Sex Work

<table>
<thead>
<tr>
<th></th>
<th>(1) Avg. weekly income non-sex worker</th>
<th>(2) Income premium for sex work</th>
<th>(3) Location of study</th>
<th>(4) Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>148.07</td>
<td>32%-37%¹</td>
<td>Mexico</td>
<td></td>
</tr>
<tr>
<td>Gertler et al. (2005)</td>
<td>260.67</td>
<td>56.5%</td>
<td>Mexico</td>
<td>Working women of same age</td>
</tr>
<tr>
<td>Pickering and Wilkins (1993)</td>
<td>37.45-40.04</td>
<td>210-231%</td>
<td>The Gambia</td>
<td>Married, divorced/widowed women in same area</td>
</tr>
</tbody>
</table>

Notes: All figures in 2011 U.S. dollars. The exchange rates used are those reported in the paper. Where not reported, the exchange rate is the rate on the last day of the year of the study reported on the OANDA currency calculator (http://www.oanda.com/currency/converter).

¹Premium is conditional on worker characteristics.
<table>
<thead>
<tr>
<th>Table 2. Premium for Unprotected Sex</th>
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<tbody>
<tr>
<td>(1) Average transaction price</td>
</tr>
<tr>
<td>Rao et al. (2003)</td>
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<tr>
<td>Gertler et al. (2005)</td>
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<td>Robinson and Yeh (2011)</td>
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<td>Arunachalam and Shah (2011)</td>
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<td>Adriaenssens and Hendrickx (2011)</td>
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Notes: All figures in 2011 U.S. dollars. The exchange rates used are those reported in the paper. Where not reported, the exchange rate is the rate on the last day of the year of the study reported on the OANDA currency calculator (http://www.oanda.com/currency/converter).
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
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<tbody>
<tr>
<td></td>
<td>Premium to unprotected vaginal sex$^1$</td>
<td>Premium to unprotected anal sex$^2$</td>
<td>Client controls?</td>
<td>Location of study</td>
</tr>
<tr>
<td>Robinson and Yeh (2011)</td>
<td>7%</td>
<td>16%</td>
<td>No</td>
<td>Kenya</td>
</tr>
<tr>
<td>Arunachalam and Shah (2011)</td>
<td>11%</td>
<td>20%</td>
<td>Yes</td>
<td>Ecuador</td>
</tr>
</tbody>
</table>

Notes: All figures in 2011 U.S. dollars. The exchange rates used are those reported in the paper. Where not reported, the exchange rate is the rate on the last day of the year of the study reported on the OANDA currency calculator (http://www.oanda.com/currency/converter).

$^1$Relative to protected vaginal sex.

$^2$Relative to protected anal sex.