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**IMPACT OF THE PROXIMATE DETERMINANTS ON THE FUTURE COURSE
OF FERTILITY IN SUB-SAHARAN AFRICA***

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INTRODUCTION

In contrast to what is now observed in most regions of the world, fertility remains very high in sub-Saharan Africa. Although the onset of fertility decline has started in several sub-Saharan African countries in the 1990s (Cohen, 1998 and Kirk & Pillet, 1998), the magnitude, the pace, and the durability of these declines are yet not well established. In addition, the fertility transition has not started in 14 countries of the region (i.e., in one out of three). Therefore, it is far from granted that over the next 50 years all countries in sub-Saharan Africa will catch up with the low levels of fertility experienced today in the rest of the world. In parallel to this hesitant fertility transition, the gains in mortality reduction obtained during the past decades are currently threatened, and in some cases reversed, in 35 countries in the region (i.e., in two out of three) that are considered as “highly affected” by the HIV/AIDS epidemic (United Nations, 2001). This could also delay, and will probably modify, the smooth completion of the fertility transition in sub-Saharan Africa.

This paper contends that sub-Saharan fertility will not necessarily decline as rapidly as it has been experienced elsewhere in the world. It also argues that African fertility levels will become much more contrasted and diverse across the sub-regions than it is currently assumed (the analysis is conducted for four sub-regions: Eastern, Middle, Southern, and Western Africa). Fertility levels depend on a variety of factors, usually grouped into “proximate determinants” and “intermediate determinants”. The latter (i.e., education levels, status of women, rates of employment, health systems, etc.) are presently far from favorable in sub-Saharan Africa (see, for instance, Lloyd and others, 2000), although it could be argued that accelerated urbanization will reinforce attitudes toward fertility reduction. Nonetheless, it is particularly difficult to predict whether the major improvements in the social and economic environment that have helped to trigger rapid fertility declines in other parts of the world will occur or not in most sub-Saharan Africa countries in the decades to come. For this reason, we have chosen here to focus on the proximate determinants of fertility and to assess, mainly from that angle, the future prospects for fertility decline in sub-Saharan Africa.

The paper will first review the various factors which explain the present high fertility levels and current low levels of contraceptive use in sub-Saharan Africa. Thereafter, it will examine various fertility and proximate determinants scenarios, using the FAMPLAN model. Finally, it will discuss other factors (also linked to the proximate determinants) that might influence future fertility trends in sub-Saharan Africa, including the HIV/AIDS epidemic.

I. THE CHALLENGE OF FERTILITY DECLINE IN AFRICA

Demographic survey results available at the end of the year 2000 provide fairly comprehensive information on contraceptive use in sub-Saharan Africa (United Nations, 1999 and U.S. Bureau of the Census, 2000). Data are available for 39 countries (out of a total of 49 countries), which account for about 90 percent of the total population of the region. Moreover, these data are quite recent, since only 4 of the surveys refer to the late 1980s but 24 surveys were undertaken between 1995 and 1999, which yields 1995 as the year of reference for the data. Data are scarce for Middle Africa, however, and only 4 countries (out of 9 in that sub-region) could be included in the analysis (see Annex, Table 1 A).

Table 1 shows, for the four sub-regions of sub-Saharan Africa, the percentage of « married » women in reproductive ages (MWRA) (these are the women in union) that are currently using a contraceptive method. The data show that the overall use of contraception is very low. Detailed results presented in the Annex (see Table 1 A) indicate that the use of contraception is over a quarter

of the women in union in only 9 countries in sub-Saharan Africa. The use of modern methods is even lower given the importance of traditional and folk methods in most countries.

Another striking feature are the major differences found between the four sub-regions. First, contraceptive use among married women varies from nearly 50 percent for the Southern sub-region as a whole, to less than 10 percent in Middle and Western Africa. Second, in the two latter sub-regions, traditional and folk methods represent 70 percent and nearly half of all methods used, respectively. The inefficiency of some of these methods raises several questions. Could the widespread use of traditional and folk contraceptive methods be taken as an indicator of an emerging demand for family planning services, a demand which cannot be presently satisfied by the organized, health/clinic supply sector? Or is that phenomenon the result of a generalized defiance against clinic supplied methods? One might also assume that the large recourse to traditional and folk contraceptive methods is consistent with the desire for a large family size, associated with adequate spacing between births. Consequently, the well-known failures of the traditional and folk methods would not be considered a problem by the women since they have “tried” to space their children, but “God” or other forces have decided otherwise.

TABLE 1. MARRIED WOMEN OF REPRODUCTIVE AGE CURRENTLY USING CONTRACEPTION, IN PERCENT, BY SUB-REGION *

<i>Sub-region (Number of countries Considered / total)</i>	<i>Average Year</i>	<i>Population in 2000 (000)</i>	<i>Population in percent</i>	<i>Clinic/supply Method</i>	<i>Traditional & others</i>	<i>Any Method</i>	<i>Percentage Traditional & Other methods</i>
Eastern Africa (16 / 18).....	1995	250 318	38.5 percent	13.0	5.1	18.2	28.2 percent
Middle Africa (4 / 9).....	1995	95 404	14.7 percent	3.0	6.9	9.9	70.1 percent
Southern Africa (5 / 5).....	1992	49 567	7.6 percent	45.6	1.5	47.1	3.2 percent
Western Africa (14 / 16)....	1995	224 183	34.5 percent	5.1	4.4	9.4	46.4 percent
Sudan.....		31 095	4.8 percent	6.9	1.4	8.3	16.9 percent
Sub-Saharan Africa *.....		650 566	100.0 percent	11.0	4.7	15.7	29.8 percent

*Weighted average according to total population of the countries considered and sub-region

Sources: 1) United Nations, 2001: World Population Prospects: The 2000 Revision;

2) United Nations, Levels and Trends of Contraceptive Use As Assessed in 1998,

ESA/P/WP.155, United Nations: New York, 1999 ; and

3) U.S. Bureau of the Census, International, Data Base, Table 55.

Prevalence of contraceptive use, by method and urban/rural residence.

Recent survey results also make possible to ascertain the slow growth in contraceptive use in sub-Saharan Africa for the recent period (see Table 2). Data are available for 25 countries, representing about 70 percent of the total population of the region, for an average period of ten years, covering in most cases the late 1980s and the 1990s (see Annex, Table 2 A). It is interesting to note that about two thirds of the countries reviewed have registered annual growth of contraceptive use that are lower than 1 percentage point. This is true for all methods taken together as well as for the use of clinic or supply contraceptive methods. Again, the differences between the four sub-regions are striking. For all methods, annual change of contraceptive use for Southern and Eastern Africa are slightly above 1 percentage point per year, whereas it is around half a percentage point for Western Africa and for Cameroon (the only country here representing Middle Africa). The average for sub-Saharan Africa as a whole is quite modest both for all the methods taken together and for the clinic or supply methods only (0.8 and 0.7 percentage point, respectively).

TABLE 2 – ANNUAL CHANGE IN PERCENTAGE POINTS GROWTH OF CURRENT USE OF CONTRACEPTION AMONG MARRIED WOMEN OF REPRODUCTIVE AGE, VARIOUS PERIODS, BY SUB-REGION

<i>Sub-region (Number of countries Considered / total)</i>	<i>Average date</i>		<i>Percent Of total pop. /Population 2000</i>	<i>Annual Change</i>		<i>Percentage Population Covered / Total population</i>
	<i>1st Survey</i>	<i>2nd Survey</i>		<i>Clinic or supply method</i>	<i>Any Method</i>	
Eastern Africa (9 / 18).....	1987	1997	38.5 percent	1.1	1.3	59.2 percent
Middle Africa (1 / 9).....	1991	1998	14.7 percent	0.4	0.5	15.6 percent
Southern Africa (4 / 5).....	1982	1992	7.6 percent	1.1	1.0	98.1 percent
Western Africa (10 / 16).....	1988	1996	34.5 percent	0.4	0.4	91.8 percent
Sudan.....	1979	1993	4.8 percent	0.2	0.3	
Sub-Saharan Africa *.....	1987	1996	100.0 percent	0.7	0.8	69.0 percent

*Weighted average according to total population of the countries considered and sub-region

Sources: 1) United Nations, World Population Prospects: The 2000 Revision, 2001 ;

2) United Nations, Levels and Trends of Contraceptive Use As Assessed in 1998, ESA/P/WP.155, New York: United Nations, 1999 ; and

3) U.S. Bureau of the Census, International Data Base, Table 55. Prevalence of contraceptive use, by method and urban/rural residence.

As to the levels of fertility, it is important to note that higher estimates of fertility (which correspond to the lowest and slowest growing rates of contraceptive use just reviewed) have been incorporated in the 2000 Revision of the World Population Prospects released recently by the United Nations (United Nations, 2001). As a result, the fertility levels estimated for the 1995-2000 period are quite different, and for a number of countries significantly higher, than those used in the 1998, 1996, and 1994 revisions of the United Nations population projections. Also, for those countries that until 2000 have had no fertility reduction or only an incipient decline – these are called “High Fertility Countries” – the medium fertility assumption posits a fertility decline at an average of one child per decade starting in 2005 or later. Consequently, 13 sub-Saharan countries are projected to still have total fertility rates above 2.1 children per women by the end of the projection period, i.e. 2045-2050 (see Annex, Table 3 A), whereas in the previous revisions projected fertility levels were set to reach 2.1 children per women in the 2030s in most cases.

From these data, it is clear that fertility remains “very” high in most sub-Saharan African countries. For the 1995-2000 period, half of the 47 countries considered had a total fertility rate above 6 children per woman and 37 countries (nearly 4 out of 5) had a total fertility rate above 5 children per woman. The picture is again very contrasted if one looks at the different sub-regions (see Table 3). For the 1995-2000 period, the total fertility rates of the Eastern, Middle, and Western sub-regions were estimated to be at least 6 children per woman. For Middle Africa, the current estimate of 6.4 is above the level ascertained for the 1950-55 period. For Eastern and Western Africa, current estimates at around 6 children per women are nearly one child less than the 1950-55 levels. Finally, only Southern Africa exhibits a current relatively low estimate: 3.3 children per woman (more than half of the 1950-55 level), reflecting a fertility transition that is well under way.

Current fertility levels are correlated with the levels of contraceptive use, which in turn are to a large extent the results of the family planning programs efforts carried out in each country. Family planning programs effort-scores were established for the world in 1982, and measured again in 1989, 1994, and 1999 (Ross & Mauldin, 1996 ; Ross and others, 1999; and Ross & Stover, 2000). These effort-scores consist of 30 indices, derived from questionnaires comprising a large number of items. The effort-scores are grouped in four components or dimensions which are: Policies and stage-setting

activities; Service and service-related activities; Record-keeping and evaluation; and Availability of contraceptive supply and services. In this analysis, we will use mainly the 1994 round which is the closest in time to the average year of the data set (i.e., 1995).

TABLE 3 - ESTIMATED PRESENT (1995-2000) AND FUTURE (2045-2050)
TOTAL FERTILITY RATES IN SUB-SAHARAN AFRICA, BY SUB-REGION

<i>Sub-region</i> (<i>Number of countries</i> <i>Considered / Total</i>)	<i>Total Fertility Rate</i>		
	<i>1950-1955</i>	<i>1995-2000</i>	<i>2045-2050</i>
Eastern Africa (17 / 18).....	6.92	6.09	2.51
Middle Africa (8 / 9).....	5.91	6.41	2.46
Southern Africa (5 / 5).....	6.45	3.29	2.10
Western Africa (16 / 16).....	6.85	5.95	2.36
Sudan.....	--	4.90	2.10
Sub-Saharan Africa.....	6.68	5.77	2.42

Source: United Nations, World Population Prospects: The 2000 Revision, 2001.

According to this work, the family planning programs effort-scores in 1994 range from modest to mediocre in most of the 30 sub-Saharan countries for which they were established (see Annex, Table 4 A). Indeed, the overall Program Effort Score, expressed as a percentage of the maximum attainable, was in 1994 below the 50 percent mark for 22 of the 30 countries (i.e., three out of four), reflecting less than expected or acceptable efforts geared at family planning programs. Interestingly enough, sub-Saharan programs score much better for the Policies and stage-setting activities than for the other three components. Whereas 22 countries were above the 50 percent mark for Policies and stage-setting activities, this was the case for only 7, 11, and 6 countries (out of 30 countries) for the other components, respectively. This means that, whereas in most countries some degree of commitment does exist (through leaders statements, enactment of population policies, adoption of laws and regulations favoring imports and/or advertisement of contraceptives, etc.), in only a handful of countries are the services actually offered, the programs adequately monitored, and the contraceptives available. The successful countries belong to the Southern sub-region, with the exception of Lesotho. In the Middle and Western sub-regions, no country had in 1994 combined “Service” and “Availability” effort-scores above 50 per cent. The same was true for the countries of Eastern Africa, with the exception of Kenya, Mauritius, and Zimbabwe.

The most recent effort-scores, prepared for 1999 for 31 sub-Saharan countries, reflect that much less countries score below the 50 percent mark for the overall Program Effort Score (only 12 countries out of the 31 surveyed). This round demonstrates also that both service delivery and evaluation have improved markedly (explaining the better overall scores) whilst availability of services remains poor (6 countries only out of 31 score above the 50 percent mark, i.e. the same number as in 1994). Finally, Ghana has joined the group of strong performers (namely, countries that score above 50 percent for combined “Service” and “Availability”), the first Western Africa country to do so (Ross & Stover, 2000).

The limited availability and accessibility of contraceptive services and commodities, and the associated poor quality of family planning activities that are service-related must be put into perspective with the poor social settings but also with the relatively low demand for family planning services prevailing in most sub-Saharan countries. Although unmet needs for family planning are important in the region as a whole, it is worth noting also that when one adds up current contraceptive use and unmet needs, the estimated total demand obtained is often only around 50 or

60 percent of women in union. These figures are noticeably inferior to those found in other parts of the world, where the total demand among the women in union generally reaches 70 or 80 percent (and sometimes more). The lower sub-Saharan demand is probably the consequence of the fact that the need for family planning in sub-Saharan Africa is more for spacing than for limiting, which is associated with high numbers of desired children as expressed by African women in many surveys (Feyisetan & Casterline, 2000). Various cultural, social, and economic factors lie behind these preferences. One may argue, as this has been sometimes observed, that the demand for limiting will grow as the use of contraception rises and will eventually exceed the demand for spacing (Moreland & Guengant, 1994). As a result of this process, average number of desired children will decrease, in particular in countries where Information, Education and Information (IEC) programs are implemented to stress the health and socio-economic benefits of family planning along with smaller family size arguments. However, for a variety of reasons (desire to conform to traditional values, fear of being criticized by religious and other opponents to family planning, etc.) governments officials, population policies leaders, health personnel, and the media, continue to put an exclusive emphasis on spacing and sometimes even condemn family planning for “limiting reasons”. This could be viewed as a denial of the resolutions on freedom of informed consent and choice that are adopted by various African governments in numerous international conferences.

II. THE IMPACT OF THE PROXIMATE DETERMINANTS OF FERTILITY

In order to further analyze the preceding findings, we have tried to evaluate the impact of the proximate determinants on the future course of fertility in sub-Saharan Africa by using the FAMPLAN computer program developed at The Futures Group International (Stover & Heaton, 1999). Based on the “Bongaarts model” (Bongaarts, 1978), and starting from a classic cohort-component demographic projection, FAMPLAN enables to evaluate the interrelationships between total fertility rates, on one hand, and the proximate determinants of fertility as well as the average method effectiveness resulting from the method mix, on the other.

The calculations, both those pertaining to the demographic projections and the analysis of the proximate determinants of fertility, were run for each of the four sub-regions of sub-Saharan Africa, under various assumptions. The objective of this exercise was not to produce another set of projections, but to evaluate the interplay of the various factors at work in shaping the future fertility levels in each of the sub-regions (hence the simplistic or arbitrary nature of certain assumptions, warranted by the speculative purpose of the exercise). The values, by year 2000, of the various parameters used in these projections are presented in Table 4.

Using these data, we first attempted to evaluate the contraceptive prevalence required to reach the 2050 fertility levels proposed by the 2000 revision of the United Nations World Population Prospects (medium variant) (United Nations, 2001), **provided** that all the other factors remain constant (i.e., the method mix and the other proximate determinants of fertility). In this case, the dependent variable is the level of contraceptive use, according to the initial method mix for each sub-region (which is kept constant) as well as the other proximate determinants, over the entire 2000-2050 projection span.

Under these assumptions and to reach around 2.3 children per woman by year 2050 in the Eastern, Middle, and Western sub-regions, and 2.1 children per woman in the Southern sub-region, contraceptive use must encompass at least 70 percent of the women in union in each sub-region, but about 80 percent in the Western sub-region and 90 percent in the Middle sub-region. These results in the latter sub-regions are to a large extent caused by the high proportion of traditional methods used there, a proportion which has been maintained constant over the 2000-2050 projection period.

Such a scenario may correspond to a marked increase in the demand for family planning, leading to universal use of contraception by year 2050 but associated with widespread recourse to traditional and folk methods of poor efficiency (except in the Southern sub-region).

TABLE 4: PARAMETERS USED FOR RUNNING THE FAMPLAN MODEL

<i>Sub-region</i>	<i>Eastern Africa</i>	<i>Middle Africa</i>	<i>Southern Africa</i>	<i>Western Africa</i>
<i>Total fertility rate, 2000</i>	5.96	6.37	3.16	5.76
<i>Contraceptive prevalence rate, 2000</i>				
- Any method.....	20.0	10.0	55.0	12.0
- Modern methods.....	14.0	2.6	53.4	6.2
<i>Method mix, 2000</i>				
- Sterilization (female)	10	4	16	4
- Sterilization (male).....	--	1	3	--
- Pill.....	32	6	27	21
- Injectables.....	17	4	38	9
- I U D.....	6	1	11	9
- Condoms.....	5	6	2	7
- Vaginal barrier methods.....	--	3	0	2
- Traditional, folk and other methods..	30	75	3	48
Total.....	100	100	100	100
Average effectiveness	0.81	0.60	0.96	0.72
<i>Other proximate determinants</i>				
- Percent of women in union.....	65	65	45	70
- Postpartum insusceptibility (in months)	16	16	12	19
- Total abortion rate.....	0	0	0	0
- Sterility (percent).....	3	6	3	3

Sources (adapted from): 1) United Nations, World Population Prospects: The 2000 Revision, 2001 ;

2) United Nations, Levels and Trends of Contraceptive Use As Assessed in 1998,

ESA/P/WP.155, New York: United Nations, 1999 ; and

3) J. Ross, J. Stover, and A. Willard, Profiles for Family Planning and Reproductive Health Programs, Glastonbury, CT/Washington, DC: The Futures Group International, 1999.

However, in order to reach these high levels of contraceptive use, annual increases of more than one percentage point are required for the Eastern, Middle, and Western sub-regions, for all projection periods except the last (2040-2050). For the Southern sub-region, where contraceptive use was already high by year 2000 and the fertility decline well engaged, the annual percentage point increases needed to reach 2.1 children in the 2020s, are quite logically much more modest and declining. They are close to zero after year 2030, when the fertility transition is considered over. For the Eastern sub-region, the one percentage point increases found under this scenario are consistent with what has been observed recently in this sub-region (see Table 5). This is not the case for the Middle and Western sub-regions, where recent percentage point increases are around 0.5 point per year.

TABLE 5: RESULTS OF THE FAMPLAN MODEL: CONTRACEPTIVE PREVALENCE REQUIRED FOR EACH SUB-REGION TO REACH THE TOTAL FERTILITY RATES PROJECTED BY THE UNITED NATIONS UNDER THE MEDIUM VARIANT OF THE 2000 REVISION (THE METHOD MIX AND OTHER PROXIMATE DETERMINANTS FOR EACH SUB-REGION ARE KEPT CONSTANT)

<i>Sub-region</i>	<i>Eastern Africa</i>	<i>Middle Africa</i>	<i>Southern Africa</i>	<i>Western Africa</i>
<i>Total fertility rate, 2000.....</i>	5.96	6.37	3.16	5.76
<i>Total fertility rate, 2050</i>				
<i>UN Projections, 2000.....</i>	2.37	2.26	2.10	2.34
<i>Contraceptive prevalence rate 2000</i>				
- Any method.....	20.0	10.0	55.0	12.0
<i>Implied prevalence by</i>				
2010.....	31.4	20.7	61.8	28.9
2020.....	45.4	39.0	67.2	47.7
2030.....	57.5	57.5	68.4	65.8
2040.....	67.8	75.2	69.1	76.7
2050.....	76.6	91.7	69.1	81.0
<i>Annual percentage point</i>				
<i>Increase in contraceptive use</i>				
2000-10.....	1.1	1.1	0.7	1.7
2010-20.....	1.4	1.8	0.5	1.9
2020-30.....	1.2	1.8	0.1	1.8
2030-40.....	1.0	1.8	0.1	1.1
2040-50.....	0.9	1.7	0.0	0.4

In fact, the pace of fertility decline and the completion of the fertility transition in each sub-region (and country) depends on the interplay of the proximate determinants of fertility, according to the initial values and the future evolution of each of these determinants. Hence the idea of testing various scenarios associating different assumptions on annual percentage point increases, with assumptions on the other proximate determinants, to see the impact of these assumptions on the total fertility rate, which in this case is the dependent variable. Thus, the following assumptions were made:

A. ANNUAL PERCENTAGE POINT INCREASES IN CONTRACEPTIVE PREVALENCE ASSUMPTIONS

1. 0.5 percentage point increase per year, maintained constant over the 2000-2050 period ;
2. 1.0 percentage point increase per year, maintained constant over the 2000-2050 period ;
and
3. 1.5 percentage point increase per year, maintained constant over the 2000-2050 period.

B. METHOD MIX ASSUMPTIONS

Constant method mix assumption:

For each sub-region, the initial method mix (see Table 4) is maintained constant over the 2000-2050 period.

More efficient method mix assumption:

For each sub-region, gradual shift from initial method mix to the more efficient one of Southern Africa by 2025, maintained constant thereafter (average method effectiveness for Southern Africa is 0.96).

C. PERCENTAGE OF WOMEN IN UNION ASSUMPTIONS

Constant percentage of women in union assumption:

For each sub-region, the initial percentage of women in union (see Table 4) is maintained constant over the 2000-2050 period.

Reduced percentage of women in union assumption:

For each sub-region, the initial percentage of women in union (see Table 4) is shifted gradually to 50 percent by 2025, and maintained constant thereafter.

D. POSTPARTUM INSUSCEPTIBILITY ASSUMPTIONS

Constant duration of postpartum insusceptibility assumption:

For each sub-region, the initial mean duration of postpartum insusceptibility (see Table 4) is maintained constant over the 2000-2050 period.

Reduced duration of postpartum insusceptibility assumption:

For each sub-region, the initial mean duration of postpartum insusceptibility is shifted gradually to 12 months by 2025 and to 6 months by 2050.

E. TOTAL ABORTION RATE ASSUMPTIONS

Negligible abortion assumption:

For each sub-region, the total abortion rate is maintained at zero over the 2000-2050 period.

Increased abortion assumption:

For each sub-region, the total abortion rate is increased gradually from 0 induced abortions per woman in 2000 to 2 by 2025, and maintained at 2 thereafter.

It should be noted that these assumptions are not relevant (and therefore will not be presented) for Southern Africa, where fertility levels have already decreased markedly (the fertility transition is already more than halfway through), and are associated with a relatively high usage of efficient contraceptive methods, a low percentage of women in union (only 45 percent) and a lower mean duration postpartum insusceptibility (12 months) than those observed in the other sub-regions. By contrast, these assumptions are fully relevant for the Eastern, Middle, and Western sub-regions, where fertility is still high.

In the various scenarios combining these assumptions, the dependent variable is the total fertility rate. The results obtained do help to better understand the factors and policies options associated with slow vs. rapid fertility decline in the particular context of each of these sub-regions.

Table 6 presents in a schematic way the 12 different scenarios run for each sub-region, combining the three assumptions of percentage point increases of contraceptive use (0.5, 1.0 and 1.5 percent per year) with the other assumptions made on the method mix, the proportion of women in union, the mean duration of postpartum insusceptibility, and abortion.

TABLE 6: PROJECTION VARIANTS IN TERMS OF ASSUMPTIONS FOR ANNUAL PERCENTAGE POINT INCREASES IN CONTRACEPTIVE PREVALENCE METHOD MIX, MARRIAGE, POSTPARTUM INSUSCEPTIBILITY AND ABORTION

<i>Percentage point increases in contraceptive prevalence and contraceptive prevalence by sub-region in 2000 and 2050</i>	<i>Projections variants: Variables</i>			
	<i>Contraceptive prevalence</i>	<i>Contraceptive prevalence, method mix</i>	<i>Contraceptive prevalence, method mix</i>	<i>Contraceptive prevalence, method mix, marriage, postpartum insusceptibility and abortion</i>
0.5 point per year	A. Impact of increase in contraceptive prevalence only	B. Impact of more efficient method mix	C. Impact of reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion	D. Impact of more efficient method mix, reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion
Eastern Africa 2000:20, 2050:55				
Middle Africa 2000:10, 2050:35				
Western Africa 2000:12, 2050:37				
1.0 point per year	A. Impact of increase in contraceptive prevalence only	B. Impact of more efficient method mix	C. Impact of reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion	D. Impact of more efficient method mix, reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion
Eastern Africa 2000:20, 2050:70				
Middle Africa 2000:10, 2050:60				
Western Africa 2000:12, 2050:62				
1.5 point per year	A. Impact of increase in contraceptive prevalence only	B. Impact of more efficient method mix	C. Impact of reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion	D. Impact of more efficient method mix, reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion
Eastern Africa 2000:20, 2050:95				
Middle Africa 2000:10, 2050:85				
Western Africa 2000:12, 2050:87				

The results obtained are presented in Table 7. It should be noted that when total fertility rates reach 2.1 children per woman, they have been kept constant at that level thereafter. Under projection variant A “Impact of increase in contraceptive prevalence only”, with the assumption of an annual increase in contraceptive prevalence of 0.5 percentage point, fertility levels remain well above four children per woman in the three sub-regions. With an increase of 1.0 percentage point per year, projection A yields varying fertility levels (from nearly 3 children per woman for Eastern Africa, to more than 3 children for Western Africa, and to still more than 4 children per woman for Middle Africa). It is only when variant A is associated with an increase in contraceptive prevalence of 1.5 percentage point per year, that fertility reaches 2.1 children per woman for Eastern Africa and for Western Africa at the end of the projection. The varying impact on fertility of the 0.5, 1.0, and 1.5

percentage point annual increases in contraceptive prevalence by sub-region is a direct consequence of the varying efficiencies of the contraceptive methods used in these sub-regions. The more efficient the method mix, the more impact a rapid increase in contraceptive prevalence has on fertility, and conversely. Therefore, for Eastern Africa where average method effectiveness is 0.81, an increase of 0.5 percentage point in contraceptive use yields by year 2050 about 1.6 child less (from 4.37 children to 2.79) against 1.1 child less for Middle Africa (from 5.26 children to 4.15), where average method effectiveness is only 0.60.

TABLE 7: ESTIMATED TOTAL FERTILITY RATES ACCORDING TO ASSUMPTIONS FOR ANNUAL PERCENTAGE POINT INCREASES OF CONTRACEPTIVE PREVALENCE, METHOD MIX AND THE OTHER PROXIMATE DETERMINANTS OF FERTILITY

<i>Sub-region</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>
<i>A. Impact of increase in contraceptive prevalence only</i>						
Eastern Africa						
0.5 point.....	5.96	5.64	5.33	5.01	4.69	4.37
1.0 point.....	5.96	5.33	4.69	4.06	3.42	2.79
1.5 point.....	5.96	5.01	4.06	3.11	2.15	(2.1)
Middle Africa						
0.5 point.....	6.37	6.15	5.93	5.70	5.48	5.26
1.0 point.....	6.37	5.93	5.48	5.04	4.60	4.15
1.5 point.....	6.37	5.70	5.04	4.37	3.71	3.04
Western Africa						
0.5 point.....	5.76	5.51	5.26	5.02	4.77	4.52
1.0 point.....	5.76	5.26	4.77	4.27	3.78	3.28
1.5 point.....	5.76	5.02	4.27	3.53	2.78	(2.1)
<i>B. Impact of more efficient method mix</i>						
Eastern Africa						
0.5 point.....	5.96	5.53	5.06	4.62	4.25	3.87
1.0 point.....	5.96	5.19	4.33	3.50	2.75	(2.1)
1.5 point.....	5.96	4.85	3.61	2.38	(2.1)	(2.1)
Middle Africa						
0.5 point.....	6.37	5.99	5.51	5.06	4.70	4.35
1.0 point.....	6.37	5.72	4.86	4.00	3.30	2.60
1.5 point.....	6.37	5.45	4.21	2.95	(2.1)	(2.1)
Western Africa						
0.5 point.....	5.76	5.40	4.98	4.58	4.26	3.93
1.0 point.....	5.76	5.12	4.36	3.60	2.95	2.29
1.5 point.....	5.76	4.84	3.74	2.62	(2.1)	(2.1)
<i>C. Impact of reduced percentage of women in union, reduced duration of postpartum insusceptibility and increased abortion</i>						
Eastern Africa						
0.5 point.....	5.96	4.98	3.98	3.46	3.51	3.58
1.0 point.....	5.96	4.67	3.36	2.50	2.13	(2.1)
1.5 point.....	5.96	4.36	2.75	(2.1)	(2.1)	(2.1)
Middle Africa						
0.5 point.....	6.37	5.49	4.58	4.17	4.37	4.62
1.0 point.....	6.37	5.27	4.12	3.46	3.35	3.23
1.5 point.....	6.37	5.05	3.68	2.75	2.34	(2.1)
Western Africa						
0.5 point.....	5.76	4.91	4.01	3.57	3.69	3.85
1.0 point.....	5.76	4.66	3.51	2.79	2.56	2.31
1.5 point.....	5.76	4.41	3.02	(2.1)	(2.1)	(2.1)

TABLE 7 (CONTINUED)

<i>Sub-Region/</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>
<i>D. Impact of more efficient method mix, reduced percentage of women in union, reduced duration of postpartum insusceptibility and increased abortion</i>						
Eastern Africa						
0.5 point.....	5.96	4.88	3.74	3.11	3.07	3.04
1.0 point.....	5.96	4.54	3.05	(2.1)	(2.1)	(2.1)
1.5 point.....	5.96	4.21	2.37	(2.1)	(2.1)	(2.1)
Middle Africa						
0.5 point.....	6.37	5.34	4.21	3.58	3.60	3.64
1.0 point.....	6.37	5.07	3.58	2.53	(2.1)	(2.1)
1.5 point.....	6.37	4.80	2.95	(2.1)	(2.1)	(2.1)
Western Africa						
0.5 point.....	5.76	4.81	3.76	3.18	3.19	3.20
1.0 point.....	5.76	4.53	3.15	2.19	(2.1)	(2.1)
1.5 point.....	5.76	4.25	2.55	(2.1)	(2.1)	(2.1)

The impact of a gradual shift to more efficient methods is evidenced by the results obtained under the projection variant B “Impact of more efficient method mix”. To be sure, fertility levels by year 2050 remain high, namely around 4 children per woman in all sub-regions, when variant B is associated with an annual increase in contraceptive prevalence of 0.5 percentage point. However, when associated with annual increases in contraceptive prevalence of 1.0 percentage point per year, variant B yields by year 2050 fertility levels around 2 children per woman in all three regions, close to the end of the fertility transition (2.1 children for Eastern Africa, 2.6 for Middle Africa, and 2.3 for Western Africa). With annual increases in contraceptive prevalence of 1.5 percentage point (which appears today as an optimistic assumption), one can envision fertility levels at 2.1 children per woman in all three sub-regions before 2040. Evidently, the lower the initial average method effectiveness, the greater the impact of a shift to more efficient methods on fertility.

Projection variant C “Impact of reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion” attempts to measure the combined impacts of variations in the proximate determinants which are not strictly related to family planning programs. Interestingly, the various results obtained under this variant are roughly similar to those obtained under variant B “Impact of more efficient method mix”. When associated with annual increases in contraceptive prevalence of 0.5 percentage point per year, variant C yields fertility levels by year 2050 that are close or above 4 children per woman in the three sub-regions. Also when associated with annual increases in contraceptive prevalence of 1.0 percentage point per year, variant C yields fertility levels around 2 children per woman for Eastern Africa in the 2040s, and for Western Africa in 2050, but more than 3 children per woman by 2050 for Middle Africa (a consequence of the low average method effectiveness of this region, kept constant under this variant).

Not surprisingly, Projection variant D “Impact of more efficient method mix, reduced percentage of women in union, reduced duration of postpartum insusceptibility, and increased abortion” yields much more rapid fertility declines everywhere than the previous variants. However, fertility levels by year 2050 remain above 3 children per woman in the three sub-regions when this variant is associated with annual increases in contraceptive prevalence of 0.5 percentage point per year. It is only when associated with annual increases in contraceptive prevalence of 1.0 percentage point per year and of course of 1.5 percentage point per year, that variant D yields in all sub-regions 2.1 children per woman as soon as the 2030s or the 2040s.

To summarize these results, fertility transition (i.e., arriving at 2.1 children per woman) can not be achieved in any of the three sub-regions when relying only on increases in contraceptive prevalence inferior to one percentage point per year. It is only when increases in contraceptive prevalence reach 1.5 percentage point per year, that one can envision the completion of the fertility transition for Eastern and Western Africa (but not for Middle Africa) at the end of the 50 years projection period. As seen before, very few countries have registered these levels of increases in contraceptive prevalence (for any method) and all these countries are located in Eastern and Southern Africa (see Annex, Table 2.A). The policy implication of this is quite clear: increase in contraceptive prevalence is definitely a necessary but not a sufficient condition to achieve fertility transition within the next 50 years.

To achieve fertility transition in Eastern, Middle, and Western Africa over that time span requires not only at least one percentage point per year increase in contraceptive prevalence all over the period, but also the favourable impact of other factors. These factors: method mix, marriage, postpartum insusceptibility, and abortion can all be modified through policy interventions, but not in the same way. Improving method mix efficiency falls clearly within the field of “family planning efforts” and requires a renewed commitment of local actors and donors to the provision of a quality and diversified family planning services, which is precisely what is lacking in the majority of the sub-Saharan countries.

Concerning the marriage or union patterns, these are the results of complex social processes. Adoption of specific legislative measures and the launch of communication campaigns to change undesirable and health risky behaviors (like too early marriage and pregnancies) are possible. But these may take time to materialize into decreased exposure to undesired pregnancies. Concerning postpartum insusceptibility, its mean duration depends at least on the frequency and length of traditional postpartum abstinence and exclusive breastfeeding. Information, education, and communication campaigns to maintain long periods of breastfeeding (and exclusive breastfeeding during the first six months) will certainly help to maintain the presently high mean postpartum insusceptibility period. However, the success of similar campaigns to maintain long periods of postpartum abstinence is less certain. Last, concerning abortion, its importance is very hard to assess, because it is illegal in most countries and because of the lack of reliable data. However, recent evidence indicates the rapid emergence of this phenomenon, for instance in Western Africa (Desgrées du Loû and others, 1999). At present, governments of the region do not seem to be ready to legalize the recourse to induced abortion, at the very least as a health measure to prevent the devastating consequences of poorly performed abortions on the health and life of women. In addition, the failure of many traditional and folk contraceptive methods, as well as the weaknesses in the mechanisms to supply modern ones, may lead to an extended recourse to induced abortions whether it is legal or not.

To conclude, the current laissez-faire attitudes from national authorities and leaders as well as donors towards family programs and the issue of abortion are conducive to longer fertility transitions in Middle and Western Africa, and possibly in Eastern Africa if a deterioration occurs. However, major social changes which may be induced by a variety of factors such as urbanization, prolonged situation of civil war or social unrest, large migration movements that follow prolonged droughts, etc., will have important impacts on union patterns, duration of postpartum insusceptibility, and the recourse to abortion. The consequences of these phenomena, which are outside the family planning “program efforts” agenda, on the future course of fertility may be important, but they are very hard to predict given their nature.

III. THE HIV/AIDS EPIDEMIC AND THE FERTILITY CHANGES

The HIV/AIDS epidemic will most likely modify fertility outcomes and also affect attitudes to family planning. It should be stressed, however, that at this stage in the HIV/AIDS epidemic it is very difficult to decompose the effects of the epidemic between the fertility outcomes and the attitudes to family planning. It is even harder to measure which impacts of the epidemic will have an upward effect and which ones will play a decreasing role, on either of these variables. Therefore, as more data collection and analysis are needed, we will only attempt to provide a tentative framework about several of the potential consequences of the epidemic with respect to fertility levels and family planning attitudes.

First of all, regarding the levels of fertility, the HIV/AIDS epidemic will probably increase the infecundability and cause more foetal losses (miscarriages or spontaneous abortion) (Zaba & Gregson, 1998). Data from Uganda suggest that fecundability is reduced by up to 30 percent among HIV+ women (Stover, 1999). Nevertheless, the impact on fertility of such a large loss might be less severe than expected: should 30 percent of HIV+ women suffer from a 30 percent loss in fecundability, a total fertility rate (TFR) of 6 children per woman would be reduced by about 10 percent (yielding a TFR of 5.4), provided of course that all other factors remain constant. The HIV/AIDS epidemic might also decrease the frequency of intercourse among HIV/AIDS infected persons, therefore leading to lower fertility outcomes.

Regarding the attitudes toward family planning, the HIV/AIDS epidemic might discourage the recourse to contraception among the couples who want to have offspring, especially those with one or two HIV+ partners. However, the fight against the HIV/AIDS epidemic will bring to the fore family planning and reproductive health issues, leading to changes in attitudes and possibly more openness toward the use of selected contraceptives. In particular, the epidemic will most likely increase both the awareness and the use of male and female condoms. The 1994 data for Côte d'Ivoire suggest that about 50 percent of female condom users were seeking pregnancy prevention whilst the rest was concerned with STI/HIV prevention. This figure might change and the fear of STI/HIV infection is likely to boost the use of condoms for both family planning and disease prevention (United Nations, 1999).

The HIV/AIDS epidemic may also modify the desired family size among the couples, and this might play either at individual and/or collective levels. As already mentioned, the epidemic might increase the wishes of parents, especially the HIV infected ones, to have offspring and this might be compounded by pressures from the extended family to perpetuate lineage and groups as well as facilitated by the relocation and fosterage mechanisms for the rearing of children. However, the fear to leave AIDS orphans might have the opposite effect, i.e. reduce the fertility aspirations of couples.

Last but not least, the HIV/AIDS epidemic will bring a huge toll on mortality and morbidity levels. This will pose a serious threat to child and adult survival prospects and translate in sharply reduced levels of life expectancies at birth. In the most affected countries, the impact of AIDS-related mortality and morbidity has already erased the substantial health gains that were obtained since the 1960s (United Nations, 2001). Therefore, as deaths would outnumber births, the demographic dynamics might change, leading to the complete abandonment of programs conducive to fertility decline by governments and the mitigation of fertility limitation attitudes by couples and individuals alike. The societal trauma that will be brought about by a protracted HIV/AIDS epidemic will probably have far reaching consequences on global attitudes toward procreation and reproduction that are still unforeseeable at this stage.

To conclude, one may contend that the HIV/AIDS epidemic could bring to test the validity of the classic theory of demographic transition in sub-Saharan Africa because of much higher levels in overall mortality and the high AIDS-related mortality rates among young women of reproductive age. The demographic transition in the region could well become a "half-through" transition, or even perhaps in some places a "reverse" transition, where mortality levels increase and fertility levels decrease to an intermediate level.

IV. DISCUSSION

The fertility transition is obviously well engaged in the Southern part of the continent where it is not excluded that total fertility rates (TFRs) will reach below replacement levels within the next 50 years. On the contrary, the pace of the fertility transition will be slower in the three other sub-regions where it is far from granted that TFRs will reach replacement levels within the same time span. The TFRs in these sub-regions may range between 2 and 5 children per woman by the year 2050 and the situation will be even more diversified at the country level.

It is clear that future fertility levels in sub-Saharan Africa will be determined by a large array of factors, in which the intermediate determinants will play an important role not to mention the impact of the HIV/AIDS epidemic on fertility and attitudes to family planning. However, the detailed analysis of the proximate determinants of fertility, and in particular the review of the levels of contraceptive use, of the rates of increase in contraceptive prevalence rates, and of the family planning effort-scores, has highlighted several important issues that are usually less documented but that will also undoubtedly determine future fertility outcomes in the region. These issues are: the "vicious circle" of low demand vs. poor supply in efforts to expand family planning services ; the role of traditional contraception in the fertility transition ; and the importance of induced abortion in place of contraceptive method use. It is important to consider these issues in detail because they are more easily amenable to policy interventions than those pertaining to the intermediate determinants of fertility and/or the mitigation of the HIV/AIDS epidemic.

The "vicious circle" of low demand vs. poor supply in efforts to expand family planning services remains difficult to assess. On one hand, the demand for family planning services is still rather low in sub-Saharan Africa as shown by the fertility preferences. On the other, supply remains rather weak and generally suffers also from the poor status of the health systems. In a nutshell, the low demand for family planning does not encourage the launch of major efforts to expand programs, whereas the poor quality of the services offered is in no way conducive to boost the future demand for services.

As to the role of traditional contraception in the fertility transition in sub-Saharan Africa, the FAMPLAN analysis demonstrates that a 0.5 percentage point increase per year in contraceptive prevalence alone is not enough to trigger a substantial fertility decline. The analysis also stresses the need for a shift to modern, more efficient methods. This will be necessary, along with an annual increase of at least 1 percentage point in contraceptive use, if Eastern, Middle, and Western Africa are to experience important reductions in fertility.

The failure of many traditional and folk contraceptive methods and the weaknesses in the mechanisms to supply modern ones lead to the role of induced abortion. Indirect measurements of the inhibiting effect of induced abortion on fertility indicate the significant effect of this proximate determinant in many sub-Saharan Africa countries and the disturbing fact that, in several countries, induced abortion inhibits fertility in a greater way than contraceptive use (Johnston & Hill, 1996). Unfortunately, induced abortions are most often poorly performed in sub-Saharan. This brings

higher ratios of maternal mortality and may also cause higher incidence of other medical conditions (e.g., secondary sterility). It is therefore imperative, if only from a health rationale, to promote policies that will minimize the recourse to induced abortion.

In terms of policy choices, these three issues, namely the demand-supply vicious circle, the role of traditional contraception in the fertility transition, and the rising levels of induced abortion, call for a renewed policy commitment in sub-Saharan Africa to stress among individuals and couples the concept of free access to sufficient choice of contraceptive methods as well as their freedom to decide on the size of their family. Although most countries in the continent have now adopted the agenda that was discussed at the International Conference on Population and Development (ICPD) in Cairo in September 1994, a large number of the population policies adopted prior to Cairo, and often revised afterwards, have not progressed much beyond the mere recognition of the population and development problems. Implementation of these policy statements has often been left to bureaucratic bodies (e.g., the population commissions). Although the latter have been somewhat active in the capital cities, they have most often conducted few activities outside the main cities and in the rural areas. In addition, the lack of vision, drive, and coordination has precluded the programs from delivering effective family planning services. Last but not least, the broadening of the classic approach into a larger reproductive health agenda (including *inter alia* the reduction of maternal mortality reduction, the eradication of excision, the mitigation of domestic female violence, etc.) poses problem for most sub-Saharan countries where fertility transition is not engaged yet or is incipient. Indeed, this has sometimes contributed to the lack of focus on much needed family planning services.

CONCLUSION

Three major conclusions can be formulated at the end of this review of the possible trends of sub-Saharan Africa fertility over the next 50 years. First, although fertility declines have started in sub-Saharan Africa, these declines may be more modest and will probably be achieved over longer periods of time than initially anticipated. Furthermore, fertility declines will not occur at the same pace everywhere in sub-Saharan Africa: for several more decades, the fertility declines in Western and Middle Africa are likely to lag behind those that have taken place already in Southern and, to a lesser extent, in Eastern Africa.

Second, the data available highlight several bottlenecks, linked to the proximate determinants of fertility, that will make a rapid fertility transition unlikely in sub-Saharan Africa. Increases in contraceptive prevalence rates per year may be closer to 0.5 than 1 percentage point, especially in Western and Middle Africa. That is lower than the levels of increase that have triggered the onset of fertility decline in Southern Africa and some countries of Eastern Africa (and much lower than the levels of increase that have led many other Third World countries through their fertility transition). In addition, the current demand-supply tandem for family planning services in sub-Saharan Africa is not conducive to a rapid expansion of contraceptive use levels. Furthermore, a supply-driven approach to fertility control is more difficult to implement in the region since there is a weaker demand for birth spacing and birth limiting. Finally, a shift to modern and effective methods is needed to ensure contraceptive security to women and couples who genuinely want to plan their family. In this respect, the potential rapid rise of induced abortion levels, which is to a large extent the result of the lack of adequate family planning services, might lower fertility further than currently expected.

Third and last, the demographic transition will continue to be somewhat unpredictable in sub-Saharan Africa as many unknown factors remain in the equation. Among these, the most important

are: the political commitment of the national actors and the donors' community toward the provision of family planning services ; the role of the intermediate determinants on fertility as these are also needed to trigger the fertility decline ; the impact of urbanization that could help accelerate the fertility transition, but only up to a certain point ; and the potential influence of the HIV/AIDS epidemic on fertility outcomes, through possible lessened fecundability and changing attitudes to family planning. Finally, it might be useful to carefully reassess the policy relevance of the full reproductive health agenda in countries where contraceptive use is very low and fertility levels are both very high and have not started yet to decline.

ANNEXES

TABLE 1A. PERCENTAGE CURRENTLY USING CONTRACEPTION AMONG MARRIED WOMEN OF REPRODUCTIVE AGE, VARIOUS DATES, PER COUNTRY AND SUB-REGION

<i>Country</i>	<i>Survey Year</i>	<i>Clinic/supply Method</i>	<i>Traditional & others</i>	<i>Any Method</i>
<u>EASTERN AFRICA</u>				
Burundi.....	1987	1.2	7.5	8.7
Comoros.....	1996	11.4	9.6	21.0
Eritrea.....	1995	4.0	1.0	5.0
Etiopia.....	1990	2.6	1.7	4.3
Kenya.....	1998	31.5	7.5	39.0
Madagascar.....	1997	9.7	9.7	19.4
Malawi.....	1996	14.4	7.5	21.9
Mauritius.....	1991	48.9	25.8	74.7
Mozambique.....	1997	5.1	0.5	5.6
Reunion.....	1990	61.7	4.9	66.6
Rwanda.....	1996	7.2	6.5	13.7
Tanzania.....	1999	15.3	6.4	21.7
Uganda.....	1995	7.8	7.0	14.8
Zambia.....	1996	14.4	10.6	25.0
Zimbabwe.....	1999	49.4	4.1	53.5
<u>MIDDLE AFRICA</u>				
Cameroon.....	1998	7.0	12.3	19.3
Central African Republic.....	1994/95	3.3	11.5	14.8
Chad.....	1996-97	1.3	2.6	3.9
Congo (Dem. Rep.).....	1991	2.0	5.7	7.7
<u>SOUTHERN AFRICA</u>				
Botswana.....	1996	40.5	1.2	41.7
Lesotho.....	1991/92	18.9	4.3	23.2
Namibia.....	1992	26.0	2.9	28.9
South Africa.....	1988	48.4	1.3	49.7
Swaziland.....	1988	17.2	2.7	19.9
<u>WESTERN AFRICA</u>				
Benin.....	1996	3.4	13.0	16.4
Burkina Faso.....	1998-99	4.9	7.0	11.9
Cape Verde.....	1998	46.0	6.9	52.9
Côte d'Ivoire.....	1998-99	7.2	7.8	15.0
Gambia.....	1990	6.7	5.1	11.8
Ghana.....	1998	12.9	9.2	22.1
Guinea.....	1992/93	1.0	0.7	1.7
Liberia.....	1986	5.5	0.9	6.4
Mali.....	1995/96	4.5	2.2	6.7
Mauritania.....	1990	1.2	2.1	3.3
Niger.....	1998	4.6	3.6	8.2
Nigeria.....	1990	3.5	2.5	6.0
Senegal.....	1997	8.1	4.8	12.9
Togo.....	1998	6.9	16.6	23.5
Sudan (North).....	1992/93	6.9	1.4	8.3

Sources: 1) United Nations, *Levels and Trends of Contraceptive Use As Assessed in 1998*,

ESA/P/WP.155, New York: United Nations, 1999 and 2) U.S. Bureau of the Census, *International Data Base, Table 55. Prevalence of contraceptive use, by method and Urban/rural residence.*

TABLE 2 A. ANNUAL CHANGE (PERCENTAGE POINT GROWTH) OF CURRENT USE OF CONTRACEPTION AMONG MARRIED WOMEN OF REPRODUCTIVE AGE, VARIOUS PERIODS, BY COUNTRY AND SUB-REGION

Country and Region	Date of		Number of years	Percentage MWRA using Clinic/supply method		Percentage MWRA using Any method		Annual Growth (Pct point)	
	1st survey	2nd survey		1st survey	2nd survey	1st survey	2nd survey	Clinic/Sup. method	Any Method
EASTERN AFRICA									
Kenya	1988/89	1998	10	17.8	31.5	26.9	39.0	1.4	<i>1.3</i>
Madagascar	1992	1997	5	5.1	9.7	16.7	19.4	0.9	<i>0.5</i>
Malawi	1984	1996	12	1.1	14.4	6.9	21.9	1.1	<i>1.3</i>
Mauritius	1975	1991	16	29.2	48.9	45.7	74.7	1.2	<i>1.8</i>
Rwanda	1983	1996	13	0.8	7.2	10.1	13.7	0.5	<i>0.3</i>
Tanzania	1991	1999	8	6.6	15.3	10.4	21.7	1.1	<i>1.4</i>
Uganda	1988/89	1995	7	2.5	7.8	4.9	14.8	0.8	<i>1.5</i>
Zambia	1992	1996	4	8.9	14.4	15.2	25.0	1.4	<i>2.5</i>
Zimbabwe	1988/89	1999	11	36.1	49.4	43.1	53.5	1.3	<i>1.0</i>
MIDDLE AFRICA									
Cameroon	1991	1998	7	4.3	7.0	16.1	19.3	0.4	<i>0.5</i>
SOUTHERN AFRICA									
Botswana	1984	1996	12	18.6	40.5	27.8	41.7	1.8	<i>1.2</i>
Lesotho	1977	1991/92	15	2.4	18.9	5.3	23.2	1.1	<i>1.2</i>
Namibia	1989	1992	3	26.3	26.0	26.4	28.9	0.0	<i>0.8</i>
South Africa	1975/76	1988	13	35.0	48.4	37.0	49.7	1.1	<i>1.0</i>
WESTERN AFRICA									
Benin	1981/82	1996	15	0.5	3.4	9.2	16.4	0.2	<i>0.5</i>
Burkina Faso	1993	1998-99	6	4.2	4.9	7.9	11.9	0.1	<i>0.7</i>
Côte d'Ivoire	1994	1998-99	5	4.2	7.2	11.4	15.0	0.7	<i>0.8</i>
Ghana	1988	1998	10	5.2	12.9	12.9	22.1	0.8	<i>0.9</i>
Mali	1987	1995/96	9	1.3	4.5	4.7	6.7	0.4	<i>0.2</i>
Mauritania	1981	1990	9	0.3	1.2	0.8	3.3	0.1	<i>0.3</i>
Niger	1992	1998	6	2.3	4.6	4.4	8.2	0.4	<i>0.6</i>
Nigeria	1981/82	1990	9	0.6	3.5	4.8	6.0	0.3	<i>0.1</i>
Senegal	1986	1997	11	2.4	8.1	11.3	12.9	0.5	<i>0.1</i>
Togo	1988	1998	10	3.0	6.9	12.1	23.5	0.4	<i>1.1</i>
Sudan (North)	1978/79	1992/93	14	3.7	6.9	4.6	8.3	0.2	<i>0.3</i>

Sources (adapted from): 1) United Nations, *Levels and Trends of Contraceptive Use As Assessed in 1998*, ESA/P/WP.155, New York: United Nations, 1999 ;

2) U.S. Bureau of the Census, *International Data Base, Table 55. Prevalence of contraceptive use, by method and urban/rural residence.*

TABLE 3 A. ESTIMATED PRESENT (1995-2000) AND FUTURE (2045-2050)
TOTAL FERTILITY RATES IN SUB-SAHARAN AFRICA, BY COUNTRY AND SUBREGION

Country and region	Total fertility rate	
	1995-2000	2045-2050
EASTERN AFRICA		
Burundi.....	6.80	2.81
Comoros.....	5.40	2.10
Djibouti.....	6.10	2.10
Eritrea.....	5.70	2.10
Etiopia.....	6.75	2.80
Kenya.....	4.60	2.10
Madagascar.....	6.10	2.10
Malawi.....	6.75	2.63
Mauritius.....	2.00	1.90
Mozambique.....	6.30	2.10
Reunion.....	2.30	1.90
Rwanda.....	6.20	2.10
Somalia.....	7.25	3.27
Tanzania.....	5.48	2.10
Uganda.....	7.10	2.85
Zambia.....	6.05	2.10
Zimbabwe.....	5.00	2.10
MIDDLE AFRICA		
Angola.....	7.20	3.26
Cameroon.....	5.10	2.10
Central African Republic.....	5.30	2.10
Chad.....	6.65	2.35
Congo.....	6.29	2.33
Congo (Dem. Rep.).....	6.70	2.36
Equatorial Guinea.....	5.89	2.10
Gabon.....	5.40	2.10
SOUTHERN AFRICA		
Botswana.....	4.35	2.10
Lesotho.....	4.75	2.10
Namibia.....	5.30	2.10
South Africa.....	3.10	2.10
Swaziland.....	4.80	2.10
WESTERN AFRICA		
Benin.....	6.10	2.10
Burkina Faso.....	6.89	2.82
Cape Verde.....	3.56	2.10
Côte d'Ivoire.....	5.10	2.10
Gambia.....	5.20	2.10
Ghana.....	4.60	2.10
Guinea.....	6.27	2.10
Guinea-Bissau.....	5.99	2.10
Liberia.....	6.80	2.81
Mali.....	7.00	2.85
Mauritania.....	6.00	2.10
Niger.....	8.00	3.82
Nigeria.....	5.92	2.10
Senegal.....	5.57	2.10
Sierra Leone.....	6.50	2.34
Togo.....	5.80	2.10
Sudan.....	4.90	2.10

Source: United Nations, *World Population Prospects: The 2000 Revision, 2001.*

TABLE 4 A. 1994 PROGRAMS EFFORT SCORES, TOTAL AND FOUR DIMENSIONS SCORES AS PERCENTAGE OF MAXIMUM, BY COUNTRY AND SUB-REGION

<i>Country and sub-region</i>	<i>Total Score</i>	<i>Dimension Scores</i>			
		<i>Policy</i>	<i>Services</i>	<i>Evaluation</i>	<i>Availability</i>
EASTERN AFRICA					
Etiopía.....	39	61	35	34	18
Kenya.....	56	48	56	61	63
Madagascar.....	33	45	35	32	13
Malawi.....	44	52	44	60	27
Mauritius.....	75	78	66	98	78
Mozambique.....	33	47	27	32	30
Tanzania.....	48	54	45	44	45
Uganda.....	44	52	45	30	39
Zambia.....	41	56	35	37	37
Zimbabwe.....	68	69	71	82	52
MIDDLE AFRICA					
Angola.....	24	37	16	32	23
Cameroon.....	49	54	48	45	47
Central African Republic.....	40	55	40	35	23
Chad.....	27	47	23	40	1
Congo.....	27	48	24	41	0
SOUTHERN AFRICA					
Botswana.....	66	65	62	58	80
Lesotho.....	44	64	34	41	38
Namibia.....	43	60	28	26	60
South Africa.....	56	57	52	48	66
WESTERN AFRICA					
Benin.....	37	37	40	40	31
Cote d'Ivoire.....	39	54	31	54	25
Ghana.....	52	65	52	45	41
Guinea.....	50	66	49	64	24
Guinea-Bissau.....	36	58	25	20	35
Mali.....	45	54	51	62	11
Mauritania.....	32	32	37	50	10
Niger.....	46	60	45	60	22
Nigeria.....	42	64	33	30	34
Senegal.....	50	69	44	61	35
Sierra Leone.....	47	51	49	41	41

Source: J. Ross, J. Stover and A. Willard, *Profiles for Family Planning and Reproductive Health Programs*, Glastonbury, CT/Washington, DC: The Futures Group International, 1999.

REFERENCES

- Bongaarts, John (1978). A Framework for Analyzing the Proximate Determinants of Fertility. *Population and Development Review* (New York), vol. 4, No. 1, pp. 105-132.
- Cohen, Barney (1998). The Emerging Fertility Transition in sub-Saharan Africa. *World Development* (Boston, Massachusetts), vol. 26, No. 8, pp. 1431-1461.
- Desgrées du Loû, Annabel, Philippe Msellati, Ida Viho, and Christiane Welffens-Ekra (1999). Le recours à l'avortement provoqué à Abidjan. Une cause de la baisse de fécondité? *Population* (Paris), vol. 54, No. 3, pp. 427-446.
- Feyisetan, Bamikale and John B. Casterline (2000). Fertility Preferences and Contraceptive Change in Developing Countries, *International Family Planning Perspectives* (New York), vol. 26, No. 3, pp. 100-109.
- Johnston, Heidi Bart and Kenneth H. Hill (1996). Induced Abortion in the Developing World: Indirect Estimates. *International Family Planning Perspectives* (New York), vol. 22, No. 3, pp. 108-114 & 137.
- Kirk, Dudley and Bernard Pillet (1998). Fertility Levels, Trends, and Differentials in sub-Saharan Africa in the 1980s and 1990s. *Studies in Family Planning* (New York), vol. 29, No. 1, pp. 1-22.
- Lloyd, Cynthia B., Carol E. Kaufman, and Paul Hewett (2000). The Spread of Primary Schooling in sub-Saharan Africa: Implications for Fertility Change. *Population and Development Review* (New York), vol. 26, No. 3, pp. 483-515.
- Moreland, Scott and Jean-Pierre Guengant (1994). Striving for Mortality and Fertility Decline in Niger. Research Triangle Park-Washington, DC: Research Triangle Institute & The Futures Group International.
- Ross, John A. and W. Parker Mauldin (1996). Family Planning Programs: Efforts and Results, 1972-94. *Studies in Family Planning* (New York), vol. 27, No. 3, pp. 137-147.
- Ross, John A., John Stover, and Amy Willard (1999). *Profiles for Family Planning and Reproductive Health Programs. 116 Countries*. Glastonbury, CT: The Futures Group International.
- Ross, John A. and John Stover (2000). Effort Indices for National Family Planning Programs, 1999 Cycle. MEASURE Evaluation Working Paper No. WP-00-20, Chapel Hill: University of North Carolina, Carolina Population Center.
- Stover, John (1999). *AIM: Version 4. A Computer Program for Making HIV/AIDS Projections and Examining the Social and Economic Impacts of AIDS*. Spectrum System of Policy Models. Washington, DC: The Futures Group International, The POLICY Project.
- Stover, John and Laura Heaton (1999). *FAMPLAN: Version 4. A Computer Program for Projecting Family Planning Requirements*. Spectrum System of Policy Models. Washington, DC: The Futures Group International, The POLICY Project.
- United Nations (1999). *Levels and Trends of Contraceptive Use As Assessed in 1998*. Sales No. ESA.P.WP.155.

United Nations (2001). *World Population Prospects. The 2000 Revision*. <http://www.un.org/esa/population/wpp2000.htm>, Highlights and Annex Tables from the United Nations Population Division. Accessed on 8 June 2001.

United States Bureau of the Census (2000). *International Data Base*. Table 55: *Prevalence of contraceptive use, by method and urban/rural residence*. <http://www.census.gov/cgi-bin/ipc/idbsprd>, International Data Base. Accessed on 8 June 2001.

Zaba, Basia and Simon Gregson (1998). Measuring the impact of HIV on fertility in Africa. *AIDS* (Philadelphia), vol. 12, Suppl. 1, pp. S41-S50.