

# **Why Countries have both Subsidized and Free Condoms to Prevent HIV/AIDS: The Role of Stigma Mitigation**

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## **Abstract**

This article explains why it is necessary to have both a free condoms program and a price subsidized Condom Social Marketing (CSM) program to encourage the use of condoms to prevent HIV/AIDS. One program is to aid the poor and the second is to avoid moral hazard and the stigma of being sexually active. The theory is applied to Tanzania to explain who goes to free clinics and who goes to the CSM program. A Probit analysis was applied using data from a Population Services International survey of condom use. Ability to pay measures and stigma aversion proxies were found to be statistically significant.

**Keywords:** **Condom Social Marketing; HIV/AIDS; Stigma; Ordeal Mechanism; Africa; Tanzania.**

# **Why Countries have both Subsidized and Free Condoms to Prevent HIV/AIDS: The Role of Stigma Mitigation**

## **Introduction**

The Joint United Nations Programme on HIV/AIDS (UNAIDS) have targeted the use of condoms as a major way of preventing the spread of HIV/AIDS in populations, such as Sub-Saharan Africa, where transmission is largely via heterosexual contact. To encourage condom use, a price subsidy would seem desirable. On the basis of estimates of cost and the price elasticity of demand a country could then plan to set the optimal subsidy rate for a condom promotion program. The optimum may be one where the condoms are provided free. If this were so, why would a country then also have a second condom program where condoms are subsidized at some other rate?

For example, in Tanzania in 1999, the Ministry of Health gave away 40 million condoms free in Government clinics, while the Condom Social Marketing (CSM) program sold 18.3 million condoms at a subsidized price, see MEASURE (2001). For sure the perceived quality may be different. But, there could also be something more fundamental going on that accounts for the segregation in the condom market.

It will be suggested that, common to any government program that provides a good or service free, the government program has to solve a *Moral Hazard* problem, i.e., people have an incentive to use more than they need and this leads to a waste of resources. The solution to this problem in the particular case of free government condoms seems to involve what Nichols and Zeckhauser (1982) call an *Ordeal Mechanism*, a feature of the program that leads to self-selection in the program such that only the neediest remain. Those who self-select out of the government scheme have an unmet demand and this is what the condom social marketing program attempts to satisfy. The free condom program will then be for those with a low ability pay who are willing to put up with the stigma of being seen going to a government clinic for free condoms. We will focus throughout on the experience of Tanzania, a country that employed both types of condom program and is typical of other Sub-Saharan African countries with a high prevalence rate of HIV (7.0% in 2003/04 according to a recent population based estimate).<sup>1</sup>

The outline of the paper is as follows. First we explain the moral hazard problem involved with the provision of free condoms. Then we outline what it is that a condom social marketing program has to offer. From there we apply the theoretical framework to Tanzania condom behavior using data from a Population Services International (PSI) survey. We close with the summary and conclusions section.

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<sup>1</sup> See Tanzania Commission for AIDS (TACAIDS), National Bureau of Statistics (NBS), and ORC Macro (2005).

## **The Moral Hazard Problem with Free Condoms**

Obviously, the whole point of providing condoms is that they be used for sexual activities. They then prevent the transmission of HIV both directly and indirectly via the prevention of the spread of sexually transmitted diseases. They are not meant to be used, for example, for water storage. However, if they are free, then there are a large number of possible uses for condoms that generate positive utility even though the benefits do not cover the costs and they do nothing to prevent the spread of HIV. For example, Epstein (2007, p271) reports that when the CSM run by PSI in Zimbabwe tried to distribute free female condoms, the officials found that people were removing the plastic rings and selling them as jewelry.

In Tanzania, for 1999, there was evidence than over half of the condoms distributed/sold were used for other purposes. MEASURE (2001, p34) estimated that an average man in Tanzania had 30 sexual acts per year. Four percent of married men (6.66 million men) used condoms and this would mean that 8 million condoms would be used within marriage.<sup>2</sup> In non-marital acts, twenty five percent of the time condoms were used. This meant that about 6 million condoms were used outside marriage. In total then, it was estimated that 14 million condoms were used. Given that 40 million were bought or received in 1999, then only 35% of the condoms would have been utilized for sexual purposes.

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<sup>2</sup> That is, 6.66 million times 30 times 0.04 = 8 million.

How does one stop this waste? A common institutional feature of government condom programs is that they are distributed only in government clinics and only during daylight hours. Advocates would like them to be more widely available, even to be handed out in public schools. The demand for such widespread availability is usually resisted. Instead, to receive the free condoms one has to go in person to the government clinic during the day.

The effect of this distribution restriction, if not the intention, is to create stigma. People being seen going to the government clinic are announcing to the world that they are sexually active. This is embarrassing for males; even more so for females. This stigma is enough to deter some people from access to free condoms. In so far as those being deterred are those that would use the condoms for non sexual purposes, the distribution restriction works as an ordeal mechanism that could enhance efficiency. Those most discouraged would be the ones who would have the least need for the condoms. They self-select out of the program, leaving the most needy. Those remaining in the program can be better off even in the presence of the stigma as they can now receive the condoms that were previously being wasted.

### **The Role for the Condom Social Marketing Program**

UNAIDS (2000) has defined a Condom Social Marketing Program as:

*The adaptation of commercial marketing and sales concepts and techniques to the attainment of social goals. It seeks to make health related information, products and services easily available and affordable to low-income populations and those at risk while at the same time promoting the adoption of healthier behaviour. In fact, it may be said that the ultimate goal of social marketing is to effect healthy behaviour change.*

Thus CSM programs provide information as well as giving subsidies for the condoms. But the program can only be effective if condoms are going to lead to changed sexual behavior, i.e., protected rather than unprotected sexual intercourse. If people are willing to pay for condoms, it is reasonable to assume that they are going to use them for sex and not water storage. So CSM programs are more likely to achieve the goal of reducing risky sex than the government's free condom schemes. The price for the condoms needs to be high enough to ensure that they will not be wasted, while not too high so that they become unaffordable. Population Services International (PSI) who ran the CSM program in Tanzania charged a price for their own *Salama* brand that was about a third of the cost of the condoms. The responsiveness of condoms to changes in price has been estimated by Brent (2009), using PSI data, to be such that a 66.7 percent reduction in price would lead to a 66.7 per cent increase in quantity demanded (i.e., the price elasticity of demand was unity). The price subsidy did have a considerable impact on usage.

Epstein (2007, pp 147 - 148) argues that the existence of stigma is the greatest barrier to AIDS prevention in Africa and the rest of the world. The assumption was that AIDS was due to “bad behavior” and you avoided it by using a condom. So if you used a condom you were automatically branded a prostitute and if you did contract AIDS you must have been doing something wrong.

How did the Tanzanian CSM program help solve the stigma problem? Apart from buying the condoms at pharmacies and retail stores, they also could be purchased *after hours* at kiosks, bars and lodgings where some anonymity could be maintained. Around one-half of the sales were made at these non conventional outlets, according to Badru (2000).

### **Applying the Theory to Tanzania**

We have just seen that an individual who has decided to use a condom for sexual activities must choose between the free condom program and the subsidized CDM program, where the choice is largely determined by two main considerations, a person’s aversion to stigma and the person’s ability to pay for the condoms. We will assume that the two condom programs each give utility. An individual  $i$ ’s difference in utility between a pack of condoms obtained from the free program and a pack bought from the subsidized CSM program will be denoted by  $Y_i^*$ . If this utility difference is linearly additively related to the characteristics of an individual that express an

aversion to stigma to differing degrees,  $X_i$ , and the ability to pay determinants,  $Z_i$ , then we obtain:

$$Y_i^* = X_i'\alpha + Z_i'\beta + u_i \quad (1)$$

where  $u_i$  is the set of unobserved attributes of the individual. The utility difference  $Y_i^*$  is also unobserved. What we do observe is only whether an individual goes to the government clinic for the condoms,  $Y_i = 1$ , or the individual buys them from the CSM program,  $Y_i = 0$ . We will assume that we will observe  $Y_i = 1$  if and only if  $Y_i^*$  is greater than some specified amount, say zero, and  $Y_i = 0$  otherwise. Then the probability  $P$  of observing  $Y_i = 1$  is given by:

$$P\{Y_i = 1\} = P\{Y_i^* \geq 0\} = P\{X_i'\alpha + Z_i'\beta + u_i > 0\} = P\{-u_i \leq X_i'\alpha + Z_i'\beta\} \quad (2)$$

The last term in equation (2) defines the cumulative distribution function of  $-u_i$ , i.e.,  $F(X_i'\alpha + Z_i'\beta)$ . For a symmetric distribution,  $F$  is also the cumulative distribution function for  $u_i$ . The symmetric distribution that we will use is the standard normal distribution. Estimation of the parameters  $\alpha$  and the  $\beta$  will therefore take place using the Probit model by maximum likelihood methods.

Data on  $Y_i$ ,  $X_i$ , and  $Z_i$ , will come from the exit survey of 2,533 individuals by PSI who were randomly selected from condom outlets such as kiosks, hospital/clinics, bars/lodgings, pharmacies, retail shops and wholesale stores in five major townships in Tanzania. The findings

were summarized in Badru (2000). Questions were asked about condom behavior as well as respondent characteristics in terms of age, gender, marital and partnership status, income sources, ownership of assets, education, religion and location. The dependent variable was derived from the answers to the question: “How much do you usually pay per pack?” which was labeled HOWMUCHP in the PSI data. It is clear that anyone responding to this question is going to be a user/consumer of condoms. This makes it an appropriate data source (purposive sample) to use to test why some people use free condoms and others pay for them. Brent (2009) gives a fuller description of this data source.

1,272 individuals responded to this price question. Of these, 37 were put in the “none” category (2.91 percent of the total) so we defined  $Y_i = 1$  as obtaining the condoms free. The remaining 1,235 did not get their condoms from the free government program and they were classed as  $Y_i = 0$ . As Badru points out, of those who regularly use condoms, 90% used the Salaama brand promoted by the CSM program. So the 1,235 can be assumed to be typical of CSM consumers.

For the  $X_i$ , the characteristics of individuals that are to indicate responsiveness to stigma, we used a wide range of specifications. The statistically significant ones (at the 5% level or lower) are listed in table 1. We explain the role of these significant  $X_i$ , variables when we analyze the estimation results. In the PSI survey, no question concerning the amount of earnings

was reported. However, nine sources of income were identified and these were used as possible proxy measures for ability to pay. In most countries education is strongly associated with income, so education variables were added to the list of possible  $Z_i$  measures. The significant ability to pay variables are presented in table 1. Also given in table 1 is the summary description of the data used.

**Table 1: Definitions of the Variables used in the Statistical Analysis and Data Description**

<b>Variable</b>	<b>Definition</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>
<b><math>Y_i</math>: Dependent Variable</b>	Individual usually gets condoms free (DV)	0.03	0	1
<b><math>Z_i</math>: Individual Characteristics</b>				
Partnerbuy	The partner usually buys the condoms (DV)	0.14	0	1
PartnerSpouse	The partner the last time one had sex with was the spouse (DV)	0.40	0	1
Age	Age of individual (in years)	27	12	60
Mbeya	Individual resides in Mbeya region (DV)	0.21	0	1
Number of Partners	Number of different persons one has had sex with in last year	3	0	200
<b><math>X_i</math>: Ability to Pay Measures</b>				
Income Source8	Source of income is from self-employment commerce (DV)	0.48	0	1
Income Source9	Source of income is other (DV)	0.03	0	1

## Analysis of the Results

The estimates of the Probit coefficients are shown in table 2. Equation 1 is the main result as it has all the variables listed there with coefficients that are significant at least at the 5% level. Equation 2 gives the better fit (it explains 58% of free condom variation, as opposed to 48% in equation 1). But the new variable added, the Number of Partners, is significant only at the 10% level and its presence reduces the significance level of Age and Income Source9.

**Table 2: Probit Estimates with the Dependent Variable being Condoms Obtained Free (z-statistics Based on Robust Standard Errors).**

Right-Hand Side Variables	Equation 1		Equation 2	
	Coefficient	z-statistic	Coefficient	z-statistic
<b><math>Z_j</math>: Individual Characteristics</b>				
Partnerbuy	1.78	4.05	1.96	3.40
PartnerSpouse	1.47	3.88	1.23	2.82
Age	0.07	2.25	0.08	1.80
Mbeya	1.16	3.08	1.22	3.04
Number of Partners			- 0.37	1.79
<b><math>X_j</math>: Ability to Pay Measures</b>				
Income Source8	0.81	2.06	0.96	2.14
Income Source9	1.46	2.02	1.53	1.79
Constant	- 7.51	5.43	- 7.16	4.36
Number of Observations		1210		1055
Pseudo $R^2$		0.48		0.58

If the stigma of being seen obtaining condoms free from the government clinic were to be felt strongly by a person, it would make sense for that person to try to get the sex partner to go to the clinic on the person's behalf. Not only is Partnerbuy highly statistically significant, it also has the expected positive sign. On its own Partnerbuy explained 16% of the variation in free condom behavior. If ability to pay were the issue, then if the partner is going to pay for the condoms then one would expect either a zero effect (what the partner paid would be irrelevant) or that the coefficient would have a negative sign (one would want the partner to pay a high price for good quality condoms). If one were married, and the last person one had sex with was the spouse, then there should be no stigma in obtaining condoms from the free government clinic. This expectation was confirmed by the data as PartnerSpouse had a positive sign. Support was also found for the idea that mature individuals would be more likely to go to the free clinics than younger people who society did not encourage to be sexually active. The Mbeya region had the highest HIV prevalence rate in Tanzania according to the national representative Tanzania Commission for AIDS (2005) survey. As areas of highest risk would be those areas where people were most likely to put up with the stigma of obtaining free condoms, the positive sign to Mbeya is as expected. The final proxy variable for stigma that was detected in the data, which appears only in equation 2, was the number of different sex partners one had in the last year. If a person were very sexually active, that person would not want to be seen to be sexually active by going to the government clinic. The Number of Partners had the expected negative sign, but it was only significant at the 10% level.

It is interesting to note that neither religion (catholic / protestant / Islam) nor education level (no education / primary / secondary) significantly affected the decision whether or not to go to the free government clinic. In a separate statistical analysis of whether a person *never* used condoms, religion and education were important; a catholic person was more likely to never use condoms as was someone without education or who had only finished the primary level. So religion and education determined whether condoms were used or not, but not whether if they were used, whether they were going to be obtained from the clinic or the CSM program.<sup>3</sup>

There were nine sources of income that were tested as ability to pay measures. These sources, expressed as dummy variables (DV) were: Income Source1 was “Unemployed”; Income Source2 was “Housewife”, Income Source3 was “Student”; Income Source4 was “Salaried, Government”; Income Source5 was “Salaried, Private”; Income Source6 was “Salaried, Other”; Income Source7 was “Self-Employed, Farmer”; Income Source8 was “Self-Employed, Commerce” and Income Source9 was “Other”. The only two income sources that were significant were sources 8 and 9, and both of these had a positive sign. Thus, in Tanzania, street

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<sup>3</sup> It was not possible to undertake a nested Probit model, with the decision where to obtain the condom free conditional on wanting to use condoms at all, as very few people answered both questions (i.e, how much do you usually pay and do you never use condoms).

traders and those with non-conventional sources of income appear to have the least ability to pay for condoms.<sup>4</sup>

## **Summary and Conclusions**

To help prevent the transmission of HIV in populations like those in Sub-Saharan Africa where transmission is mainly via heterosexual couples, it is important that condoms be used, and when they are used, be used for sexual activity and not for other purposes. To achieve this end, there needs to be a partnership between public and private provision. Free condom government provision should be accompanied by a price subsidized condom marketing program. The partnership works by catering for two kinds of would-be condom user.

Firstly, there are those who would like to use condoms for sex, but cannot afford them at cost or even a subsidized price. If they are willing to put up with some embarrassment, they go to the free government clinic. Secondly, there are those who are not willing to go public with their sexual intentions and may be willing to pay to avoid the stigma. Hence they may be willing to

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<sup>4</sup> We could not use the wealth measures given in the PSI data as proxies for ability to pay because very few persons answered both questions on assets and the questions indicating an aversion to stigma. For example, those who had no floor were statistically positively related to obtaining their condoms free when included with Partnerbuy. But, just 390 observations were used for this estimation equation.

pay for condoms on a private market. A CSM program subsidizes the price and this may be enough of an incentive for them to buy and use condoms for sex.

On the other hand there is a group not accommodated by the joint program. This is the one where the ordeal price of free condoms is too high, yet the subsidized price of the CSM condom is considered to be even higher. These people do not obtain condoms. Many in this group would be those who do not intend to use condoms for sex. Their withdrawal would not be much of a social loss. Although there would be some discouraged who would have used the condoms for sex, the problem is not the existence of an ordeal mechanism *per se*, but rather the concern is that they value condoms so low. The education part of the CSM program aims to ensure that this low valuation would be reversed.

The moral hazard problem of providing free condoms is a real one. Lest you consider making use of the ordeal mechanism for condoms an uncivilized solution, recall that the UK National Health Service functions largely using an ordeal mechanism. Medical Care is rationed not by price, but by requiring that patients have the inconvenience of waiting in line. Nor should the role of stigma and its solution be an issue just related to condom programs. For example, Thiede et al. (2004) argue that it is the greater confidentiality of private providers that accounts for higher income groups in South Africa paying for VCT services that are provided free at government clinics where their anonymity is not being safeguarded (leaving them vulnerable to

stigma). Note that Thiede et al. conjecture that it is to avoid stigma that people are willing to pay for the services privately. We were able to test this hypothesis empirically.

The appeal to the existence of an ordeal mechanism as a device for solving the moral hazard problem entailed in free condoms provides a deeper understanding of the usual Microeconomic explanation for price discrimination. In the standard model (whether it be one with a welfare maximizing government using the Ramsey rule, or a profit maximizing monopolist) one group of consumers is charged a lower price than another whenever its price elasticity of demand is greater. Gertler et al. (1987) have demonstrated that low income earners have a higher price elasticity of demand for health than high income earners, so one should expect that the poor go to the government clinics for free condoms. In addition to elasticity differences, price discrimination requires that groups can be kept separate. It is the strength of the preference to avoid stigma, and the income level of the would-be condom user, that explains the segmentation that takes place in the market for condoms. Those who cannot bear stigma and can afford to avoid it are served by the CSM program; and those who can tolerate stigma and have low incomes go to the free government clinics.

Of course, charging different prices to different consumers is not price discrimination if the quality of the product is different. But, what constitutes quality in the context of condoms? It may well be that greater accessibility and the capability to avoid stigma are key attributes determining condom quality and this warrants a non-zero price.

When the theory was applied to condom behavior in Tanzania, we saw that the best proxy indicator of an aversion to the stigma of obtaining free government condoms was whether or not the partner picks up the condoms from the clinic. Stigma would appear to be lower for those married and most recently had sex with their spouse, those more mature in age, and those who lived in the highest risk region. Those with the least ability to pay for condoms were street traders and those who earn their income in non-conventional ways.

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