The Pakistan Development Review
31 : 2 (Summer 1992) pp. 119 – 144

Motivation and Fertility Control Behaviour in Pakistan

NAUSHIN MAHMOOD

Using data from the Population, Labour Force and Migration (PLM) Survey of 1979-80, this paper examines the component of potential motivation for fertility limitation among Pakistani married women and then determines what factors are important in explaining the contraceptive use differentials among the potentially motivated subgroup of women. The analysis is conducted using logit regression models.

The findings show that, among women wanting no additional children, a substantial proportion is reluctant to adopt fertility control behaviour, confirming the existence of latent demand for contraception in all strata. A majority of those women report no exposure to the programme or no contact with a family planning worker, and a large majority of those who have had exposure or have been contacted do not report contraceptive use, indicating a considerable shortfall of the programme. Among the urban women wanting no more children, the important factors affecting contraceptive use positively are education (both primary and secondary), household income, living in nuclear family, exposure to the programme, and contact with a family planning worker. For rural women, only nuclear family living and the programme factors are significant in promoting contraceptive use. The suggestions likely to increase contraceptive prevalence are, first, to reach those women who have the potential motivation for contraception, and, second, to increase the quality and sources of the motivation efforts of the programme to crystallize the latent demand among those who need it.

I. INTRODUCTION

In societies like Pakistan, where deliberate control of fertility is very limited, all individuals are not necessarily in favour of unrestrained child-bearing. The motivation for fertility control may exist, but the traditional social setting is likely to suppress it either by scarcity of resources or by inertia. In such a setting, a strong motivation for fertility control in conjunction with highly organised and culturally-sensitive supply systems is required to produce effective fertility regulation. Easterlin (1978) defined the motivation for fertility regulation as the difference between the potential output of surviving children (C_n)[1] and the desired number of

Naushin Mahmood is Research Demographer at the Pakistan Institute of Development Economics, Islamabad.

Author's Note: I am thankful to Professor Ronald Freedman and Karen Oppenhein Mason for their useful comments and helpful suggestions in the completion of this research. This paper is based on chapter five of my dissertation submitted to the University of Michigan, Ann Arbor.

[1]This variable is defined as the number of surviving children that parents would have without deliberate fertility control.

children (C_d). The greater C_n is in excess of C_d, the greater is the potential burden of unwanted children, implying an increased motivation for fertility control. Hence, the desire for no more children, either alone or in combination with the number of living children, is most commonly used to assess the extent of potential motivation for fertility control, which, in turn, has implications for deliberate family limitation.

Research evidence for Pakistan indicates that the desire for no more children has a significant positive relationship with contraceptive use and only a small proportion of those wanting no more children adopt contraception to avoid future births, pointing towards a large unmet need among Pakistani women [Shah and Palmore (1979); Shah and Ahmed (1981)]. Information on fertility through the KAP-type surveys in Pakistan also indicates that among a substantial proportion of women (about 40 percent, on average) who express the desire for no more children, current use of contraception has been less than 10 percent during the past years.[2] Although Pakistan has a history of family planning activity of about twenty-five years, its programme inputs have probably not been sufficient to appreciably raise the contraceptive prevalence rate and thereby reduce marital fertility [Robinson (1978, 1987)].

As the desire for no more children is presumed to indicate the motivation for fertility regulation, it is of interest to study a related question of how, and to what extent, such motivation is translated into effective fertility control behaviour and what factors are important in explaining contraceptive use differentials among the potentially motivated subgroups of women. This study, therefore, has two main objectives:

(1) To examine the discrepancy between the stated desire for children and fertility control behaviour and to see the variability in KAP-gap among different subgroups of women;[3] and
(2) To examine, among those who want no more children, how such characteristics as age, education, residence, and family's socio-economic status affect their fertility control behaviour; and to what extent the supply-related factors are important in explaining the use behaviour of potentially motivated women.

Such an analysis can give us some understanding of the factors related to non-use among presumably motivated women, and can also give some indication of

[2]A summary of results on fertility, desired family size, and contraceptive use derived from the three KAP-type surveys of 1975, 1979-80, and 1984-85 in Pakistan is shown in Annex Table 1 to indicate variability in fertility and family planning-related behaviour of women.

[3]KAP-gap identifies the proportion of currently married women exposed to the risk of childbearing who do not want any more children and yet are not using contraceptives to avoid future births.

why contraception may be an aspect of fertility behaviour of Pakistani women admitting of a slower change than is the desired fertility.

II. METHODOLOGY

After we classify women using contraceptives in relation to their desired fertility by socio-economic subgroups, a multivariate analysis is undertaken to study the relationship of a set of explanatory variables with contraceptive use among those who want no more children. Contraceptive use (*CU*) is measured as a dummy dependent variable that takes the value of One if the respondent is currently using contraceptives and Zero otherwise. Because of the binary nature of the dependent variable (*CU*), logistic regressions are used.[4] The model can then be written as:

$$P = Pr(CU = 1) = F(X\beta) = 1/(1-e^{x\beta})$$

$$(1-P) = Pr(CU = 0) = 1-F(X\beta) = 1/(1-e^{x\beta})$$

where X is a vector of explanatory variables, β is a vector of coefficients associated with X and P is the underlying probability of using contraceptives which is assumed to be completely determined by $X\beta$. Rearranging the above two equations, we can write the logit model as:

$$L = \log P(1-P) = \log P - \log (1-P) = X\beta$$

where L is the logit or log of the odds ratio. The logits, as opposed to proportions, will give prediction or coefficients bounded by Zero or One in the probability metric. The estimated coefficients which have positive and negative signs, indicate the magnitude of the increment in the log-odds of contracepting with a unit change in the explanatory variable. Different equations of the model are estimated by the maximum likelihood estimation technique, using Proc Logist procedure available in the SAS statistical package.

III. DATA DESCRIPTION

The data in the present study is drawn from the Population, Labour Force and Migration (PLM) Survey of Pakistan, undertaken by the collaborative efforts of PIDE/ILO-UNFPA during 1979-80.[5] Based on two-stage stratified random

[4]Although other alternative methods to estimate regressions for a binary dependent variable are probit and log-linear models, I used the logit analysis because of its computational ease, simple interpretation, and desirable statistical properties. On theoretical grounds, however, the estimates obtained from the logit and probit analysis are not likely to differ much because the logistic and normal distributions are quite close to each other except at the tails [see Kmenta (1986) for further information].

[5]See Irfan (1981) for further details.

sampling, the PLM survey generated extensive information on economic, social, and demographic variables through four separate questionnaires on fertility, labour force, migration, and income-expenditure.

The fertility module (i.e., questionnaire) of the PLM survey, which sought information on women's (ever-married aged 15–49 years) background characteristics, their marriage and maternity history, contraceptive knowledge and use, as well as husbands' educational and occupational background, is the main source of our data analysis. Some other economic and family status variables collected through the other three modules are added to fertility information, allowing us to take a comprehensive look at the variations in KAP-gap and contraceptive use behaviour of married women in relation to their personal as well as family characteristics.

The sample size selected for this analysis consists of currently married exposed women[6] aged 15–44 years who responded to the question of whether they wanted any more children. We get a sample of 6,358 women, 3,872 urban and 2,486 rural. Then, for the subgroup of women who do not want more children (the relevant sample size is 2,487 women, 1,142 urban and 1,345 rural) we examine the determinants of contraceptive use as a function of women's individual and familial characteristics as well as of exposure and access to family planning services.

The variables used in explaining the variations in KAP-gap and contraceptive use are women's current age, parity, educational attainment, husband's education, household income, household head's occupation, family type, and region of residence. In addition, 'exposure to family planning through mass media' and 'contact with a family planning worker' are included to examine the impact of supply-related factors on contraceptive use (see Table 1 for the description and measurement of these variables as used in the regression models).

IV. EMPIRICAL RESULTS

Table 2 presents the percentages contracepting and the desire for future births by selected socio-economic characteristics of currently married exposed women for urban and rural areas, separately. To measure the effect of a set of predictor variables on contraceptive use among those who want no more children, Table 3 presents the regression results in two basic models. Model I includes the socio-economic and demographic variables; Model II includes the supply-related variables and all the variables in Model I (the full equation model). The results of other partial equations are reported in Annex Tables 2, 3, and 4 for total, urban, and rural areas, respectively, which will be referred to in the discussion of results.

[6]This refers to women who are reported as fecund, are not pregnant, and have answered the question on contraceptive use. Hence, pregnant women who were not asked the question on use have been excluded from this subsample.

Table 1

Description and Mean Values of Explanatory Variables for Urban and Rural Samples (N=2,487; Exposed Women Wanting No More Children)

Variable Description	Urban	Rural
Women's Age (Current Age in Years)		
15–24[a]	–	–
25–34	0.43	0.39
35–44	0.51	0.56
Parity (Living Children in Numbers)	5.25	5.01
Wife Education (Level Completed)		
No Education[a]	–	–
Primary	0.09	0.03
Secondary and Above	0.19	0.01
Husband Education (Years of Schooling Completed)	5.55	2.07
Household Head Occupation		
Farmers/Farm Managers[a]	–	–
Professional/Clerical	0.21	0.03
Proprietors/Sales Persons	0.19	0.07
Service Workers	0.07	0.02
Agricultural Labourers	0.01	0.08
Production Workers	0.35	0.19
Others	0.14	0.13
Household Monthly Income (in Rupees)	1500.59	977.88
Family Type		
Extended[a]	–	–
Nuclear	0.62	0.65
Region of Residence		
Punjab[a]	–	–
Sindh	0.37	0.17
The NWFP	0.10	0.11
Balochistan	0.04	0.03
Family Planning Programme		
No Exposure and Contact[a]	–	–
Exposure Only	0.24	0.16
Contact Only	0.17	0.14
Both Exposure and Contact	0.16	0.03
Total (N)	(1142)	(1345)

[a]Reference category.

Separate equations for urban and rural areas are estimated to see if the fertility control behaviour of women diverges in the two settings.

(a) Correspondence between Potential Motivation and Fertility Control Behaviour

The results in Table 2 show that contraception is an uncommon practice for a large majority of Pakistani women. For women who want more children, the proportions using contraceptives are quite small across all subgroups, suggesting that fertility control is very rarely used for spacing births. Those few women who do use contraceptives for spacing births are either living in urban areas, are educated, or have higher socio-economic status of the family. However, the variation in the levels of use among these women is too small to anticipate any significant impact on fertility.

The results further show that although contraceptive use is relatively higher among those women who want no more children, it is still quite low in absolute terms. Assuming that wanting no more children reflects the motivation for limiting future births, we find large discrepancies between such motivation and the fertility limitation. Such discrepancies are substantial in the case of women with lower education, a lower socio-economic status, and less exposure and access to the programme. For example, among urban women who want no more children, 36.2 percent with secondary or higher education are users as compared to only 11.2 percent with no education. By comparison, the corresponding percentages for rural women are 23.5 percent and 5.2 percent, respectively. This shows that even well-educated women exhibit their level of use much below its potential, as nearly two-thirds of urban educated women wanting no more children are not using any method. Similarly, 28.5 percent of urban women with both exposure and contact with the programme personnel are users as compared to only 8 percent with no such exposure. Among rural women, the corresponding proportions are 17.1 percent and 2.2 percent, respectively. This indicates two important facts; that most women wanting no more children have not been reached or contacted by the programme, and that a large majority of those contacted have not adopted contraception. This may be reflective of ineffectiveness and inadequacy of the family planning programme services in Pakistan. However, large proportions of the unmet need among all strata could either be due to weak motivation for fertility restriction or due to a weak programme effort, or both. In an attempt to understand which factors are important in the adoption of contraception among the potentially motivated women, we have undertaken a multivariate analysis of the determinants of contraceptive use. This analysis can give us the magnitude of the direct as well as the indirect effects on use of each explanatory variable.

Table 2

Percentages Using Contraceptives, by the Desire for Additional Children among Different Subgroups of Currently Married, Exposed Women in Urban-Rural Areas

Women's Characteristics	Want More Children				Want No More Children			
	Urban		Rural		Urban		Rural	
	%Using	(N)	%Using	(N)	%Using	(N)	%Using	(N)
All Women	3.1	(1211)	0.5	(2660)	17.0	(1142)	5.6	(1345)
Age								
15–24	2.8	(543)	0.3	(1120)	9.1	(1120)	5.0	(60)
25–34	3.8	(519)	0.7	(1116)	18.7	(498)	4.4	(519)
35–44	1.3	(149)	0.2	(424)	16.4	(578)	6.4	(766)
Parity								
1–3	3.2	(1015)	0.4	(2177)	18.4	(228)	5.1	(277)
4 Plus	2.0	(196)	0.8	(483)	16.6	(914)	5.7	(1068)
Wife Education								
None	1.0	(828)	0.3	(2500)	11.2	(824)	5.2	(1278)
Primary	3.7	(136)	1.9	(106)	23.8	(105)	10.0	(50)
Secondary Plus	9.7	(247)	5.6	(54)	36.2	(213)	23.5	(17)
Husband Education								
None	0.2	(451)	0.3	(1732)	10.3	(445)	4.8	(944)
Primary	2.2	(137)	0.3	(370)	16.3	(160)	5.9	(169)
Secondary Plus	5.3	(623)	0.9	(558)	22.7	(537)	8.6	(232)
Household Monthly Income								
<1000	1.0	(590)	0.4	(1957)	11.5	(523)	5.1	(922)
1000–2000	3.6	(392)	0.5	(556)	18.5	(428)	7.0	(345)
2000 Plus	7.4	(229)	0.7	(147)	28.8	(191)	5.1	(78)

Continued –

Table 2 – (*Continued*)

Women's Characteristics	Want More Children				Want No More Children			
	Urban		Rural		Urban		Rural	
	%Using	(N)	%Using	(N)	%Using	(N)	%Using	(N)
Household Head Occupation								
Farmers/Farm Managers	0.0	(38)	0.2	(1232)	3.3	(30)	4.0	(627)
Professional/Clerical	12.1	(124)	2.2	(92)	28.1	(235)	7.0	(43)
Proprietors/Sales Persons	3.0	(233)	0.6	(183)	18.8	(228)	6.3	(96)
Service Workers	2.1	(97)	0.0	(71)	9.3	(75)	6.9	(29)
Agricultural Labourers	0.0	(27)	0.9	(229)	13.3	(15)	4.2	(119)
Production Workers	1.6	(437)	0.9	(484)	12.3	(405)	8.2	(657)
Others	3.9	(155)	0.8	(396)	16.4	(26)	7.5	(174)
Family Type								
Extended	2.7	(752)	0.3	(1522)	15.6	(429)	3.9	(463)
Nuclear	3.7	(459)	0.6	(1136)	17.8	(713)	6.5	(882)
Knows Any Method								
No	0.0	(801)	0.0	(2164)	0.0	(510)	0.0	(944)
Yes	9.0	(410)	2.4	(496)	30.7	(632)	18.7	(401)
Exposure to FP Programme								
No Exposure and Contact	0.8	(644)	0.0	(2019)	8.0	(512)	2.2	(898)
Exposure Only	4.0	(354)	0.5	(391)	23.9	(268)	5.9	(219)
Contact Only	6.3	(111)	2.7	(187)	21.1	(190)	3.0	(187)
Both Exposure and Contact	10.8	(102)	7.9	(63)	28.5	(172)	17.1	(41)
Region of Residence								
Punjab	2.5	(599)	0.7	(1644)	19.7	(527)	6.2	(941)
Sindh	3.2	(433)	0.0	(595)	12.4	(452)	0.4	(234)
The NWFP	2.0	(98)	0.0	(292)	16.4	(116)	9.5	(137)
Balochistan	7.4	(81)	0.0	(129)	31.9	(47)	9.1	(33)

(b) Factors Determining Contraceptive Use among Those Wanting No More Children

(i) Age and Parity

Our results in Table 3 indicate that age increases the likelihood of using any method only in the urban sample where the relatively older women are more likely to adopt contraception than are the younger women. Interpreting in terms of odds ratios and setting the odds of using contraceptives for the omitted category of younger women equal to 1.00, we find that middle-aged urban women (25–34 years) are 2.6 times more likely, and older women (35–44 years) 2.4 times more likely than the younger women (15–24 years), to adopt contraception. In Pakistan's socio-cultural context where it is not normative to regulate fertility at a younger age, it is likely that younger women are more influenced by their husband's negative attitudes towards contraception or have a greater dependency on their in-laws than the older women, who may have stabilised their social position in the family with age and greater marital experience. As a result, older women may feel more confident in making choices about family planning once their fertility desires have been met. For the rural women, on the other hand, the differentials in contraceptive use between age groups are not significant, although the relationship between age and fertility control behaviour is in the expected direction. This implies that the overall context of the rural setting in which contraception adoption is not very common may be making age a less differentiating variable in predicting use.

As for the relationship between parity and contraceptive use, the coefficients are not significant for either urban or rural women across the two models. A lack of relationship between the number of living children and contraceptive use may be due to the fact that parity is strongly related to age, although we might expect that parity taps the strength of the motivation to avoid another birth.

(ii) Women's Education

Education may reduce the social and psychic costs of fertility regulation by providing greater awareness, knowledge, and independence to women to learn about and approach family planning services. Education can also have a direct impact on use through the inculcation of new values and norms to adopt innovative behaviour and increase the likelihood of rejecting fatalistic attitudes towards family planning.

Our results in Table 3 are in agreement with our expectation that women's education has a significant and positive impact on contraceptive use. As we can see, in the urban subsample, not only secondary education but even completing the primary level of education is important in increasing the likelihood of contraception. This is evident from the large coefficients of 0.758 for the primary and 1.195

Table 3

Logit Models of the Effect of Selected Variables on Contraceptive Use among Those Wanting No More Children (Currently Married, Exposed Women, N = 2,487)

Explanatory Variables	Model 1		Model 2	
	Urban	Rural	Urban	Rural
Intercept	–6.980(22.2)***	–5.079(8.36)***	–7.049(22.04)***	–5.426(8.69)***
Age				
15–24	–	–	–	–
25–34	1.045(4.75)*	–.222(.11)	.955(3.91)*	–.571(.67)
35–44	1.021(4.24)*	–.253(.14)	.887(3.14)*	–.007(.00)
Parity	–.039(.65)	.011(.03)	–.049(.99)	–.014(.04)
Wife Education				
None	–	–	–	–
Primary	.758(7.70)**	.375(.46)	.679(5.92)*	.189(.11)
Secondary Plus	1.195(23.54)***	1.397(4.53)*	.994(14.74)***	1.045(2.25)
Husband Education	.008(.13)	.003(.02)	.032(.75)	.035(.85)
Household Head Occupation				
Farmers/Farm Managers	–	–	–	–
Professional/Clerical	1.566(2.23)	.101(.02)	1.471(1.96)	–.079(.01)
Proprietors/Sales Persons	1.401(1.80)	.394(.68)	1.324(1.60)	.359(.51)
Service Workers	.815(.55)	.288(.13)	.671(.36)	.379(.21)
Agricultural Labourers	1.256(.94)	–.064(.02)	1.306(1.02)	–.133(.06)
Production Workers	1.102(1.13)	.608(3.58)*	.986(.90)	.311(.32)
Others	.965(.84)	.434(1.30)	.804(.57)	.311(.32)
Household Monthly Income	.409(8.11)**	.209(.79)	.379(6.78)**	.139(.32)
Family Type				
Extended	–	–	–	–
Nuclear	.423(5.19)*	.616(4.31)*	.417(4.93)*	.718(5.40)*
Region of Residence				
Punjab	–	–	–	–
Sindh	–.776(15.25)***	–2.526(6.19)**	–.734(12.22)***	–1.916(3.46)*
The NWFP	–.264(.83)	.355(1.07)	–.213(.53)	.622(2.75)*
Balochistan	.675(3.29)*	.395(.38)	.577(2.45)	1.114(2.78)*
Exposure to FP Programme				
No Exposure	–	–	–	–
Exposure Only	–	–	.921(15.0)***	1.041(7.3)**
Contact Only	–	–	.991(15.04)***	2.316(55.13)***
Both Exposure and Contact	–	–	.962(13.95)***	1.869(12.76)***
Model X^2	121.85(17df)	146.65(20df)	43.82(17df)	105.78(20df)
(N)	(1142)	(1345)	(1142)	(1345)

Source: Annex Tables 3 and 4.

*Significant at .09 level; **at .01 level; ***at .001 level.

Figures in parentheses are X^2 values.

for the secondary level of education in Model 1, which do not change much after additionally controlling for supply-related factors in Model 2. Interpreting in terms of odds ratios, the results in Model 2 indicate that compared to the uneducated women, urban women with completed primary education are twice as likely – and women with completed secondary education are 2.7 times as likely – to adopt contraception. This suggests that exposure even to only a few years of schooling plays a significant role in removing social and psychological barriers towards contraception and increasing the personal readiness to adopt fertility control behaviour. For rural women, on the other hand, only secondary schooling has a significant impact on the motivation to adopt contraception, as indicated by the appreciable coefficient of 1.397, while primary schooling is not significant in determining use (Model 1). The effect of secondary education, however, disappears once the supply factors are taken into account (Model 2). This suggests that the impact of educational differentials on contraceptive use among rural women operates largely through these particular proximate determinants of contraceptive use, as much of this effect is related to programme variables in this analysis. This means that while the number of rural educated women is small particularly at the secondary level, most of them have had programme exposure and contact with the programme workers, implying that a higher rate of contraception among these few educated women was achieved largely through their contact with the programme.[7]

(iii) Husband's Education

We expect the husband's education to be important in enhancing women's choice to adopt contraception, but the results in Table 3 are not supportive of this hypothesis. As we can see from the table, the coefficients for husband's education are not significant in either of the models. In fact, the impact of husband's education becomes insignificant when wife's education is added to the model. This is evident from the hierarchical estimation of the model shown in Annex Tables 3 and 4, Equations 1 and 2, for both urban and rural women. This implies that the strong effect of wife's education transcends the impact of husband's education in predicting contraception among potentially motivated women, and the original relationship observed for husband's education is spurious in this analysis.

(iv) Household Head's Occupation

We expect that women from non-agrarian and high status-occupation families should be more likely to regulate fertility than women from agrarian or low

[7]A cross-tabulation of women's education by programme variables confirms the fact that a high proportion of secondary-passed rural women also have had greater programme exposure and contact with the family planning personnel.

status-occupation families. Our results support the argument that high-status occupations increase the likelihood of contraception as the coefficients for professional/clerical, proprietors/sales persons are positive and significant when estimated for the total sample. (See Annex Table 2.) However, looking at the results for urban and rural subsamples in Table 3, we find that the household head's occupation does not remain a significant predictor of contraceptive use. This means that virtually all of the effect of occupation on contraceptive use is related to urban residence. Since we are differentiating between non-agrarian occupations and the farmer/landed class – and all non-agricultural occupations are more common in urban areas – we find a null effect of occupation when examined for urban and rural areas separately. These results, thus, show that urban-rural residence accounts for the entire effect of occupation in this analysis.

(v) Family Income and Family Type

One theoretical argument is that the wealthier and economically better-off families would have greater ability to adopt contraception because of the lower monetary and social costs of fertility regulation. The household monthly income, measuring the economic status and well-being of the family, is included in the Model to test this hypothesis. Our findings show that this is true only for urban women, while income differentials make no difference in explaining fertility behaviour of rural women. The results in Table 3 indicate that family income has largely a direct effect in increasing contraceptive use among urban women because the coefficients for income almost remain the same after controlling for the family planning variables (.38 in Model 2), while the coefficients for rural women are insignificant in both the models. The fact that income shows no impact on contraceptive use among rural women could be due to many factors. It is likely that women from the wealthier families give a priority to spend cash income on the preservation of land and increasing its productivity, causing them to be less concerned and motivated to spend on contraceptive services. It is also possible that the psychological and time costs involved in going to a place for such services may be greater for rural women because the availability and easy access to the programme services are lower in rural than in urban areas.

Our results also indicate that women living in nuclear families are more likely to adopt contraception than those in the extended kin households. This fits in well with the theoretical argument that women from nuclear households are more conjugally oriented, are living in a less traditional atmosphere, and face fewer constraints and less opposition from older members of the family about adopting fertility control. As the table shows, for both urban and rural women, the coefficients for family type are positive and significant in Models 1 and 2. This suggests that rural women living in a nuclear family may have fewer economic and social

inhibitions than for those in extended families to take the initiative to adopt contraception. The same reasoning may be true for urban women, but the relative predictive power of the variable is smaller than that for rural women.

(vi) Region of Residence

Region of residence is included in the model to capture the macro effects of living in a region, and to see if significant differences in use exist by region. The logit results in Table 3 give varying effects of the region of residence.

In the urban subsample, the coefficient for Sindh is negative and significant (–.776) while it is positive and significant (.675) for Balochistan and insignificant for NWFP in Model 1. This means that contraceptive prevalence is lower in urban Sindh and higher in urban Balochistan when compared to Punjab, a result somewhat surprising and opposite to what is expected in the context of the general development level of these regions. One explanation of such differentials in contraceptive use could be sought in terms of the differences in the programme's coverage and effectiveness between these regions. We may speculate that a possible reason for a lower programme effectiveness in urban Sindh than the other regions could be the political and economic disturbances in Sindh Province during the past few years, which might have affected programme's outreach and efficiency. The results from Model 2 indicate that the coefficient for Balochistan shrinks and becomes insignificant when the family planning variables are taken into account, while that for Sindh essentially remains the same. This implies that the Sindh-Punjab differences in use could also be due to differences in the types of women or the prevailing cultures in the two provinces.

In the rural subsample, we find from Model 1 that only women in Sindh have a significantly lower contraceptive prevalence than women in the Punjab. Although we expected a lower contraceptive prevalence for all three regions than the Punjab in the rural strata, the results are as expected only for Sindh. The situation, however, changes when family planning variables are taken into account. As we can see from Model 2, women from all three regions indicate significant differentials in use as compared to Punjab, with a lower contraceptive prevalence among Sindhi women and higher use among women from the NWFP and Balochistan. This means that after controlling for programme factors, the coefficients for use increase for the NWFP and Balochistan, but they are lower for Sindh. The relatively higher contraceptive prevalence rates in rural Balochistan and the North West Frontier Province are an unresolved puzzle. Perhaps, they should not be taken too seriously because of the small sample size of these provinces. It must also be mentioned here that the issue of causality between programme variables and contraceptive use is involved in the interpretation of these results. It is hard to determine whether it is the impact of programme variables that has caused women to adopt contraception

or the strong motivation to use that has led some women to seek information about the programme or to approach the programme personnel. The extremely low levels of use, particularly among rural women and in Balochistan Province, suggest that the latter may be more probable. The possibility of reverse causation between the supply factors and contraceptive use will be discussed further in the subsequent section.

(vii) Exposure and Access to FP Services

Greater exposure and access to family planning services tend to reduce the social, financial, and psychic costs of contraception and enhance the motivation to adopt fertility control. 'Exposure of family planning services through mass media'[8] and 'contact with family planning personnel'[9] are the two variables[10] included in the model to capture the impact of supply services on contraceptive use.

The results in Table 3 (Model 2) indicate that the supply factors have a strong relationship with contraceptive use. This is observable from the large and highly significant coefficients for all categories of family planning variables. We can see that for urban women, the log odds of contracepting are .92 greater if a woman has only exposure to the programme, .99 if she has met a family planning worker only, and .96 if she has both programme exposure and contact with a worker. For rural women, the coefficients for these supply factors are even greater and highly significant: 1.04, 2.32 and 1.87, respectively. This indicates that meeting with programme personnel has the strongest relationship to use in rural areas. However, given that contraceptive prevalence is exceedingly low among rural women (Table 2), whether it reflects the impact of the programme on contraceptive use or is a reverse causation is unclear. It seems very probable that the few rural women who are strongly motivated to avoid future births hunt up for the family planning information and the resources to use it. The fact that majority of women do not report any contact with a family planning worker means that the programme effect could not have strong effects on use. The strong coefficients probably arise because the few women, rural in particular, interested in avoiding future births seek

[8]The sources of mass media to get information and exposure about family planning are radio, film, television, newspapers, and magazines.

[9]Meeting with the programme personnel reflects the delivery of supplies and services to motivated women.

[10]'Knowledge of any method' is another relevant variable in this context but is not included in the analysis due to certain limitations. First, the level of knowledge reported in the data set for total women is quite low (29 percent) when compared with the earlier fertility surveys (around 76 percent). The reason for a substantial decline in the level of knowledge over a period of five or ten years is not clear, making the reporting of knowledge questionable in this survey. The data indicate that none of the women without knowledge is using any method.

out the programme services and report their use.

V. CONCLUDING REMARKS

The findings of our analysis confirm the fact that a majority of Pakistani married women are reluctant to adopt fertility control behaviour. Although a substantial proportion (i. e., 45 percent urban and 31 percent rural) of currently married women do not want additional children, only 17 percent and 6 percent of these women are users of contraception, leaving a large gap between the potential demand for and actual use. The magnitude of this gap is large even among women who are well-educated, urban, and from high-income families. However, such women have shown higher levels of use than the uneducated, rural, and low-income women. Our results also show that most women who do not want additional children have no programme exposure or contact with a programme worker, and a large majority (about 72 percent urban and 83 percent rural) of even those who have both exposure and contact have not begun contraceptive use according to these data.

Regarding the factors which determine contraceptive use among those women who want no more children, our findings are that in urban areas, women's education (both primary and secondary) and family income are positively related to higher contraceptive use. In rural areas, on the other hand, primary education makes no difference, and only the small group of women with secondary education have a higher use rate, which was apparently achieved through their contact with a programme worker. Nuclear family living is associated with higher use in both urban and rural areas.

Our analysis, however, makes it evident that among all strata of the population most of those women who want no more children are not protecting themselves. This gap could arise either due to the existence of certain normative or personal constraints on adoption of fertility regulation, or due to the problems of availability of supplies and family planning services. The personal constraints on contraception adoption are related to psychological, socio-cultural, and economic circumstances of individuals. This, I believe, is important to understand in the context of Pakistan's current social and economic structure where low level of development and a limited outreach of the programme–in combination with strong religious and social values favouring high fertility, strong resistance to any change, and a subjugated position of women in making family decisions – probably weaken the motivation for deliberate fertility limitation. This makes the situation in Pakistan quite challenging in terms of the successful implementation of the programme. Our analysis of the determinants of contraceptive use for the minority of women who want no more children, however, indicates the extent to which an individual's social and economic status is related to contraceptive adoption. In rural areas, where people have generally more fatalistic attitudes towards life and are more resistant to

innovative behaviour, education and income, both as factors reducing the psychological and financial barriers, and as increasing knowledge and awareness of family planning, are not related to contraceptive adoption. In urban areas, differentials in education and income apparently have some effect on promoting contraceptive use. This suggests that the effects of certain social and economic factors are related to the specific context of the type of area where women live.

Although two indices of the programme effort are related to contraceptive use, the results indicate a considerable shortfall of the programme. Our findings are consistent with the general consensus that, historically, the programme has not only failed to reach a large proportion of relevant women but also failed to motivate those who have been reached. Greater efforts, therefore, are needed first and foremost to reach those women who have the potential motivation for contraception; and, secondly, to increase the quality and resources of the motivating efforts to crystallize the latent demand among those who need it. In strengthening these programme efforts, it also appears essential to understand and determine what programme elements are critical in obtaining successful results. In this context, it would be useful to initiate small-scale projects in selected areas of Pakistan to identify the key organisational and administrative elements for an effective family planning programme. As these programmes prove successful, they can be systematically introduced into the national programme.

Even if increased programme efforts confirm the existence of latent demand and they increase contraceptive prevalence, there is little doubt that greater progress in social and economic development is desirable both for their general welfare effects and for what they can do to reduce desired fertility and to increase deliberate fertility limitation. As we may infer from our analysis, increase in the levels of education and, hence, more economic and social opportunities for women can be conducive to the achievement of smaller family size desires and the promotion of fertility limitation. Expansion of the basic infrastructure, such as transport and communication facilities, will increase the programme's abilities to reach the rural population and link local populations to non-traditional ideas, aspirations, and markets of the larger world beyond the local village. In addition, increased urbanisation, which may also bring a shift towards the nuclear type of household, may lower desired fertility.

Given the limitations of our data set in terms of aggregate information on desired fertility and contraceptive use within a cross-section of married women only, we feel that there are many questions left unresolved in terms of a precise understanding of the specific reasons deterring contraceptive adoption among Pakistani women. In this regard, women's socialisation, family circumstances, and husband's attitudes, which are likely to influence women's reproductive choices and behaviour, are important to study. Moreover, information on such programme

factors as exposure to and contact with a programme worker, which we have been forced to use in our analysis of the determinants of contraceptive use, is limited in scope and content. A direct measure of the availability of service outlets and access to those places in terms of distance and costs could be more useful in evaluating the impact of supply factors on use, and could give further insights into the questions that we have addressed. The inferences we have drawn from this analysis about programme factors and contraception are based on the responses of women themselves. Our analysis of regional differentials in contraceptive use resulted in some anomalies which need to be examined and clarified by other data, in particular service statistics regarding acceptance rates and the availability of supply services on a regional basis when those are available. Nevertheless, with the limited quantitative information that we have on fertility and its related measures, our analysis has given some insights into the determinants and patterns of fertility control behaviour of married Pakistani women.

Annex Table 1

Fertility Levels, Desired Family Size, Contraceptive Use and Percent Wanting No More Children, by Year of Survey and Region of Residence in Pakistan

Area/Region	Year of Survey[d]	TFR[a]	CEB[b]	Mean Desired Family Size		% Using Contraceptives		% Wanting No More Children
				All Ages	<35	Ever	Current	
All Pakistan	1974-75[c]	6.3	4.2	4.4	4.0	10.5	5.2	49.4
	1979-80	6.5	4.1	4.5	4.3	6.0	4.1	39.5
	1984-85	6.0	4.3	4.9	4.5	11.8	9.1	43.4
Urban Areas	1974-75	6.2	4.2	3.9	–	21.9	12.4	54.0
	1979-80	6.2	4.4	4.3	4.2	11.1	7.7	48.8
	1984-85	5.6	4.4	4.9	4.4	28.6	18.1	49.4
Rural Areas	1974-75	6.4	4.1	4.3	–	6.3	2.7	47.0
	1979-80	6.6	3.9	4.7	4.6	7.0	5.4	41.0
	1984-85	6.1	4.2	5.0	4.7	7.0	5.4	41.0
Region of Residence								
Punjab	1974-75	6.2	4.2	–	–	9.9	–	–
	1979-80	6.5	4.2	4.4	4.2	6.4	5.7	40.6
	1984-85	6.1	4.3	4.7	4.2	12.8	9.3	45.6

Continued –

Annex Table 1 – (*Continued*)

Sindh	1974-75	6.7	4.1	–	–	10.4	–	–
	1979-80	6.1	3.9	4.8	4.7	4.4	4.2	40.4
	1984-85	5.2	4.3	5.1	4.9	11.3	9.6	44.7
	1990-91	5.24						
The North West Frontier Province	1974-75[e]	6.2	4.1	–	–	9.5	–	–
	1979-80	7.0	4.4	4.9	4.7	7.1	4.7	37.9
	1984-85	5.8	4.2	5.5	5.1	10.7	9.4	37.8
Balochistan	1979-80	6.6	3.6	4.4	4.2	8.3	8.6	27.0
	1984-85	7.5	4.7	5.8	5.4	5.4	4.3	25.6

Source: Pakistan Fertility Survey, 1974-75; Population, Labour Force and Migration Survey, 1979-80; Pakistan Contraceptive Prevalence Survey, 1984-85.

[a] Total Fertility Rate.

[b] Children Ever Born (Average).

[c] The total fertility rate for 1974-75 represents the rate for 1970–75, the period five years prior to the survey.

[d] All these surveys pertain to the samples of ever-married women. However, some of the differences in these estimates could be attributed to the differences in survey methodologies. Overall, the fertility questions asked in each survey are quite comparable.

[e] The estimates for 1974-75 represent both the North West Frontier Province and Balochistan.

– Not available.

Logit Model of the Effect of Selected Predictor Variables on Contraceptive Use for Women Wanting No More Children for the Total Sample
(Currently Married, Exposed Women, N = 2487)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	–3.80(92.5)***	–3.66(88.9)***	4.11(92.2)***	–5.41(37.4)***	–5.99(43.6)***	–6.66(51.8)***	–6.89(53.0)**
Age							
15–24	–	–	–	–	–	–	–
25–34	.75(3.9)*	.68(3.3)*	.74(3.8)*	.74(3.8)*	.64(2.8)*	.71(3.3)	.61(2.3)
35–44	.87(5.0)*	.78(4.2)*	.89(5.2)*	.88(5.1)*	.76(3.9)*	.83(4.3)*	.71(3.0)
Parity	.01(.01)	–.03(.49)	–.00(.00)	–.01(.02)	–.01(.13)	.03(.48)	–.04(.86)
Wife Education							
None	–	–	–	–	–	–	–
Primary	.75(10.1)***		.73(9.5)***	.72(9.3)**	.71(9.0)**	.67(8.2)*	.58(5.5)*
Secondary	1.30(36.1)***	–	1.32(36.7)***	1.25(31.6)***	1.25(31.6)***	1.26(31.6)***	1.08(20.8)***
Residence							
Rural	–	–	–	–	–	–	–
Urban	.78(23.9)***	.92(35.9)***	.49(7.2)**	.44(5.8)*	.44(5.6)*	.61(10.7)	.42(4.7)*
Husband Education	.04(4.9)*	.09(45.9)***	.02(1.1)	.01(.53)	.02(.63)	.01(.53)	.01(.26)
Household Head Occupation							
Farmers/Farm Managers			–	–	–	–	–

Continued –

Annex Table 2 – (*Continued*)

Professional/Clerical		1.02(11.3)***	1.02(11.4)***	.98(10.5)***	.92(8.9)**	.92(8.9)**
Proprietors/Sales Persons		.84(8.3)**	.84(8.3)**	.84(8.2)**	.77(6.9)**	.81(7.5)**
Service Workers		.33(.61)	.38(.81)	.37(.72)	.32(.54)	.27(.36)
Agriculture Labourers		.27(.4)	.32(.53)	.27(.38)	.18(.17)	.24(.28)
Production Workers		.61(5.2)*	.65(6.0)	.65(5.8)*	.61(5.1)*	.59(4.8)*
Others		.52(3.2)	.52(3.2)	.55(3.5)	.44(2.2)	.37(1.5)
Household Income			.20(2.9)*	.26(4.9)*	.38(9.5)*	.34(7.6)**
Family Type						
Extended				–	–	–
Nuclear				.42(7.7)**	.48(9.4)	.49(9.5)**
Region of Residence						
Punjab					–	–
Sindh					–.86(22.2)***	–.69(12.7)***
The NWFP					–.02(.01)	.09(.18)
Balochistan					.61(3.9)*	.66(4.3)*
Exposure to FP Programme						
No Exposure, No Contact						–
Exposure Only						1.02(26.2)***
Contact Only						1.49(59.8)***
Both Exposure and Contact						1.20(27.6)***
Model X^2	174.2***(7df)	136.0***(5df)	188.2***(13df)	191.1***(14df)	199.0(15df)	232.0(18df)	302.9(21df)

*Significant at .09 level; **at .01 level; ***at .001 level.

Figures in Parentheses are X^2 values.

Annex Table 3

Logit Model of the Effect of Selected Predictor Variables on Contraceptive Use for Women Wanting No More Children for the Urban Subsample
(Currently Married, Exposed Women, N = 1142)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	–3.20(43.8)***	–2.90(37.3)***	–4.35(15.0)**	–5.91(16.7)***	–6.29(18.6)***	–6.98(22.1)***	–7.05(22.0)**
Age							
15–24	–	–	–	–	–	–	–
25–34	1.08(5.4)*	.99(4.7)*	1.05(5.1)*	1.03(4.9)*	.94(4.1)*	1.04(4.8)*	.99(3.9)*
35–44	1.07(5.0)*	.94(4.1)*	1.05(4.8)	1.03(4.6)	.93(3.8)*	1.02(4.2)*	.89(3.1)*
Parity	–.01(.05)*	–.05(1.0)	–.01(.05)	–.02(.11)	–.03(.27)	–.04(.65)	–.05(.9)
Wife Education							
None	–	–	–	–	–	–	–
Primary	.82(9.6)***		.80(8.9)**	.79(8.8)**	.79(8.8)**	.76(7.7)**	.68(5.9)*
Secondary	1.28(29.8)***		1.30(29.8)***	1.21(24.7)***	1.21(24.6)***	1.19(23.5)***	.99(14.7)***
Husband Education	.04(3.4)	.10(38.3)***	.01(.42)	.01(.11)	.01(.11)	.01(.13)	.01(.02)
Household Head Occupation							
Farmers/Farm Managers	–	–	–	–	–	–	–
Professional/Clerical			1.68(.4)	1.65(2.5)	1.61(2.4)	1.57(2.2)	1.47(1.9)
Proprietors/Sales Persons			1.49(2.1)	1.45(1.09)	1.43(1.9)	1.40(1.8)	1.32(1.6)

Continued –

Annex Table 3 – (*Continued*)

Service Workers		.85(.6)	.87(.63)	.83(.58)	.81(.55)	.67(.36)
Agriculture Labourers		1.31(1.0)	1.36(1.1)	1.28(1.1)	1.26(.9)	1.31(1.0)
Production Workers		1.12(1.2)	1.12(1.2)	1.10(1.1)	1.10(1.1)	.99(.9)
Others		1.10(1.1)	1.06(1.0)	1.06(1.0)	.96(.84)	.81(.57)
Household Income			.24(3.0)*	.28(4.1)*	.41(8.1)*	.34(6.8)**
Family Type						
Extended				–	–	–
Nuclear				.33(3.3)*	.42(5.2)*	.42(4.3)*
Region of Residence						
Punjab					–	–
Sindh					–.78(15.3)***	–.73(12.2)***
The NWFP					–.26(.83)	–.21(.53)
Balochistan					.66(3.3)*	.58(2.45)
Exposure to FP Programme						
No Exposure, No Contact						–
Exposure Only						.92(15.0)***
Contact Only						.99(15.1)***
Both Exposure and Contact						.96(13.9)***
Model X^2	80.7***(6df)	48.3***(4df)	92.2***(12df)	95.2***(13.df)	98.6(14df)	121.8(17df)	146.6(20df)

*Significant at .09 level; **at .01 level; ***at .001 level.

Figures in parentheses are X^2 values.

Annex Table 4

Logit Model of the Effect of Selected Predictor Variables on Contraceptive Use for Women Wanting No More Children for the Rural Subsample
(Currently Married, Exposed Women, N = 1345)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	–3.34(27.0)***	–3.30(27.1)***	–3.64(30.4)***	–4.36(6.7)***	–5.71(10.5)***	–5.08(8.4)***	–5.43(8.7)**
Age							
15–24	–	–	–	–	–	–	–
25–34	–.09(.02)	–.13(.04)	–.09(.02)	–.08(.01)	–.16(.06)	–.22(.11)	–.57(.67)
35–44	.34(.28)	.29(.20)	.39(.36)	.40(.38)	.33(.25)	–.25(.14)	–.01(.00)
Parity	.03(.20)	.03(.20)	.03(.13)	.02(.09)	.02(.05)	.01(.03)	.01(.04)
Wife Education							
None	–	–	–	–	–	–	–
Primary	.477(.80)	–	.54(.97)	.52(.90)	.45(.67)	.38(.46)	.19(.11)
Secondary	1.45(5.0)*	–	1.38(4.4)*	1.39(4.5)*	1.43(4.7)*	1.39(4.5)	1.04(2.3)
Husband Education	.046(1.8)	.08(6.4)*	.04(1.10)	.03(.92)	.04(1.3)	.03(.75)	.04(.85)
Household Head Occupation							
Farmers/Farm Managers			–	–	–	–	–
Professional/Clerical			.28(.17)	.28(.18)	.18(.08)	–.10(.02)	–.08(.01)
Proprietors/Sales Persons			.48(1.00)	.49(1.10)	.47(.97)	.39(.48)	.36(.51)
Service Workers			.48(.38)	.51(.43)	.45(.34)	.29(.13)	.38(.21)

Continued –

Annex Table 4 – (*Continued*)

Agriculture Labourers		.15(.09)	.17(.11)	.12(.06)	–.06(.02)	–.13(.06)
Production Workers		.78(6.4)*	.81(6.6)*	.81(6.5)	.61(3.6)*	.31(.61)
Others		.51(1.9)	.50(1.8)	.56(2.3)	.43(1.30)	.31(.61)
Household Income			.11(.22)	.25(1.10)	.21(.79)	.14(.32)
Family Type						
Extended				–	–	–
Nuclear				.67(5.6)*	.62(4.3)**	.72(5.4)*
Region of Residence						
Punjab					–	–
Sindh					–2.53(6.2)*	–1.92(3.5)*
The NWFP					.36(1.1)*	.62(2.7)*
Balochistan					.39(.38)	1.11(2.8)*
Exposure to FP Programme						
No Exposure, No Contact						–
Exposure Only						–1.92(3.5)**
Contact Only						2.32(55.1)***
Both Exposure and Contact						1.87(12.8)***
Model X^2	12.9*(6df)	8.5(4df)	19.7(12df)	19.9(13df)	26.1*(14df)	43.8***(17df)	105.8(20df)

*Significant at .09 level; **at .01 level; ***at .001 level.

Figures in Parentheses are X^2 values.

REFERENCES

Easterlin, Richard A. (1978) The Economics and Sociology of Fertility: A Synthesis. In Charles Tilly (ed) *Historical Studies of Changing Fertility*. Princeton: Princeton University Press.

Irfan, Mohammad (1983) Studies in Population, Labour Force, and Migration: A PIDE/ILO/UNFPA Project. Islamabad: Pakistan Institute of Development Economics. (Research Reports Series No. 118.)

Kmenta, J. (1986) *Elements of Econometrics*. New York: Macmillan.

Morgan, Philips, and Jay D. Teachman (1988) Logistic Regression: Description, Examples, and Comparisons. *Journal of Marriage and the Family* 50:929–936.

Population Planning Council (1976) *Pakistan Fertility Survey: First Report*.

Population Welfare Division (1986) *Pakistan Contraceptive Prevalence Survey: 1984-85*. Islamabad: Ministry of Planning and Development Division.

Robinson, Warren C. (1978) Family Planning in Pakistan, 1955–1977: A Review. *The Pakistan Development Review* 17:2 233–247.

Robinson, Warren C. (1987) The New Beginning in Pakistan's Family Planning Programme. *The Pakistan Development Review* 26:1 107–118.

Shah, Nasra M., and James A. Palmore (1979) Desired Family Size and Contraceptive Use in Pakistan. *International Family Planning Perspective* 5:4 143–149.

Shah, Nasra M., and Tauseef Ahmed (1981) Unmet Need for Contraception in Pakistan: A Review of Programme Targets. Honolulu, Hawaii: East West Center. (Working Papers of the East-West Population Institute No. 18.)