

PA-ABN-161  
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806-44

AN ESTIMATION OF SRI LANKA'S CONTRACEPTIVE NEEDS FOR 1985-2005  
AND SERVICE DELIVERY COSTS IN 1991-1995

by

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June 1990

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Paper presented at the Seminar on Family Planning Research and Emerging Issues for the Nineties, organized by the Family Planning Association of Sri Lanka, June 15-17, 1990. The work on which this paper is based was performed in whole or in part under a contract to the Institute for Resource Development, Inc., with funding from the U. S. Agency for International Development Colombo, Sri Lanka.

AN ESTIMATION OF THE FUTURE CONTRACEPTIVE NEEDS FOR 1985-2005 AND  
SERVICE DELIVERY COSTS IN 1991-1995 FOR SRI LANKA

Background and Objectives

The impact of rapid population growth on economic and social development in Sri Lanka has long been recognized. Sri Lanka was among the earliest countries to endorse a United Nations Declaration stating that family planning was both a fundamental human right and an important element in long-range planning for national development. Demographic targets aimed at reducing the birth rate were established as early as 1965, and implementation of family planning programs in both the public and private sectors has received substantial attention.

Formal family planning activities were initiated in Sri Lanka in 1953, with the establishment of the Family Planning Association of Sri Lanka (FPASL). The National Family Planning Program was inaugurated in 1965, and a Family Planning Bureau (now the Family Health Bureau) was established within the Ministry of Health in 1968. In addition to FPASL, several other nongovernmental organizations, e.g., Sri Lanka Association for Voluntary Surgical Contraception (SRL/AVSC) and Community Development Services (CDS), also provide family planning services. While fertility has declined from a TFR of 5.0 in 1953 to 2.8 in the period 1982-87, further effort is required to maintain progress, serve new users, and reach a goal of replacement level fertility by the end of the century.

The analysis reported here represents the second of a two part study addressing various aspects of contraceptive use in Sri Lanka. The overall purpose of the study is to better understand the characteristics of non-users, in order to develop a program to inform them about family planning and tailor special services to their needs. The first part of the study is

an examination of the levels, trends and determinants of contraceptive use, with a special focus on the 6-10% of reproductive age women who are exposed to pregnancy but do not wish to become pregnant. The second part of the study, the subject of this report, is aimed at estimating future contraceptive needs and costs.

Three key questions are addressed: (1) What level of family planning use, given certain assumptions about method mix, will be required for the country to reach replacement level fertility by the turn of the century? (2) What are the projected costs associated with meeting future service needs, and how are these costs now distributed between the government and NGOs (primarily the FPASL, CDS, and the SRL/AVSC)? and (3) How might government and NGO costs be affected if a larger percentage of users received contraceptive services through the private (commercial) sector?

In order to address these questions, a quantitative assessment of contraceptive requirements over a 20 year period and associated costs over 5 year period has been made under varying assumptions about dependence upon three sources of family planning service: non-governmental organizations, like the Family Planning Association of Sri Lanka, the government program, and the private/commercial sector. Analysis of future contraceptive need is based on use of the computerized model for contraceptive target setting, TARGET, developed by Bongaarts and Stover (1986). The TARGET model calculates the number of new acceptors and continuing users required to achieve a given fertility goal. TARGET output is based on calculations reflecting the impact of the four most important proximate determinants of fertility: contraceptive prevalence and effectiveness, postpartum infecundability, induced abortion, and marital patterns. Cost projections

utilize data generated by the TARGET model as input for a family planning cost model, COST, developed by Nortman and Tsui (1989).

### Projections of Future Contraceptive Needs

The TARGET model requires information on baseline fertility and contraceptive use, as well designation of a target fertility level. The 1987 DHS survey of 5,865 ever-married women of reproductive age estimates a contraceptive prevalence rate (CPR) of 61.7, and this estimate was used as the baseline CPR. Achievement of replacement level fertility (TFR of 2.1) by the year 2005 in Sri Lanka is consistent with the "low variant" population projections produced by the United Nations in 1985 (U.N., 1985). The 1985 low variant U.N. projection for Sri Lanka shows a TFR of 2.66 for the period 1985-90, with TFR declining to 2.25 during the period 1990-95, and finally to 2.15 for the period 1995-2000. The baseline TFR of 2.8 used in this analysis is slightly higher than the U.N. figure of 2.66, and is based upon DHS survey data for the period 1982-87.

Two aspects of contraceptive practice which are especially important in efforts to project the contraceptive prevalence needed to achieve a target fertility level are (1) use-effectiveness (determined by method mix) and (2) rates of contraceptive discontinuation. Method mix as reported in the 1987 DHS, and assumed to prevail in 1985, is shown in the first column of the table below. The 1987 distribution of users across methods reflects the strong orientation towards delivery of contraceptive sterilization services. Almost 50% of current users are sterilization acceptors, with approximately 40% female and 8% male methods. Traditional methods, represented by the "other" category, are the next largest proportion after female sterilization. Based on past and anticipated trends, method mix is assumed

to change over the projection period as indicated in the table.

Assumed Composition of Method Use among Current Contraceptors: 1985-2005

Method	1985	1990	1995	2000	2005
Percent distribution					
Pill	6.60	8.82	11.05	13.27	15.50
IUD	3.40	4.65	5.90	7.15	8.40
Female Sterilization	40.40	39.15	37.90	36.65	35.40
Male Sterilization	8.00	8.00	8.00	8.00	8.00
Injectables	4.40	5.95	7.50	9.05	10.60
Condom	3.00	3.50	4.00	4.50	5.00
Other	34.20	29.92	25.65	21.37	17.10
Total	100.00	100.00	100.00	100.00	100.00

The annual discontinuation rates, by method, and effectiveness rates are shown below. The discontinuation rates are based on results from a 1986 rural family planning survey (FPASL and FHI, 1987), modified slightly to apply to urban practice as well. No change in contraceptive discontinuation over the projection time period is assumed. The use-effectiveness rates are default values taken from the TARGET program.

Discontinuation Rates and Use-Effectiveness Levels

Method	Discontinuation	Effectiveness
Pill	.35	.90
IUD	.15	.95
Female sterilization	.01	1.00
Male sterilization	.01	1.00
Injectable	.15	.98
Condom	.40	.80
Other	.40	.70

In the projections used for this analysis, fertility is assumed to decline from the 1985 level of 2.8 to 2.1 by the year 2005; method mix is assumed to change as indicated in the the table above, and discontinuation rates are assumed to remain constant. Variation in the projections is introduced only with respect to the assumptions about source of contraceptive services. In the first projection (A), source of service, as reported in the 1987 DHS, is assumed to remain unchanged over the projection period. In the second projection (B), distribution of service by source is assumed to change as indicated in the table below. Under these assumptions, a larger role for the commercial sector in providing both clinical and supply methods is projected. Such a shift in source of service differentially impacts NGO and government sectors, as will be shown in the section on cost projection.

Two Assumptions Regarding Percent Distribution of Service Providers by Method for 1985-2005

Source	Pill	IUD	F/Ster	M/Ster	Inject.	Condom
<u>Projection A: 1985 source held constant to 2005</u>						
Government	67.4	95.0	97.0	89.0	68.0	33.0
NGOs	1.0	1.0	1.0	10.0	3.0	2.0
Commercial	31.6	4.0	2.0	1.0	29.0	65.0
<u>Projection B: Source in 1985 same; source distribution in 2005 below:</u>						
Government	30.0	90.0	75.0	75.0	60.0	20.0
NGOs	2.0	1.0	1.0	10.0	5.0	2.0
Commercial	31.6	4.0	2.0	1.0	29.0	65.0

Note: 1987 Demographic and Health Survey service provider distribution assumed to hold in 1985

The assumptions used in the two projections are summarized below:

Projection	1985-2005 TFR Change	Method Mix	Source of Distribution
A	2.8 --> 2.1	Changing	Constant
B	2.8 --> 2.1	Changing	Changing

The estimated size of the female population in reproductive ages at each five year interval is derived from the 1985 United Nations population projection figures for Sri Lanka. The proportion of women aged 15-49 currently married (57.1 percent) is calculated from 1987 DHS data, and is assumed to remain constant throughout the projection period. For purposes of this analysis, postpartum infecundability is assumed to decline from the current level of 10.2 months to 7.7 months in 2000; current measures of contraceptive effectiveness are assumed to remain constant over the projection period. Reliable data on induced abortion is not available, but it is reasonable to assume that the net effect of any change in abortion rates will be too small to have an effect on fertility. (Pathological sterility is also assumed to have no effect.)

Results of the TARGET contraceptive use projections are summarized in Tables 1 through 4. Table 1 illustrates the projected growth in the numbers of married women of childbearing ages, a consequence of past fertility patterns. Variation in the target fertility assumptions the next 15 years has little impact on the projected female populations, since the majority of these women are already born. This projection calls for 5,708 thousand women of reproductive age in the year 2000, an increase of 1,580 women or 38

percent. Given that a constant proportion of them are expected to be in union, by 2000 an estimated 3,259 thousand women would be regularly exposed to the risk of pregnancy.

Assumptions about the future course of fertility, however, imply differences in the required level of contraceptive prevalence and number of users. To achieve replacement level fertility by 2005, contraceptive prevalence would need to increase from the baseline estimate of 61.7 percent for 1985 to 74.3 percent by the year 2005. For 1990 the estimate is 65 percent, to increase to 71.3 percent by 2000.

The growth in the number of contraceptive users, shown for each five year period in Table 1 and for each year in Table 2, represents the combined impact of required increases in prevalence rates and projected growth in the size of the exposed female population. To achieve the target fertility of 2.1, the number of users will need to increase by 43 percent, from slightly less than one and a half million in 1985 to almost two and a half million in 2005. In the decade of the 1990s, an increase of 577,000 users would be needed. Again, much of this required increase is due to the inevitable growth in the size of the childbearing-aged cohorts.

Table 3 reports the projected proportions of married women expected to be using each method of contraception at five year intervals between 1985 and 2005, following the method mix assumptions described earlier. The general picture that emerges is for a notable increase in the projected demand for each method. While sterilization is expected not to increase as quickly, there would be a stronger growth in the proportions of currently married women using the pill and injectables. A significant proportion of women, although declining over this period, would still be using traditional methods by 2005.

### Projected Costs of Family Planning in Sri Lanka

The projected number of users of each method can be translated into annual supply requirements over the period 1985-2000, as shown in Table 4. This is done by assuming that one couple year of protection for pill users requires 13 cycles, for condom users 100 units, and for injectable users 4 units. The annual number of IUD and sterilization procedures are shown (1 per acceptor). The projection results indicate that the annual number of pill cycles to be distributed would need to increase from 1407.8 thousand in 1985 to 5005.2 thousand by 2005. In the 1990s, the required number of pill cycles annually would need to double from 2004.8 to 4010.5 thousand.

Given the assumed shift in method mix toward greater use of modern spacing methods, it is not surprising that the required number of condom and injectable units also increases. However, this change, in addition to the demographic growth in the user cohort, leads to sizable requirements for the annual supply of pills, condoms and injectables. For example, in the 1990s a 71 increase is projected for the number of condoms, that is, growing from 6.12 million to 10.46 million pieces.

The projected number of users have been distributed across three main service providers following the two assumptions outlined earlier, i.e., one of no change and one of change toward increasing reliance on private provision. As shown in Table 5, the government is expected to service the majority share of contraceptive demand in this period, 861 thousand users in 1985 doubling to 1,796 thousand by 2005. If more private sector coverage occurs, the increase for the public sector would be to 1,362 thousand, or a 58 rather than 108 percent growth. Such a shift itself would clearly reduce the financial costs to the government program in providing family planning services.

Even with no change in the provider distribution, the NGOs will see a doubling of the number of users they service, a number that reaches 47,000 in 2005. Private consumers of contraception will increase from 602 to 769 thousand. With greater reliance on the private sector, as dictated by the second scenario, NGO services need to increase 1.6 times to serve 57 thousand users. Comparing the projected number of users serviced by the private sector between the two scenarios, an assumption of no change in provider distribution implies 769 thousand users by 2005 while more private sector coverage leads to an estimated 1,194 thousand users.

With the projected demand to increase so dramatically, it is clear that careful planning will be required to provide for the new users and to reduce the possibility of overloading existing delivery systems, as well as outstripping available resources to expand service capacities.

#### Costing Family Planning Services

The estimation of projected costs for family planning is based on a family planning cost model (COST) developed by D. Nortman and A. Tsui. The COST model is designed to use information generated by the target-setting model (TARGET) as input for cost calculations. The major factors affecting the cost of delivering family planning services include: (1) program structure, or the delivery mechanisms, method mix, and related facility, equipment and personnel requirements; and (2) the volume of acceptors and continuing users required to meet the fertility target. The COST model is designed to estimate the annual cost of recruiting and servicing the projected number of sectoral clients estimated by TARGET.

The Nortman-Tsui COST model is based on an accounting framework which addresses five basic components: personnel, commodity, administrative, net

incentive and fee costs, and other costs directly related to the distribution of services. The cost basis is annual and the recommended application is for a five year projection period. The procedure is acceptor- and user-driven: the cost of three of the five components is directly based on the TARGET-projected number of acceptors and users.

With these estimated number of family planning consumers, the COST model calculates first the number of visits required to provide services and supplies to clients at the various delivery sites (e.g. national program or private NGO clinics) on a method-specific basis. COST differentiates among staff time requirements for delivering the various methods, and further differentiates between time requirements (and the cost implications thereof) of first time and return visits. Return visits typically require less time, and are therefore less costly. The annual number of first visits is set equal to the annual number of acceptors, but the number of return visits will depend upon the method continuation rate and scheduled frequency of follow up visits per year. The latter again will vary by method and type of provider.

The general framework for COST is as follows:

$$\begin{array}{r}
 \text{Total direct} \\
 \text{costs for} \\
 \text{each method and} \\
 \text{provider type}
 \end{array}
 =
 \begin{array}{r}
 \text{Personnel} \\
 \text{costs}
 \end{array}
 +
 \begin{array}{r}
 \text{Acceptor} \\
 \text{visits}
 \end{array}
 \times
 \begin{array}{r}
 \text{Method} \\
 \text{Service} \\
 \text{Fee}
 \end{array}
 +
 \begin{array}{r}
 \text{Return} \\
 \text{visits}
 \end{array}
 \times
 \begin{array}{r}
 \text{Service} \\
 \text{Fee}
 \end{array}
 +
 \begin{array}{r}
 \text{Other} \\
 \text{Direct costs}
 \end{array}$$

The personnel costs are calculated on a visit-specific basis, as mentioned earlier, estimating the staff salary costs, plus administrative time, for servicing each client visit. The method and provider-specific direct costs are then summed and inflated with an overall administrative overhead rate,

12% in this case, to arrive at the total costs. (A technical appendix on the model is available from the authors.)

Costs of Delivering Family Planning Services in Sri Lanka, 1991-1995

Input data on staff wages, time requirements for servicing clients of different contraceptive methods, commodity unit costs, fee and incentive structures, were obtained using budgets and reports from the Family Planning Association of Sri Lanka. In addition, FPASL staff provided information regarding the service delivery structure of the government program. The calculations were made for two types of providers -- the government program and NGOs. For the latter the costs of two types of service delivery modes were estimated -- clients of the clinics and of social marketing. Because moderate service fees are assessed at NGO clinics and pharmacy retailers purchase contraceptives, like pills and condoms through the FPASL social marketing program, both gross costs to deliver services and the net costs, after the fee returns, are given.

The option to recover some operating costs is a timely and important strategy for any service delivery organization to consider. Given the imminent growth in contraceptive service demand to achieve replacement fertility, the simultaneous increase in costs of full subsidy of family planning services can be staggering. In situations where external assistance funds in time may become more and more limited, local sources of funding, either from private donors or through client fees, become increasingly critical. As these results will show, current recovery of NGO service costs are significant from both clinic clients and contraceptive retailers.

Table 6 gives the estimated annual costs for delivering family planning services in the beginning and ending years of the period through the public and non-governmental sectors. These costs are derived from the cross-section of acceptors and users in the five-year period estimated as part of the volume of demand leading to replacement level fertility by 2005. It is important to note, in the case of government services, that the extent to which resource sharing occurs with maternal and child health programs (clinic and personnel facilities, for instance) is not fully known. Hence, the costing units applied to contraceptive acceptor and users of this sector are likely to be underestimated. A possible adjustment is to inflate some of the direct cost components in the model with an estimated proportion of shared costs, e.g. by 30%, if this is the portion of the government's integrated MCH/FP service activity directed at family planning.

Shown in current rupees (and U. S. dollars, using \$1.00 = 40 Rs as an exchange rate), the annual cost for the government program is estimated to rise from 107.1 million Rs to 126.4 million, or by 15% over five years, if there is no change in the distribution of providers. Given a shift toward more private sector coverage, the government program's costs would rise by 11%, to 103.7 million Rs in 1995.

For NGOs, the rising demand drives costs up more than for the public sector. Gross costs could rise 21% in the five-year period from 24.4 million Rs to 31.0 million Rs, largely due to the costs of program-related services, such as information-education-communication programs or special outreach programs targetted at specific subpopulations of potential contraceptive users. Because NGOs have frequently assumed an important duty of generating contraceptive demand nationally, and given the likelihood that the remaining core of potential clients may be more resistant to the family

planning message, these special service costs contribute proportionately more to total costs than do the user-specific costs. With some costs recovered through user fees and retailer purchases, the net costs still rise by 19%, to 13.3 million Rs in 1995.

Increasing private sector coverage does not reduce the financial burden on NGOs, under the present costing framework. Service delivery costs rise more, by 27%, largely because the costs of the social marketing program grow, although they essentially benefit private sector costs. And while recovery of supply costs through retailer purchases occurs, the administrative costs of the program are seen to still increase. Indeed, an expansion of private sector provision of contraceptive services portends a significant increase in NGO program net costs (21% over five years). This estimate does not, however, consider the strong possibility that program efficiencies will grow and economies of scale would be enjoyed over both the long and short term of this period.

It is possible, too, to calculate the method-specific costs of delivering family planning services through the clinics of two types of providers, as seen in Table 7. This provides a sense of cost-effectiveness across the contraceptive methods. The input measures are the method-specific total costs (direct plus 12% indirect) and the output measures are couple-years of protection. The latter represent the number of couples protected against accidental pregnancy for a full year if contraceptive supplies were used for a predetermined number of consecutive months, e.g. 13 cycles of pills used over one year provide one CYP for a pill user. In the case of longer-acting methods, such as IUDs and sterilization, the CYPs can not be assessed directly from the number of method users, as these represent

both inherited as well as current protection. Hence an effective duration is assigned to each method, 5 years in the case of the IUD and 10 years for sterilization. Moreover, since each year of protection does not provide a full birth averted given the lower potential fertility of these methods' acceptors (they are usually older and of higher parity), each CYP is discounted, using here a rate of .572. Thus, in calculating the denominator CYPs for IUDs and sterilizations, we have taken the annual number of procedures done (acceptors) and multiplied it by 2.86 (5 x .572) or 5.76 (10 x .572) respectively.

The table shows that method costs for 1991 in the government sector tend to be somewhat higher than in the NGOs. It costs the government program an estimated 192 Rs to service a pill user (1 CYP) and the NGO 143 Rs. However, a direct comparison is not fair, as the NGO method costs shown are even lower, on a net basis, as recovery through client fees is possible. Hence, servicing 1 CYP for condoms costs the government program 220 Rs and costs NGOs 240 Rs, 20 Rs more; but client-paid fees will reduce NGO costs by 150 Rs (100 units x 1.5 Rs/unit) to 90 Rs. Sterilization costs are given both with and without the 500 Rs compensation per acceptor. Even with compensation, the per CYP cost of sterilization in Sri Lanka is lower than that found in other Third World family planning programs. Most cost-effective of the methods for either provider appears to be the IUD because of the longer duration of use than for other modern temporary methods. However, overall demand for this method is minimal and proportionately less of the total direct costs is absorbed by its delivery.

Costs for delivering family planning services will inevitably grow given rising demand. The extent to which they grow as projected through the COST accounting framework will depend on at least two other factors, both of

which are not addressed by the model. First, there may be improved program efficiencies, such as declining per capita recruitment costs. Second, the absorptive capacities for services by the various providers, particularly the government, may be higher than currently experienced. Underutilization of staff time and facilities enables extra delivery effort to be accommodated with minimal added cost.

Will overall costs per couple year of protection increase over time, either with or without the scenario of greater private sector coverage? Table 8 gives the results of these calculations for both provider types. It should be noted that in this case, the output measure regarding longer-acting methods, like IUD and sterilization, is annual acceptors (not discounted or adjusted for effective duration). The reasoning behind this is to focus less on change in cost of method effectiveness as opposed to examining at the implications for change in the cost of annual output. Hence, annual output is taken as CYPs for supply methods like pill, injectable and condom and as annual procedures (or insertions) for sterilization and IUDs acceptors.

Table 8a shows the per unit cost in rupees (current) and Table 8B in U.S. dollars. Also the NGO costs are separately given for clinic-based versus social marketing-based services. Recovery levels through client-paid fees is shown to illustrate the potential for cost reduction, which presently benefits NGO efforts and may be a plausible alternative in the future for public sector efforts.

Although aggregate costs (shown in Table 6) rise over this period 1991 to 1995, the per CYP cost is seen as declining. This is not due to program efficiency but rather to the assumed change in the method mix incorporated

into the original user projection. The upward growth in the number of users of spacing methods, and away from sterilization, incurs lower cost to both government and private NGOs, much of it through the reduction in needed compensation payments. Hence, the compositional change in contraceptive methods itself will result in cost savings to the programs. As such, the per CYP cost to the government declines by about 30 Rs in five years if there is no change in provider distribution and by 23 Rs if there is greater private sector involvement. This latter change is again not a reflection of administrative performance but rather reflects the loss of spacing method users to the private provider, leaving the government with a higher share of sterilization-related costs.

Nongovernmental costs per CYP provided through clinic services are higher. Again these figures reflect the role of other direct costs of demand generation and special programs incurred by NGOs from which the public sector directly benefits. Even with recovered user fees, the per CYP costs for NGOs is 396 Rs and would decline to 388 Rs, as less sterilization is envisioned. More importantly, a shift toward greater private sector supply of contraceptive demand beginning in 1985 raises the per CYP cost to NGOs by 1991 (compare 396 Rs with 447 Rs) whereas by 1995 the cost is 42 Rs lower as sterilization use declines. Social marketing programs appear very cost effective, in this case, as after recovered fees, the per CYP cost is less than 80 Rs. Moreover even with an expansion of the social marketing program to supply commercial pharmacies and contribute toward the second scenario, the per CYP costs are quite favorable. No change in provider types results in a net CYP cost of 70 Rs whereas with increasing private coverage the cost is 62 Rs. Nearly two thirds of the social marketing costs are earned back through client-paid commodity purchases.

## Summary

Sri Lanka's family planning efforts are known to be among the most successful in the Third World and certainly in the South Asia region. Remarkable gains in contraceptive adoption over two decades of organized activity have been achieved with relatively little resources. A strong political commitment to national health insurance and dynamic nongovernmental programs have ensured the accessibility of modern contraception through clinics, hospitals, and community-based distribution programs.

With the stated goal of achieving replacement-level fertility by the year 2000, the country faces the continuing challenge of meeting the contraceptive needs of its reproductive-age population, a cohort which will grow significantly during this period as a result of high birth rates in the past. Various projections of the needed amount of contraceptive protection to meet this goal have been made; in addition to the present one, the Department of Census and Statistics (de Silva, 1989) and the Population Division (1990) in the Ministry of Plan Implementation have made such estimates. There is a strong convergence in the numbers, with over two million contraceptive users required to achieve the fertility target at the end of this decade.

The distribution of those users by contraceptive method differs slightly depending on the assumed trends. In this projection, it has been assumed that sterilization use will decline, that the use of modern spacing methods will increase, and that reliance on traditional methods will also decline. In addition, the application of two possible scenarios regarding service and supply provision has been made, one where no change (since the

1987 observed pattern) occurs and one where there is an increasing shift toward private sector coverage of contraceptive needs.

The cost implications of these two scenarios have been estimated here, bearing in mind that the two key factors influencing any programs costs are the composition of methods being used and the types of service delivery providers involved. Increased reliance on private providers is reasonable and possibly necessary given the rising demand and limited public resources to meet the demand. The immediate cost implications are for a 11 to 15% increase in government costs (less if more private sector coverage occurs) and an 18 to 21% increase in NGO costs (more with greater privatization). The distinction draws out the program-related costs of NGOs in maintaining and recruiting contraceptive users, through information and education programs and special outreach efforts.

Cost effectiveness across methods shows, perhaps surprisingly, that all methods offered, with the exception of IUDs for which little demand exists, are about equal. Sterilization compensation does raise method costs significantly but even so, the per CYP cost of about 240 Rs is very competitive with those observed in other developing countries. Gross costs are somewhat lower for method-specific delivery in NGOs but are even lower when user payments are factored in.

The issue of cost recovery becomes important for future consideration, particularly as the Government of Sri Lanka prepares to meet growing contraceptive demand. Sustaining the supply of contraceptives, having adequate numbers of trained personnel, and reviewing the necessity of financial compensation for sterilization will be the main elements in deciding resource allocations. The present no-fee situation in government delivery sites may need to be reconsidered. Certainly the nongovernmental

organizations, like the FPASL, have been charging clients a moderate amount to cover some of the operating costs. Expansion of the social marketing program may also be helpful in this period as a significant proportion of those costs are recovered. However, at the same time as private sector dependence may be encouraged, this analysis indicates that this shift will raise costs for NGOs given the costs of their supportive programs.

Cost projections, in and of themselves, rarely prove to be the most accurate tools for planning. Nonetheless, cost analysis can often reveal potential sources of unexpected costs. Using an accounting procedure which is sensitive to acceptor and user flows and their demand on existing service resources, it is possible in this study to see how variation in the types of contraceptive methods in use over time and the providers available to serve them can create unanticipated patterns of costs. None of these negates the portending rise in contraceptive need if a fertility target of replacement by the end of the decade is to be achieved.

Table 1  
 PROJECTED NUMBER OF WOMEN OF REPRODUCTIVE AGE  
 AND CONTRACEPTIVE PREVALENCE: 1985-2000

Indicator	1985	1990	1995	2000	2005
Total Fertility Rate	2.8	2.64	2.48	2.29	2.10
Women 15-49 years (000s)	4128	4710	5204	5708	6154
Women 15-49 in union (000s)	2408	2689	2971	3259	3514
Percent MWRA currently using	61.7	65.0	68.2	71.3	74.3
Number of contraceptive users (000s)	1486	1747	2026	2324	2612

Table 2  
 PROJECTED LEVEL OF CONTRACEPTIVE USE AND USERS  
 TO ACHIEVE REPLACEMENT FERTILITY BY 2005

Year	Percent using	Number of Users (000s)
1985	61.7	1486
1986	62.4	1537
1987	63.0	1589
1988	63.7	1641
1989	64.3	1694
1990	65.0	1747
1991	65.6	1801
1992	66.3	1857
1993	66.9	1912
1994	67.5	1969
1995	68.2	2026
1996	68.8	2084
1997	69.4	2144
1998	70.1	2204
1999	70.7	2264
2000	71.3	2324
2001	71.9	2383
2002	72.5	2442
2003	73.1	2500
2004	73.7	2557
2005	74.3	2612
Change		
1985-2005	+12.6	+1126
1990-2000	+6.3	+577

Table 3  
 PERCENTAGE OF CURRENTLY IN-UNION WOMEN 15-49 USING  
 CONTRACEPTIVES, BY METHOD: 1985-2005

Method	1985	1990	1995	2000	2005
Pill	4.1	5.7	7.5	9.5	11.5
IUD	2.1	3.0	4.0	5.1	6.2
Female Steriliz.	24.9	24.4	25.8	26.1	26.3
Male Steriliz.	4.9	5.2	5.5	5.7	5.9
Injectables	2.7	3.9	5.1	6.5	7.9
Condom	1.9	2.3	2.7	3.2	3.7
Other	21.1	19.4	17.5	15.2	12.7
TOTAL	61.7	65.0	68.2	71.3	74.3

Table 4  
PROJECTED ANNUAL CONTRACEPTIVE SUPPLY REQUIREMENTS: 1985-2005

Method (units)	1985	1990	1995	2000	2005
Pill (000s of cycles)	1407.8	2004.8	2910.2	4010.5	5005.2
IUD (000s of insertions)	15.1	20.4	28.4	37.8	45.8
Sterilization (000s of procedures)					
Female	36.5	38.6	41.4	43.1	42.7
Male	7.1	7.7	8.5	9.2	9.4
Injectables (000s of units)	289.6	415.9	607.8	841.2	1052.6
Condom (000s of units)	4765.0	6116.0	8103.5	10457.5	12531.2
Other (000s of CYPs)	512.5	522.9	519.6	496.7	459.2

Note: CYP = couple year of protection

Table 5  
 PROJECTED NUMBER OF CONTRACEPTIVE USERS BY TYPE OF SERVICE PROVIDER:  
 TWO ASSUMPTIONS, 1985-2005

Type of assumption and year	Number of users (000s)			
	Total	Government	Non-governmental organizations	Private
<b>No change</b>				
1985	1,486	861	22	602
1990	1,747	1,060	28	660
1995	2,026	1,284	34	709
2000	2,324	1,535	40	749
2005	2,612	1,796	47	769
<b>Increasing private</b>				
1985	1,486	861	22	602
1990	1,747	998	28	721
1995	2,026	1,132	36	858
2000	2,324	1,259	46	1,019
2005	2,612	1,362	57	1,194

Assumption of no change: No change in distribution of service providers observed in 1987 Demographic and Health Survey through to 2005

Assumption of increasing private: Major shift toward private sector provision of pill and condom, moderate for sterilization, and slight shift for IUD and injectables by 2005.

Table 6  
ESTIMATED COSTS FOR FAMILY PLANNING DELIVERY  
BY SERVICE PROVIDER ASSUMPTION: 1991-1995

Provider Scenario	Annual Costs		Percent Change
	1991	1995	
<b>GOVERNMENT</b>			
<u>No change</u>			
Rs (000s)	107,061	126,360	+15.3
\$ (000s)	2,677	3,159	
<u>Increasing private</u>			
Rs (000s)	92,463	103,697	+10.8
\$ (000s)	2,312	2,592	
<b>NON-GOVERNMENTAL</b>			
<u>No change</u>			
Cost			
Rs (000s)	24,430	30,974	+21.0
\$ (000s)	611	774	
User recovery			
Rs (000s)	13,624	17,664	+29.7
\$ (000s)	341	442	
Net cost			
Rs (000s)	10,806	13,310	+18.8
\$ (000s)	270	332	
<u>Increasing private</u>			
Cost			
Rs (000s)	28,995	39,472	+26.5
\$ (000s)	725	987	
User recovery			
Rs (000s)	16,087	23,079	+30.3
\$ (000s)	402	577	
Net cost			
Rs (000s)	12,908	16,393	+21.3
\$ (000s)	323	410	

**Table 7**  
**ESTIMATED COST PER COUPLE YEAR OF PROTECTION BY METHOD**  
**AND SECTOR: 1991**

Sector/ Method	Cost <sup>1</sup> (000s Rs)	CYPs	Rs/CYP	\$/CYP
<b>GOVERNMENT</b>				
Pill	21,603	112,600	191.9	4.80
Injectable	17,689	76,700	230.6	5.77
Condom	4,701	21,400	219.7	5.49
IUD	3,932	59,488 <sup>2</sup>	66.1	1.65
Female sterilz.				
Compensated	51,041	217,360 <sup>3</sup>	234.8	5.87
Not compens.	29,761	217,360	136.9	3.42
Male sterilz.				
Compensated	6,975	40,400 <sup>4</sup>	174.2	4.35
Not compens.	3,055	40,400	76.3	1.91
<b>NGO CLINIC<sup>5</sup></b>				
Pill	243	1,700	142.7	3.57
Injectable	666	3,400	195.9	4.90
Condom	312	1,300	239.9	6.00
IUD	42	572 <sup>6</sup>	73.6	1.84
Female sterilz.				
Compensated	822	2,288 <sup>7</sup>	359.2	8.98
Not compens.	622	2,288	271.8	6.79
Male sterilz.				
Compensated	834	4,576 <sup>8</sup>	182.2	4.55
Not compens.	434	4,576	94.8	2.37

<sup>1</sup> Includes delivery costs, other program-related costs, administrative and indirect costs

<sup>2</sup> CYPs = 20,800, discounted and with effective use of 2.86 years

<sup>3</sup> CYPs = 38,000, discounted and with effective use of 5.72 years

<sup>4</sup> CYPs = 7,000, discounted and with effective use of 5.72 years

<sup>5</sup> NGO clinic costs are not net, i.e. fee-for-service not recovered

<sup>6</sup> CYPs = 200, discounted and with effective use of 2.86 years

<sup>7</sup> CYPs = 400, discounted and with effective use of 5.72 years

<sup>8</sup> CYPs = 800, discounted and with effective use of 5.72 years

Table 8a

COST PER PROCEDURE OR COUPLE YEAR OF PROTECTION  
BY PROVIDER ASSUMPTION: 1991 AND 1995

Provider	1991	1995
<b>Rs/procedure or CYP</b>		
<b>GOVERNMENT</b>		
<u>Cost</u>		
No change	387	355
Increasing private	385	362
<b>NON-GOVERNMENTAL</b>		
<u>Cost</u>		
No change		
Clinic	480	474
Social marketing	200	195
Increasing private		
Clinic	534	491
Social marketing	195	183
<u>Recovery</u>		
No change		
Clinic	84	86
Social marketing	126	125
Increasing private		
Clinic	87	86
Social marketing	123	121
<u>Net cost</u>		
No change		
Clinic	396	388
Social marketing	74	70
Increasing private		
Clinic	447	405
Social marketing	72	62

Cost expressed per procedure (sterilization, IUD insertion)  
or couple year of protection (pill, injectable, condom)  
provided in that year

Table 8b

COST PER PROCEDURE OR COUPLE YEAR OF PROTECTION  
BY PROVIDER ASSUMPTION: 1991 AND 1995

Provider	1991	1995
\$/procedure or CYP		
<u>GOVERNMENT</u>		
<u>Cost</u>		
No change	9.68	10.66
Increasing private	9.62	9.04
<u>NON-GOVERNMENTAL</u>		
<u>Cost</u>		
No change		
Clinic	12.00	11.86
Social marketing	5.00	4.87
Increasing private		
Clinic	13.35	12.30
Social marketing	4.86	4.58
<u>Recovery</u>		
No change		
Clinic	2.11	2.14
Social marketing	3.14	3.12
Increasing private		
Clinic	2.17	2.15
Social marketing	3.08	3.03
<u>Net cost</u>		
No change		
Clinic	9.90	9.72
Social marketing	1.85	1.75
Increasing private		
Clinic	11.18	10.13
Social marketing	1.80	1.55

Cost expressed per procedure (sterilization, IUD insertion) or couple year of protection (pill, injectable, condom) provided in that year