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Are Unsafe Induced Abortions Contributing to Fertility Decline in Africa?: Findings from Egypt and Zimbabwe**

Background

OF the estimated 500,000 maternal deaths that occur annually around the world, unsafe abortions account for approximately 13 percent (World Health Organization, 1995). Unsafe abortions are pregnancies which tend to be unwanted and are subjected to deliberate intervention with the objective of termination, and they are characterized by the "lack or inadequacy of skills of the provider, hazardous and unsanitary techniques" (Kinoti *et al.*, 1995). In Africa, it is estimated that there are approximately 4 million unsafe abortions annually amounting to 26 unsafe abortions per 1000 women of reproductive age. The risk of dying from an unsafe abortion is highest in the Africa region (1 in 150) compared to Asia, Latin America and Europe where the risks of dying are 1 in 250, 1 in 800 and 1 in 2,600 respectively (World Health Organization, 1995). Based on hospital studies, up to 50 percent of maternal deaths in Sub-Saharan countries are attributable to abortions. While these figures are estimates, they do suggest that unsafe abortions constitute a serious public health challenge which warrants the utmost attention of national governments (World Health Organization, 1994). The policy actions taken by African governments on abortion have been within the context that induced abortion is a legal and not a public health issue. As a rule, laws on induced abortion restrict its use in very limited circumstances such as to protect the life of the mother, and in cases of rape and incest (Henshaw, 1990). Several scholars have argued that such restrictive policies are

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unlikely to reduce the demand for abortion services (Maine *et al.*, 1994; Bleek and Asante-Darko, 1986; Chi *et al.*, 1977). Rather, they increase the likelihood of induced abortions being performed under unsafe and ultimately life threatening conditions.

Given that the idea of legalizing abortion is highly politicized in many African countries, governments are unlikely to change abortion laws without public support. However, efforts at educating policy makers can be aided by the availability of verifiable evidence that current abortions laws have undesired effects on other policies. The case of induced abortions is an excellent example. Several governments now have policies and programmes (mostly family planning) that are designed to reduce total fertility rates. What may not be fully recognized by policy makers is that induced abortions regardless of whether or not they are illegal or unsafe, have direct effects on total fertility rates and consequently the level of effort required by family planning programmes to achieve total fertility rate targets. The availability of approaches that permit an examination of the effects of induced abortion on family planning effort could prove to be a very useful tool for policy dialogue on abortions. The Target-Cost Model, software programme is an example that such dialogue is feasible.

The Target-Cost Model was developed by The Futures Group (Stover *et al.*, 1993), an upgrade of the Target-Setting Model developed by Bongaarts and Stover (1986). The Target-Cost Model, like its predecessor was based on previous work by Bongaarts (1982) which showed that the observed total fertility rate in a given population is a function of the combined inhibiting effects of intermediate or proximate variables on total fecundity. Total fecundity is defined as the total fertility rate that would be achieved by a given population in the absence of the inhibiting effects of intermediate variables. The relationship between total fertility, the intermediate variables, and total fecundity are expressed in the equation below.

$$TFR = Cm . Cc . Ci . Ca . Cs . TF$$

which are defined as follows:

<i>Definition</i>	<i>Data Entered into Target-Cost Model</i>
TFR = Total Fertility Rate which is the total number of births a woman will have at the end of her reproductive years	Total fertility rate
Cm = index of marriage. This is a measure of exposure to sexual activity	Percent of women either in marriage or in union
Cc = index of contraception. This is a measure of the use of contraception among fecund women	Contraceptive prevalence rate (%) Average use effectiveness of methods Discontinuation rates

- C_i = Index of postpartum infecundability. This is a measure of the practice of lactation and postpartum abstinence among fecund women. Median duration of postpartum infecundability (in months)
- C_a = Index of induced abortion. This is a measure of presence of induced abortion. Total abortion rates which the total number of induced abortion a woman will have during her reproductive years
- C_s = Index of sterilization. This is a measure of the presence of sterilization among women of reproductive age. Percent of women aged 45-49 who remain childless
- TF = Total fecundity. This is the total fertility rate that would be achieved by a given population in the absence of the inhibiting effects of intermediate variables listed above. This is calculated internally by the Target-Cost Model based on the above data entered.

A detailed description of the Target-Cost Model can be found in Stover *et al.* (1993). The usefulness of this model is determined by (1) how representative the input data are for the population in question, and (2) the accuracy of the data. In cases where comparisons are made between two periods, accurate and representative data will be required for the periods. Such data are now available in an increasing number of African countries through Demographic and Health Surveys.

Study Objectives

The objectives of this paper are to:

1. Examine the effect of induced abortions on the decline of total fertility rates in two African countries.
2. Discuss the implications of rising induced abortion rates for maternal health within the context of restrictive legal environments.
3. Suggest recommendations for reducing the incidence of abortion related maternal deaths.

Study Hypotheses

The hypotheses tested were that:

- (i) Total abortion rates remained constant between base year and the end year in the countries under consideration, and it did not exert additional effects on contraceptive prevalence rates in the Target Cost Model.

- (ii) Total abortion rates did not remain constant between base year and the end year in the countries under consideration, and it exerted additional effects on contraceptive prevalence rates in the Target Cost Model.

Total abortion rate is defined as "the total number of abortions a woman would have if she survived to age 49 years and had abortions at the prevailing age-specific rates" (Stover *et al.*, 1993).

Methodology

To test the hypotheses above, nationally representative data on health and population indicators required by the Target-Cost Model had to be available for two consecutive periods. Chronologically, the first period is the base year and the second period is the end year. Version 1.19 of Target-Cost software which was DOS compatible and was installed and used on a 486 IBM compatible desktop computer. The following procedures were performed:

- (1) All inputs in the base year were entered into the model. The base year is the start or baseline year for which the analysis is being conducted. The data were obtained from Demographic and Health Surveys (DHS) for Egypt (1988 and 1992) and Zimbabwe (1988 and 1994) (see Appendix 1 and 2).
- (2) All the inputs for the end year except the observed contraceptive prevalence rates were entered for the model. The term "observed contraceptive prevalence rate" refers to the actual contraceptive prevalence rate reported in the DHS in the end year or second period (see Appendix 1 and 2).
- (3) Based on the above, the model solved for an expected contraceptive prevalence rate for the end year to achieve the known end year total fertility rate. The model in the first instance assumed no change in abortion rates (which was kept at zero for the two periods).
- (4) Comparisons were made between observed contraceptive prevalence rates at end year (reported by DHS) and the expected rate (generated by the Target-Cost Model). Confidence intervals at 99.7 percent were constructed for observed and expected contraceptive prevalence rates for each country. An overlap between the confidence intervals of the observed and expected rates would indicate that the difference between the observed and expected rates was not statistically significant at $p < 0.003$. Conversely, if no overlap was detected, one can conclude that the observed difference was statistically significant at the same level of significance and could not be explained merely by the effect of chance.
- (5) The magnitude of the effect of change in particular proximate determinants were examined in terms of the change in percentage points between contraceptive prevalence rate at the end year, assuming no change in the proximate determinant from base year, and the end year contraceptive prevalence rate using actual values of the proximate determinant in the end year.

- (6) The magnitude of change in abortion rates was determined indirectly by simulating different values of change in total abortion rates between base year and end year, and solved for a corresponding CPR, given other inputs in the model. Based on this exercise, the magnitude of change of total abortion rates will show a corresponding contraceptive prevalence rate that should be observed at the end year. This analysis only measures the change in abortion rates between the base and end years but not the actual abortion rates during both periods.

The Countries: Egypt and Zimbabwe

Egypt and Zimbabwe were selected for this study because of the availability of data from two consecutive series of Demographic and Health Surveys, and evidence of fertility decline. As mentioned earlier, Demographic and Health surveys were performed in Egypt in 1988 and 1992, and in Zimbabwe in 1988 and 1994. Table 1 shows selected background characteristics of both countries indicating that they share some similarities such as life expectancy at birth, per capita GNP. Zimbabwe has a smaller percentage of female illiteracy, a smaller infant mortality rate and a larger annual rate of population growth.

TABLE 1: SELECTED BACKGROUND CHARACTERISTICS OF EGYPT AND ZIMBABWE

	<i>Egypt</i>	<i>Zimbabwe</i>
Population (1991)	54 million	10 million
Annual Rate of Population Growth (1991-2000)	2.5	3.4
Life expectancy at birth (1991)	61 years	60 years
Infant Mortality Rate (1991)	59 per 1000 live births	48 per 1000 live births
Maternal Mortality Rate (1988)*	300 per 100,000 live births	330 per 100,000 live births
Percent Female Illiteracy (1991)	66%	40%
Per Capita GNP (1991)	US\$610	US\$650
Percent Population < 15 years (1991)	39.1%	44.5%
Prevalence of malnutrition under 5 years (1991)	13%	12%

Sources: World Bank (1993). World Bank Development Report 1993.

* United Nations Development Programme (1992). World Development Report 1992.

Results

Table 2 shows the effects of changes in proximate determinants of fertility, namely the percent of married women, median duration of postpartum infecundability and percent of sterility, on contraceptive prevalence rate in Zimbabwe between 1988 and 1994. A 1.1 percentage points reduction in the proportion of married women accounted for a 0.8 percentage point reduction in the proportion married who were required to use contraceptives, given other data in the model. Postpartum infecundability is the period women are not 'exposed to the risk of pregnancy either because they are amenorrheic or are still

abstaining from sex following birth.' A longer duration of postpartum infecundability means a smaller proportion of women will need to use contraceptives to achieve specific reductions in the total fertility rate. As shown in Table 2, the median postpartum infecundability increased by 0.5 month during this period; this was associated with a concomitant reduction in the need for contraceptive use by 0.7 percentage points. Furthermore, the percent of women aged 45-49 years who were childless reduced by 2.3 percentage points, and this change accounted for an increased need for contraceptive use by 1.6 percentage points. These results indicate that the direction of change in postpartum insusceptibility and percent of women married are consistent with increases in their fertility inhibiting effects, whereas the decline in sterility indicated a reduction in its fertility inhibiting effect. Furthermore, the gains made by the combined effects of marriage and postpartum insusceptibility (-1.5 percentage points) were nullified by the effects of sterility (+1.6 percentage points).

TABLE 2: CHANGES IN PROXIMATE DETERMINANTS OF FERTILITY AND THEIR EFFECTS ON CONTRACEPTIVE PREVALENCE RATES IN ZIMBABWE, 1988, 1994 (end target TFR = 4.3)

<i>Proximate Determinant</i>	<i>Base Year</i>	<i>Target Year</i>	<i>Change</i>	<i>Effect on Contraceptive</i>
	<i>(1988)</i>	<i>(1994)</i>	<i>(in Points)</i>	<i>prevalence rate</i>
				<i>(in percentage points)</i>
Percent Married Women 15-49 years	62.9	61.8	-1.1	-0.8
PostPartum Infecundability (months)	13.6	14.1	+0.5	-0.7
Percent Sterility	3.4	1.1	-2.3	+1.6

In Egypt however, there was a slight increase in the percent of women who were in a married union by 0.2 percentage points from 65.1 to 65.3 percent yielding an increase in the required contraceptive prevalence rate by 0.1 percentage point, in the presence of other model inputs, to achieve a total fertility rate of 3.9 (see Table 3). The median duration of postpartum infecundability during this period decreased; by 3.1 percentage points and this increased the contraceptive prevalence rate required to achieve the target TFR by 5.6 percentage points. The percent of sterile women did not change during this period and so had a net effect of zero on contraceptive prevalence rate. The overall direction of these proximate determinants and their combined effects indicate a reduction in their fertility inhibiting effects. Table 4 shows the percent of married women using any family planning method at base year, the observed per cent of women using any method at end year (1992 for Egypt and 1994 for Zimbabwe), and the percent expected to be using any method based on target model computation. For Egypt, the expected contraceptive prevalence rate found to be consistent with a target total fertility rate of 3.9 in 1992 was 52.5 percent. In Zimbabwe, expected contraceptive prevalence rate consistent with a target total fertility rate of 4.5 in 1994 was 55.2 percent. A critical assumption in this modeling is that total abortion rates remained constant during the period under consideration for Egypt and Zimbabwe.

TABLE 3: CHANGES IN PROXIMATE DETERMINANTS OF FERTILITY AND THEIR EFFECTS ON CONTRACEPTIVE PREVALENCE RATE IN EGYPT 1988, 1992 (end target TFR = 3.9)

<i>Proximate Determinant</i>	<i>Base Year (1988)</i>	<i>Target Year (1992)</i>	<i>Change (in Points)</i>	<i>Effect on Contraceptive prevalence rate (in percentage points)</i>
Percent Married Women 15-49 years	65.1	65.3	+0.2	+0.1
Post Partum Infecundability (months)	9.2	6.1	-3.1	+5.6
Percent Sterility	4.4	4.3	-0.1	0

TABLE 4: MAGNITUDE OF DIFFERENCES BETWEEN OBSERVED AND EXPECTED CONTRACEPTIVE PREVALENCE RATE IN ZIMBABWE AND EGYPT

<i>Country</i>	<i>Contraceptive prevalence rate¹ (Percent)</i>			<i>Difference* (in percentage points)</i>
	<i>Base year</i>	<i>Observed end year</i>	<i>Expected at end year</i>	
<i>Egypt</i>	37.8	47.1	51.5	-5.4
<i>Zimbabwe</i>	43.1	48.1	55.2	-7.1

1. This is the difference in percentage points between observed contraceptive prevalence rate and expected prevalence rates. With the minus sign, the value indicates the percentpoints fewer women who were notrequired to use contraception in order to achieve the observed total fertility rate at the end year.

Compared to the expected contraceptive prevalence rate, the observed (actual) contraceptive prevalence rate was 5.4 percent less than expected in Egypt and 7.1 percent less than expected in Zimbabwe. Confidence intervals at 99.7 percent constructed for observed and expected contraceptive prevalence rates are shown in Table 5. As previously mentioned, this procedure seeks to determine whether a statistically significant difference exist between the observed and expected contraceptive prevalence rate in each of these countries.

TABLE 5: CONFIDENCE LIMITS OF OBSERVED AND EXPECTED CONTRACEPTIVE PREVALENCE RATES IN ZIMBABWE (1994) AND EGYPT (1992)

	<i>Observed (DHS Surveys)</i>				<i>Expected (Target-cost model)*</i>			
	<i>Contraceptive Prevalence rate (%)</i>	<i>3 SD²</i>	<i>99.7% Confidence Limits</i>		<i>Contraceptive prevalence rate (%)</i>	<i>3 SD²</i>	<i>99.7% Confidence Limits</i>	
			<i>Lower</i>	<i>Upper</i>			<i>Lower</i>	<i>Upper</i>
<i>Egypt</i>	47.1	1.5	45.6	48.6	52.5	0.04	52.46	52.54
<i>Zimbabwe</i>	48.1	3.0	45.1	51.1	55.2	0.1	55.1	55.3

1. Assumes no change in total abortion rates between base and end years.

2. Standard deviation.

There was no overlap between the range of values for the observed and expected contraceptive prevalence rates in Egypt and Zimbabwe, strongly indicating that the difference between observed and expected values is not merely due to the effect of chance. The findings from the constructed 99,7 percent confidence intervals for both Egypt and Zimbabwe indicate that there was a statistically significant difference between the observed and expected contraceptive prevalence rates. Therefore, the magnitude of difference have to be explained by other factors. Some possible explanations include (a) imprecision in the data used in the model, (b) the exclusion of unmarried women in some of the data used in the model, (c) under-reporting of contraceptive prevalence rate JTi demographic and health surveys, (d) failure to account for the possibility of the concurrent use of more than one method by some women, and (e) the failure of abortion rates remaining constant between the two periods coupled with an increase in abortion rates. Imprecision in the estimates of data entered into the model is possible but unlikely because DHS data are nationally representative. Furthermore, the sample sizes in these surveys are large enough that the magnitude of standard error of the estimates as shown in the appendices of country survey reports were not unusually large. The use of contraceptive prevalence rates for married women and not all women does not adequately include contraceptive practices among groups like adolescents. Demographic and Health Surveys have consistently shown that contraceptive use is considerably higher among married women than among adolescents. This then suggests that the effect of contraception as an inhibitor of fertility could be overestimated by the model if the results are generalized to all women of reproductive age. Conversely, the inhibiting effects of other proximate determinants are likely to be underestimated. This problem can resolved however, by confining the conclusions made from the results of the model analyses to married women only.

Under-reporting of contraceptive prevalence rates is less likely to have an effect on the results of the model analyses because the methodology for field interviews and the questions asked pertaining to contraceptive use were consistent for both periods in both countries (Rutstein, 1996). Even if under-reporting occurred, its effects on the model calculations are likely to be negligible provided the pattern of under-reporting remained stable during both rounds of DHS in both countries. There was no indication that patterns of under-reporting had changed in both countries between the base and end years. The prospect of simultaneous use of more than one contraceptive method was reviewed. By not accounting for this possibility, it is quite likely that the effects of contraceptive use will be underestimated. Condoms are more likely than others to be used in conjunction with other methods and to determine the effects of concurrent use of condoms and other methods on expected contraceptive prevalence rates, condoms as a proportion of all methods was increased by an additional ten percent, raising the total method mix to 110 percent in the model. The revised estimates of expected contraceptive prevalence rates did not differ significantly from initial expected estimates. This indicates that even though concurrent use of two methods (particularly the condom plus another method) may have been underestimated, it was unlikely to have made a difference in the expected contraceptive prevalence rate.

The failure of abortion rates to remain constant is probably the most plausible explanation for the difference between observed and contraceptive prevalence rates. This is because the effects of other proximate determinants have been accounted for using the most reliable and nationally representative data available. Furthermore, there is a statistically significant difference between observed and expected contraceptive prevalence rates at end year coupled with the smaller than expected observed prevalence rates. These findings cast very serious doubt on the assumption that total abortion rates remained constant among married women between the base and end years. Therefore, it can be concluded that total abortion rates among married women did not remain constant between the base and end years in Egypt and Zimbabwe. In addition the results are consistent with an increase in total abortion rates.

Tables 6 and 7 show the results of simulation which predict the magnitude of change in total abortion rates that were consistent with observed contraceptive prevalence rates for Zimbabwe and Egypt. For Zimbabwe, an increase in the total abortion rate among married women of between 1.1 and 1.2 was consistent with the observed contraceptive prevalence rate of 48.1 per cent in the 1994. With respect to Egypt, an increase in total abortion rate of between 0.8 and 1.0 was consistent with the observed contraceptive prevalence rate of 47.1 per cent reported in the 1992 DHS. In a separate study (Johnston, 1996; Johnston and Hill, 1996) also reported a rise in total abortion rates for both Egypt and Zimbabwe during the periods reviewed in this paper. The authors used indirect methods based on Bongaarts' equations to calculate the rates from DHS data. Furthermore, the trend of increase in total abortion rate was also observed in Kenya, Senegal, and Morocco.

TABLE 6: TARGET MODEL SIMULATIONS ON THE EFFECTS OF ABORTION RATES ON PREDICTED CONTRACEPTIVE PREVALENCE RATE IN ZIMBABWE, 1988, 1994

<i>Change in total abortion rate</i>	<i>Predicted contraceptive prevalence rate¹ (in per cent)</i>	<i>Difference from expected contraceptive prevalence rate² (in percentage points)</i>
0.2	54.0	-1.2
0.4	52.7	-2.8
0.6	51.5	-3.7
0.8	50.3	-4.9
1.0	49.1	-6.1
1.1	48.5	-6.7
1.2	47.9	-7.3

1. The predicted contraceptive prevalence rate is the proportion of women who would be required to use contraception to achieve total fertility rate of 4.3 in 1994 accompanied by a specified increase in total abortion rates by 1994, given all other proximate determinants, method mix, use continuation and method effectiveness.

2. This is the difference between the predicted contraceptive prevalence rate as a result of an increase in total abortion rates and expected contraceptive prevalence rate at constant total abortion rates between 1988 and 1994. The minus sign implies that fewer percentage of women who need to use contraception as a result of an increase in the average number of induced abortions in the country.

TABLE 7: TARGET MODEL SIMULATIONS ON THE EFFECTS OF ABORTION RATES ON PREDICTED CONTRACEPTIVE PREVALENCE RATE IN EGYPT, 1988, 1992

<i>Change in total abortion rate</i>	<i>Predicted contraceptive prevalence rate¹ (in per cent)</i>	<i>Difference from expected contraceptive prevalence rate¹ (in percentage points)</i>
0.2	51.2	-1.3
0.4	50.0	-2.5
0.6	48.7	-3.8
0.8	47.4	-5.1
1.0	46.1	-6.4

1. As in Table 6.

2. As in Table 6.

Discussion

Without regard to health outcomes, the results described above suggest that induced abortions may be on the rise, and probably contribute to the decline of fertility in the countries reviewed. This observation is substantiated by Johnston and Hill (1996) who showed through indirect estimation methods that there was a trend of an increase in the role of induced abortions in fertility reduction in Egypt, and four other less developed countries. Even if induced abortion may be on the rise in Egypt and Zimbabwe, this paper does not provide any evidence to indicate that an increase in abortion will necessarily result in an increase in unsafe abortions, although this is possible in countries with restrictive and enforced abortion laws.

As pointed out in the introduction, unsafe abortions contribute to maternal morbidity and mortality. One reason that may not necessarily be associated with rise in the prevalence of unsafe abortions is the increase in the number of medical doctors trained in the past decade in Zimbabwe and Egypt. Furthermore, doctors who are better trained in gynecological and obstetric procedures and are more likely to provide comparatively safer abortion services to women and girls able and willing to pay for such services. Even if women were able to pay for these services, the preponderance of doctors in urban areas still preclude women in rural areas from having access to safe abortion services. Women in rural areas who seek abortion services are probably more likely than urban dwelling women to resort to unsafe methods with their dire consequences.

Unfortunately, the environment for the provision of abortion services remain restrictive in both Zimbabwe and Egypt, and such an environment is likely to limit access to safe abortion services even in the presence of an increased number of trained doctors. It would appear that a considerable proportion of abortions which now take place may could well be unsafe and therefore be contributing inadvertently to fertility reduction. The proportion of maternal deaths attributed to induced abortions are likely to increase unless steps are taken to prevent the need for, and recourse to unsafe abortions.

Governments that have existing family planning programmes can and should be able to do the following, even if legal abortion services are restricted: (a) increase the use of modern contraceptives among women, especially those who reside in rural areas, among those women who are unmarried and sexually active, and women with a previous history of induced abortions, (b) implement measures that result in an increased ratio of men and women who use permanent methods such as sterilization, rather than short-term methods like the oral pill¹, and (c) improve the quality of services provided in the current family planning programme to increase use-effectiveness.

For national governments to move toward the liberalization of abortion laws, they must gain more understanding of the interrelationship between abortion policies and other related policies such as population, fertility regulation, and reproductive health in general (Coeytaux, 1988). The Target-Cost Model, as utilized in this study, has proven useful in examining macro-level relationships between rising abortion rates, fertility decline and contraceptive use. The model is potentially useful as a tool for assisting policy makers to recognize the implications of an inevitable rise in abortion rates within the context of restrictive abortion policies. It can also draw attention to options national governments could explore within their family planning programmes to reduce unwanted pregnancies and the prevalence of induced abortions. As serial nationally representative data become more readily available for other countries, it will be possible for national planners to indirectly model the effects of induced abortion on fertility decline, and take appropriate steps to reduce abortion related deaths.

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¹This is especially applicable to women and men who have achieved their desired family size.

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Appendix 1

PROGRAMME PARAMETERS FOR PROJECTING CONTRACEPTIVE PREVALENCE RATES FOR EGYPT

<i>Proximate Determinants of Fertility</i>	1988	1992
Number of Women in the Reproductive Age	12,348,720	13,162,080
Percent Women Married	65.1%	65.3%
Post Partum Infecundability	9.2 months	6.1 months
Sterility	4.4%	4.3%
Total Fertility Rates	4.7	3.9
Contraceptive Prevalence Rate	37.8%	47.1%

Method Mix		
<i>Method</i>	1988	1992
Condom	6.3%	4.2%
Female Sterilization	4.0%	2.3%
Injectable	0.3%	1.1%
IUD	41.7%	59.2%
Male Sterilization	0.0%	0.0%
Norplant	0.0%	0.0%
Oral Pills	40.3%	27.4%
Traditional Methods	6.3%	4.9%
Vaginal Barrier	0.0%	0.9%
Vaginal Tablets	1.1%	0.0%

Method Attributes		
<i>Method</i>	<i>Effectiveness (%)</i>	<i>Discontinuation (%)</i>
Condom	83.0	47.1
Female Sterilization	100	0.0
Injectable	100	20.0
IUD	98.2	125
Male Sterilization	100	1.0
Norplant	100	10.0
Oral Pills	93.1	42.1
Traditional Methods	83.2	40.5
Vaginal Barrier	83.2	47.1
Vaginal Tablets	83.2	47.1

Sources: Fatma *et al.* (1993). *Egypt Demographic and Health Survey, 1992*.

Fatma *et al.* (1989). *Egypt Demographic and Health Survey, 1988*.

Stover *et al.* (1993). *Target-Cost: A Model for Projecting Family Planning Service Requirements and Costs to Achieve Demographic Goals*.

Appendix 2

PROGRAMME PARAMETERS FOR PROJECTING CONTRACEPTIVE PREVALENCE RATE
FOR ZIMBABWE

<i>Proximate Determinants of Fertility</i>	1988	1994
Number of Women in the Reproductive Age	2,163,300	2,630,600
Percent Women Married	62.9%	61.8%
PostPartum Infecundability	13.6 months	14.1 months
Sterility	3.4%	1.1%
Total Fertility Rates	5.5	4.3
Contraceptive Prevalence Rate	43.1%	48.1%

Method Mix		
<i>Method</i>	1988	1994
Condom	2.8%	4.8%
Female Sterilization	5.3%	4.8%
Injectable	0.7%	6.6%
IUD	2.5%	2.1%
Male Sterilization	0.5%	0.4%
Norplant	0.0%	0.4%
Oral Pills	72.0%	68.5%
Traditional Methods	16.2%	12.4%
Vaginal Tablets	0.0%	0.0%

Method Attributes		
<i>Method</i>	<i>Effectiveness (%)</i>	<i>Discontinuation (%)</i>
Condom	83.0	47.1
Female Sterilization	100	0.0
Injectable	100	16.0
IUD	98.2	15.0
Male Sterilization	100	1.0
Norplant	100	10.0
Oral Pills	98.1	16.0
Traditional Methods	83.2	29.0
Vaginal Tablets	83.2	44.0

Sources: Zimbabwe Central Statistics Office. (1995). *Zimbabwe Demographic and Health Survey, 1994*. Zimbabwe Central Statistics Office. (1989). *Zimbabwe Demographic and Health Survey, 1988*. Stover et al. (1993). *Target-Cost: A Model for Projecting Family Planning Service Requirements and Costs to Achieve Demographic Goals*.