

Ascertaining the level of fertility preference implementation in Nigeria

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Abstract

Using the 1990 and 2003 Nigeria Demographic and Health Survey (NDHS) data, the study examines the levels of, trend and differentials in fertility preference implementation in Nigeria and how this has contributed to observed fertility changes in the country. Results show that the extent to which women implement their fertility preference is high and increased by about 4% over the period. Its contribution to observed fertility decline of 0.5 births was however small (6%). The index also increased over the period by the various characteristics of women examined except among respondents with tertiary level of education and women from the South West. Percentage change is high among women from rural areas, the North-East and women with no formal education. The pattern among different categories of couples shows that preference implementation is higher among cohabiting, monogamously married and concordant couples. The paper concludes with program and research recommendations.

Key words: Fertility, preference, implementation, index, Nigeria.

Resume

Utilisant les données de L'Enquête Démographique et de Santé du Nigeria pour les années 1990 et 2003, l'étude examine les niveaux, tendances et différences dans la mise en œuvre des préférences de fécondité au Nigeria et comment cela a contribué aux changements observés dans la fécondité. Les résultats montrent que le degré auquel les femmes adhèrent à leurs préférences de fécondité est élevé et a augmenté d'environ 4 % sur cette période. La contribution de celui-ci à la baisse en fécondité de 0.5 naissances était cependant petite (6 %). L'index a également augmenté pendant cette période par les diverses caractéristiques des femmes examinées, sauf parmi les répondants de niveau universitaire et les femmes du Sud-ouest. Le changement en pourcentage est élevé chez les femmes en milieu rural, au Nord-est et les femmes illettrées. La constante parmi les différentes catégories de couples montre que l'adhérence à ces préférences est plus élevée chez les couples qui cohabitent, mariés monogames et les couples concordants. Le document se conclut par des recommandations de programme et recherche.

Introduction

The discrepancy observed between actual and wanted fertility in Nigeria points to the fact that women have not been able to translate their fertility preferences into reality. For example, wanted fertility declined from 6.1 in 1990 to 5.5 in 2003 while actual fertility fell from 6.3 to 5.8 over the same period (Ibisomi, 2007). These differences show that there is some degree of unwanted fertility in the country.

Fertility preference studies have been limited in Nigeria. The available ones are however rich in content and diversity (in terms of coverage and study population). For instance, McCarthy & Oni (1987) examined the determinants of desired family size among urban women in a South-Western city of Nigeria distinguishing between women who expressed numerical and those who expressed non-numerical responses. Non-numeric responses were found to be common among young women, women with fewer children, women residing in low socio-economic areas, women in polygamous marriages, Muslim women and women with no education. Bankole (1995) in his own study of couples' preferences and their subsequent fertility also in the South-Western part of the country brought forth the strong influence of men on fertility decisions, which cannot be ignored or captured by proxy information from the wives. He found that fertility desires of both marriage partners are important predictors of couples' fertility and that the desires of both spouses have equal effects on fertility behaviour.

Isiugo-Abanihe (1994) examined the reproductive motivation and family

size preferences among Nigerian men. The study showed that preference for a large family is very strong among Nigerian men (who generally decide and dictate what happens within and around the family) although there are considerable ethnic and religious variations.

At the regional level, a study of seven sub-Saharan African countries (Feyisetan & Casterline, 2000) on indicators of fertility preferences revealed increases in the desire to limit child-bearing and that these contributed substantially to the increase in prevalence of contraceptive use when the latter is decomposed into the explanatory variables. Similarly, decomposition of changes in fertility into its determinants shows that while on the average the level of implementation index is a more important determinant of fertility decline for all the developing countries examined, the demand for children (wanted fertility) is the dominant factor in sub-Saharan Africa (Ibisomi, Odimegwu, Otieno & Kimani, 2005; Ibisomi, 2002; Bongaarts, 1993).

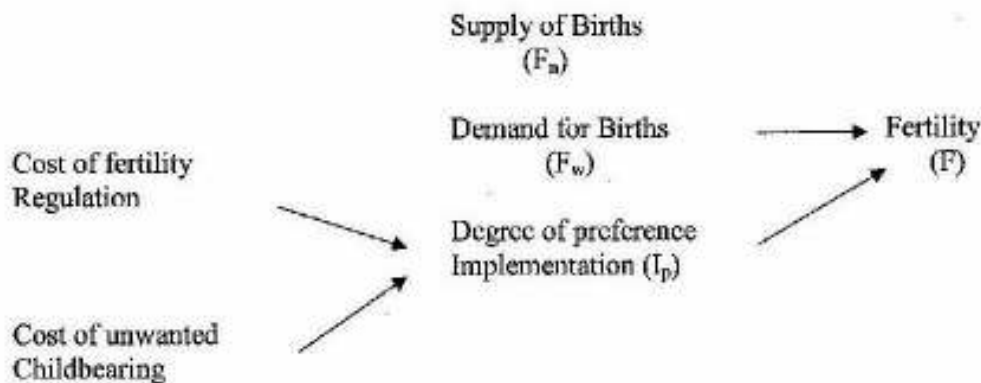
While the studies presented above have addressed various fertility preference issues, not much has been done to examine the extent to which couples and individuals have been able to achieve their fertility preferences. Also, while there is an indication of fertility transition in Nigeria (NDHS 2003; Feyisetan and Bankole, 2002), there has not been a systematic investigation of the contributing factors to this decline. In addition, few known studies have been done within a theoretical context to quantify fertility measures in the country at the national level. Thus, the impact of the various efforts by the government to implement or achieve set

objectives at the various international meetings on population in the promotion of fertility behaviour remains a matter of conjecture in Nigerian demographic discourse.

This study specifically estimates the extent to which people have been able to implement their fertility preferences and the contribution of this to fertility changes in Nigeria. It will add to the body of knowledge on fertility and reproductive health issues in Nigeria. It will also be an indicator of the extent to which available reproductive health programs and services in the country have assisted couples and individuals to achieve their fertility preferences. These should assist the government as well as reproductive health programmers in designing appropriate and/or fortifying existing ones with the aim of improving the level at which people achieve their fertility preferences and towards the country achieving a sustainable fertility level.

Theoretical framework

The framework for this study is adapted from the Bongaarts (1993) variant of the supply-demand framework for the determinants of fertility and enhanced by ideas from literature reviewed on the crucial role of males on eventual couples' fertility behavior. The Bongaarts framework posits that fertility (F) as measured by total fertility rate is an outcome of the interaction of supply of births (natural fertility), demand for births (wanted fertility) and degree of fertility preference implementation (an index that measures the extent to which people are able to implement their fertility preferences). The degree of preference implementation is in turn dependent on cost of fertility regulation and that of unwanted childbearing. Following is a summary of the key variables and their relationships in the Bongaarts (1993) model.



Source: Bongaarts, J. (1993). The supply-demand framework for the determinants of fertility: An alternative implementation.

Figure 1 Key variables and interrelations in variant of supply-demand model.

Supply of births (F_n) is measured as natural total fertility. Natural fertility means the rate of childbearing that would prevail in the absence of deliberate efforts by couples to limit family size.

Demand for births (F_w) is measured as wanted total fertility. Wanted fertility is the rate of childbearing that would be achieved if all women were able to

eliminate unwanted births.

Degree of preference implementation (I_p) is measured by an index with values ranging from 0 to 1.

The above framework is expanded to incorporate the role of males in fertility decision-making and outcome thus:

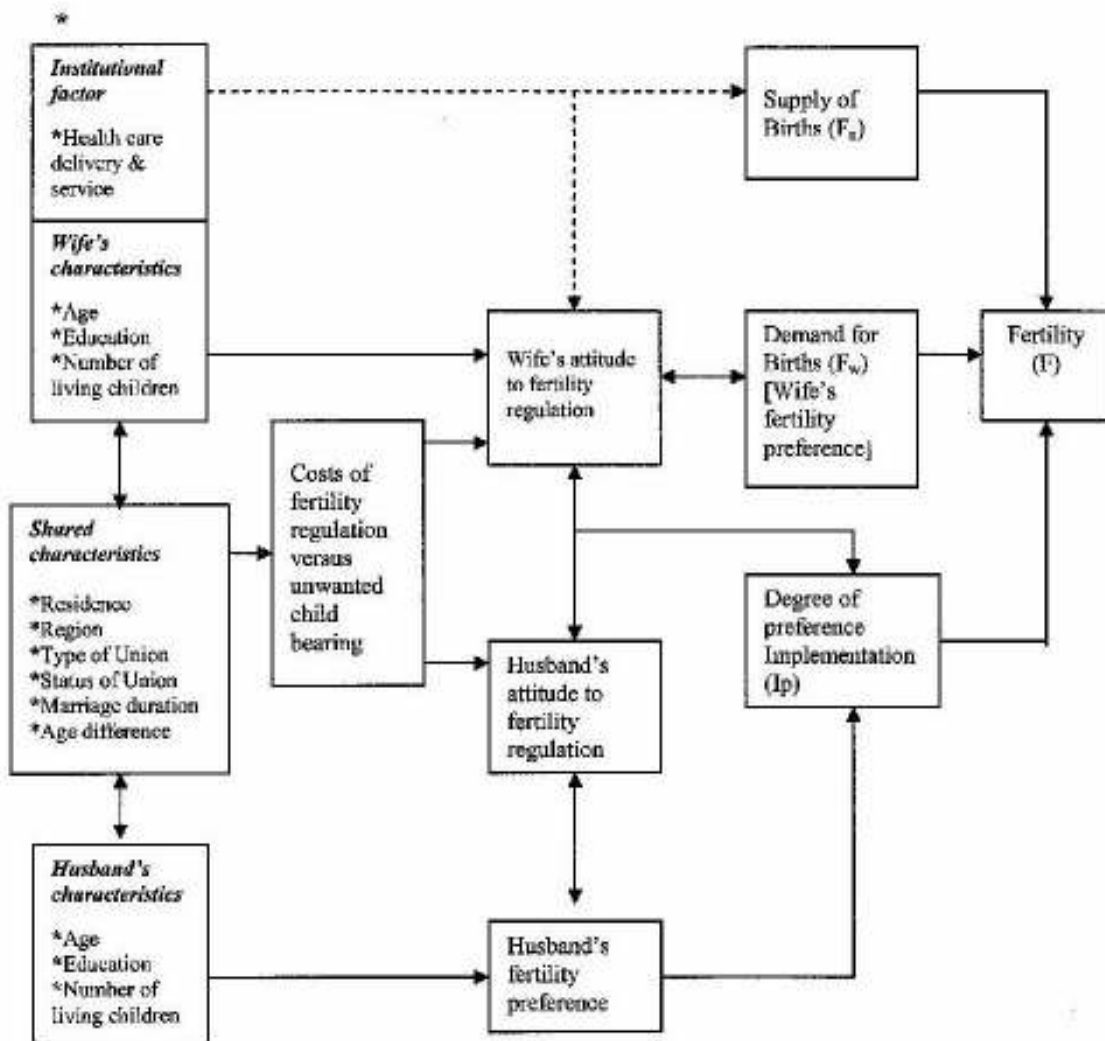


Figure 2 Operational framework for analysis of fertility preference implementation in Nigeria.

-----> Link not operationalised.

In the expanded framework (Figure 2), which is used in the analysis of this study, couples' individual characteristics have effect on their shared characteristics and vice versa while the three influence couples' individual attitude to fertility regulation and fertility preferences. The couples' characteristics equally influence the way they perceive and balance out the costs of fertility regulation and that of unwanted child bearing which eventually inform their attitude to fertility regulation. The availability and accessibility of health care service also influences couples fertility regulation attitude and preference as well as the woman's natural fertility (For example where the service is available and of good quality, it can increase natural fertility through prompt treatment of diseases that give rise to infertility. However, this variable will not be operationalised due to lack of adequate measure in the data sets).

In this model, the woman's attitude to fertility regulation influences her fertility preference and vice versa. The same applies for the man. The model also shows that the fertility attitude and preferences of the two spouses have influence on each other for it is the outcome of these that determines the extent to which a woman achieves her fertility preferences. The actual fertility is then determined by the woman's fertility preference (demand for births), natural fertility (supply of births) and the extent to which she is able to implement her fertility preference (degree of preference implementation).

Data and methods

Data source and sample size

For this analysis, the 1990 and 2003

Nigeria Demographic and Health Survey (NDHS) individual women data and 1,168 matched couples' records from the 2003 survey are used. The NDHSs are nationally representative (cross-sectional) probability sample surveys of women aged 15-49 years and men aged 15-59 years in the 2003 survey designed to provide up to date information on fertility among numerous other issues. For the individual women data sets, the sample sizes were 8,781 and 7,620 in the 1990 and 2003 surveys, respectively. Response rates for the two NDHS individual women questionnaires was 95.4% in the two surveys. For details on the conduct of the surveys, please refer to the 1990 and 2003 NDHS reports.

Data analysis

The data sets are analysed using Statistical Package for Social Scientists (SPSS) for Windows. To achieve the study objectives, the Bongaarts (1993) variant of the supply-demand framework for the determinants of fertility is adapted and operationalized. The Bongaarts model is specified thus:

$$F = F_w \times I_p + F_n \times (1 - I_p) \quad (1)$$

where F is the total fertility rate (TFR), F_w is wanted fertility (calculated like the TFR but with unwanted children removed from the numerator), F_n is total natural fertility [$F_n = F/C \times C = 1 - 1.02 \times U$ where U represents the proportion of married women who practice contraception] and I_p is the index of preference implementation with values ranging from 0 to 1. With full preference implementation (demand equals actual), $I_p = 1$ and I_p is 0 with no preference implementation

(actual fertility will be equal to natural fertility). The index of fertility preference implementation is a measure of the extent to which women are able to implement their fertility preferences.

Since F , F_w and F_n can be calculated from the survey data sets, I_p remain the only unknown. Rearranging the equation to make I_p the subject of the formula gives:

$$I_p = (F_n - F)(F_n - F_w) \quad (2)$$

$$F_1 - F_2 = [F_{w1}I_{p1} + F_{n1}(1 - I_{p1})] - [F_{w2}I_{p2} + F_{n2}(1 - I_{p2})] \quad (3)$$

Since the emphasis here is on examining changes in fertility that result

Equation 2 is used to derive the index of preference implementation in this study.

To estimate the contribution of wanted fertility, natural fertility and the index of fertility preference implementation to fertility changes between the periods, fertility trend is decomposed into its determinants. The decline in fertility between two periods is simply $F_1 - F_2$, and this difference can be expressed as a function of the mediating variables thus:

from changes in determinants, this equation can be rewritten as

$$\Delta F = \Delta F_w \bar{I}_p + \Delta I_p (\bar{F}_w - \bar{F}_n) + \Delta F_n (1 - \bar{I}_p) \quad (4)$$

where ΔF , ΔF_w , ΔF_n and ΔI_p represent absolute changes in F , F_w , F_n and I_p , respectively and \bar{F}_w , \bar{F}_n and \bar{I}_p are the average values of F_w , F_n and I_p respectively.

Equation (4) conveniently divides the observed fertility decline ΔF into three

components corresponding to each of the three determinants

Change in

Natural fertility ΔF_n

Wanted fertility ΔF_w

Index of implementation ΔI_p

Contribution to fertility decline Δ

$$\Delta F_n (1 - \bar{I}_p)$$

$$\Delta F_w \times \bar{I}_p$$

$$\Delta I_p (\bar{F}_w - \bar{F}_n)$$

The influence of the men on the extent to which their partners are able to implement their fertility preferences is examined by estimating and comparing fertility preference implementation indices for selected individual and shared characteristics of the couples. These are type of union (monogamy, polygamy), status of union (cohabiting,

formal) and couples' desired number of children. Desired number of children was put into four categories as follows: (1) concordant – where the man and the woman desired the same number of children, (2) discordant joint – where the man and the woman did not desire the same number of children, (3) discordant (H>W) – where the man

desired more children than his partner and (4) discordant ($W > H$) – where the woman desired more number of children than her partner.

Scope and limitation

The formulation assumes that actual fertility is always greater than wanted fertility in the course of development. Hence its relevance and adoption for this study as observed fertility (F) exceeds wanted fertility (F_w) in Nigeria. In cases where F and F_w are equal to F_n or where $F_w > F$, I_p cannot be captured. Further work is clearly needed on the indicator to incorporate all the possible outcomes of the interplay between natural, wanted and actual fertility. The formulation is also suited to macro level analysis (where averages of the determinants are used in the calculations) only as preference implementation cannot be estimated at individual woman level. These identified lags are however beyond the scope of this study.

Results

The extent to which women are able to translate their wanted fertility into reality (actual fertility behaviour measured by TFR) given their natural fertility is presented here. The indices of fertility preference implementation (I_p) among sampled women are presented in Table 1. Table 2 presents the percentage change in actual fertility (F), natural fertility (F_n), wanted fertility (F_w) and I_p between 1990 and 2003 while Table 3 presents the absolute and percentage

contribution of the three determinants (F_n , F_w and I_p) to the observed change in actual fertility among sampled women over the period. In addition, the fertility preference implementation indices among couples are shown in Table 4.

Fertility preference implementation index

Table 1 shows a decline in total fertility rate (F) between 1990 and 2003. Fertility also generally declined over the period among the sub groups except among respondents with no formal education, those with tertiary level of education and those from the North East. It is worthy to note that proportion of currently married women using contraceptives increased from 0.08 in 1990 to 0.13 in 2003. The proportion also increased by the various sub-groups over the period except among women with tertiary level of education. Despite the decline in contraceptive use among this group of women, the highest use of contraceptives in the country is still found amongst them. Table 1 also presents the indices of fertility preference implementation among sampled women by some of their background characteristics. The table shows that in the total sample, total fertility rate (F), natural fertility (F_n) and wanted fertility (F_w) all declined over the period while the index of fertility preference implementation (I_p) increased from 0.73 in 1990 to 0.76 by 2003.

Table I Indices of fertility preference implementation among women in Nigeria with the values used in its derivation.

	U	C	F	Fn	Fw	Ip
Residence						
Urban						
1990	0.163	0.834	5.43	6.51	5.18	0.81
2003	0.193	0.803	5.10	6.35	4.84	0.83
Rural						
1990	0.034	0.965	6.95	7.20	6.77	0.58
2003	0.096	0.902	6.31	6.99	6.00	0.69
Education						
None						
1990	0.027	0.972	7.46	7.67	7.30	0.57
2003	0.046	0.953	7.65	8.03	7.44	0.64
Primary						
1990	0.117	0.881	6.82	7.74	6.49	0.74
2003	0.163	0.834	6.37	7.64	5.94	0.75
Secondary						
1990	0.231	0.764	4.65	6.08	4.27	0.79
2003	0.269	0.726	4.43	6.11	4.13	0.85
Tertiary						
1990	0.395	0.597	2.55	4.27	2.50	0.97
2003	0.335	0.658	2.79	4.24	2.64	0.91
Region						
North East						
1990	0.018	0.982	6.83	6.96	6.68	0.46
2003	0.041	0.958	7.29	7.61	7.09	0.61
North West						
1990	0.023	0.977	7.84	8.03	7.77	0.73
2003	0.070	0.929	6.63	7.14	6.48	0.77
South East						
1990	0.096	0.902	6.05	6.71	5.76	0.69
2003	0.216	0.780	4.56	5.85	4.12	0.75
South West						
1990	0.182	0.814	5.46	6.70	5.19	0.82
2003	0.298	0.696	4.31	6.19	3.86	0.81
Total						
1990	0.080	0.918	6.32	6.88	6.11	0.73
2003	0.131	0.866	5.82	6.72	5.53	0.76

U – Proportion of married women using contraception

 $C = 1 - 1.02*U$

Fn = F/C

F = Total Fertility Rate

Fw = Wanted Fertility

 $Ip = (Fn-F)/(Fn-Fw)$

Ip – Index of preference implementation

The same trend in actual, natural and wanted fertility over the survey period in the total sample of women is also observed when the analysis is disaggregated by type of place of residence,

highest level of education and region. The exception to this are found among women with no formal education and women in the North-Eastern region of the country. These are also the two

groups of women with increase in their actual fertility levels between 1990 and 2003. The index of fertility preference implementation generally increased in the various sub-groups except among women with tertiary level of education and women from the South-Western region. As would be expected, the extent to which women in urban areas are able to implement their fertility preference is higher than found among women in the rural areas. Although there is a decline in the extent to which people have been able to implement their fertility preferences over the period in the tertiary education category, the extent to which this group of women are able to implement their fertility preferences is still higher than what is obtained in the other three education categories. The index generally increases as the level of education increases implying that people are more able to achieve their fertility preferences as their level of education increases. Among the regions, the extent to which people have been able to implement their fertility preferences is lowest in the North East and highest in the South West where it was relatively stable (0.82 in 1990 and 0.81 in 2003) over the period examined.

Percentage change in the three determinants between periods

This was carried out to know the magnitude of the change in the three determinants of fertility (as well as actual fertility level itself) between 1990 and 2003. Table 2 shows notable percentage decline of between 15 and 25 percent in actual fertility among women from the North West, South East and South West regions of the country. Similar pattern is found in the percentage decline in wanted and natural fertility,

with the three regions having the greatest decline. Percentage decline in the rural areas are higher than found in the urban areas for actual fertility and its three determinants. For the fertility preference implementation index, high percentage of change over the period are found among respondents from the North East, respondents from the rural areas and those with no formal education.

Estimation of the contribution of the three determinants to fertility changes between periods

In order to estimate the contribution of wanted fertility, natural fertility and the degree of fertility preference implementation to fertility changes between 1990 and 2003, fertility trend over the period was decomposed into the three determinants. The estimates of observed, wanted and natural fertility, as well as the index of implementation for the two successive points of 1990-2003 are used in the procedure as discussed in the data and methods section. Table 3 shows the absolute and percentage contribution of the three determinants to changes in fertility over the period.

Between 1990 and 2003, actual fertility declined by 0.5 births per woman. This is accounted for by a decline of 0.43 births in wanted fertility, 0.04 births decline in natural fertility and 0.03 births decline in the index of fertility preference implementation. These births translate into contributions of 86, 8 and 6 percent (to the observed 0.5 births per woman) by wanted fertility, natural fertility and the index of fertility preference implementation, respectively. The increase in actual fertility level among respondents with no education was contributed to by increase in wanted and natural fertility. This is also

Table 2 Percentage change in actual fertility, wanted fertility (Fw), natural fertility (Fn) and the index of fertility preference implementation (Ip) between 1990 & 2003 among women in Nigeria.

	F		Fw		Fn		Ip	
	1990	2003	1990	2003	1990	2003	1990	2003
		% change		% change		% change		% change
Residence								
Urban	5.43	5.10	5.18	4.84	6.51	6.35	0.81	0.83
		-6.08		-6.56		-2.46		2.47
Rural	6.95	6.31	6.77	6.00	7.20	6.99	0.58	0.69
		-9.21		-11.37		-2.92		18.97
Education								
None	7.46	7.65	7.30	7.44	7.67	8.03	0.57	0.64
		2.55		1.92		4.69		12.28
Primary	6.82	6.37	6.49	5.94	7.74	7.64	0.74	0.75
		-6.60		-8.47		-1.29		1.35
Secondary	4.65	4.43	4.27	4.13	6.08	6.11	0.79	0.85
		-4.73		-3.28		0.49		7.59
Tertiary	2.55	2.79	2.50	2.64	4.27	4.24	0.97	0.91
		9.41		5.60		-0.70		-6.19
Region								
North East	6.83	7.29	6.68	7.09	6.96	7.61	0.46	0.61
		6.73		6.14		9.34		32.61
North West	7.84	6.63	7.77	6.48	8.03	7.14	0.73	0.77
		-15.43		-16.60		-11.08		5.48
South East	6.05	4.56	5.76	4.12	6.71	5.85	0.69	0.75
		-24.63		-28.47		-12.82		8.70
South West	5.46	4.31	5.19	3.86	6.70	6.19	0.82	0.81
		-21.06		-25.63		-7.61		-1.22
Total	6.32	5.82	6.11	5.53	6.88	6.72	0.73	0.76
		-7.91		-9.49		-2.33		4.11

the case among respondents from the North East. The increase in fertility among respondents with tertiary level of education is mainly contributed to by increase in wanted fertility. The positive contribution of the index of fertility preference implementation to actual fertility among women with tertiary

level of education is, as a result of its decline over the 1990-2003 period. Decline in the index of fertility preference implementation has the effect of increasing actual fertility and will be shown as having a positive contribution to it. This is also the case among respondents from the South West.

Table 3 Absolute and percentage contribution of Fw, Fn and Ip to fertility decline between 1990 & 2003 among women in Nigeria.

	Absolute contribution				Percentage contribution		
	F	Fw	Fn	Ip	Fw	Fn	Ip
Residence							
Urban	-0.34	-0.28	-0.03	-0.03	82.98	8.57	8.45
Rural	-0.64	-0.49	-0.08	-0.08	75.96	11.91	12.13
Education							
None	0.19	0.08	0.14	-0.03	43.82	73.56	-17.38
Primary	-0.45	-0.41	-0.03	-0.01	91.06	5.67	3.28
Secondary	-0.22	-0.11	0.01	-0.11	51.46	-2.42	50.96
Tertiary	0.23	0.13	0.00	0.10	56.99	-0.78	43.79
Region							
North East	0.46	0.22	0.30	-0.06	47.52	65.48	-13.00
North West	-1.21	-0.97	-0.22	-0.02	80.06	18.41	1.52
South East	-1.50	-1.18	-0.24	-0.08	78.62	16.03	5.35
South West	-1.16	-1.08	-0.09	0.02	93.52	8.14	-1.66
Total	-0.50	-0.43	-0.04	-0.03	86.02	8.12	5.85

Index of fertility preference implementation among couples

Since all the parameters factored into the derivation of the index of fertility preference implementation are women based, this section examines fertility preference implementation indices among different categories of couples in an attempt to highlight the important role of the males in fertility decision-making and outcome. Only the 2003 couples' data is used and exploration of the percentage change between periods or the percentage contribution of

the determinants to fertility change over periods is not done as only one data point is available.

Table 4 shows that the extent to which concordant couples are able to implement their fertility preferences is higher than found among discordant couples in general. Furthermore, the extent to which discordant couples where the woman desire more number of children than their partners are able to implement their fertility preferences is higher than found among discordant couples where the man desire more

number of children than their partners. Fertility preference implementation was also found to be slightly higher among couples in monogamous union compared to couples in polygamous

union while the couples in cohabiting relationship have higher level of fertility preference implementation compared to couples in formal relationships.

Table 4 Indices of fertility preference implementation among couples in Nigeria with the values used in its derivation

	U	C	F	Fn	Fw	Ip
Ideal number						
Concordant	0.091	0.907	8.16	8.99	8.03	0.87
Discordant	0.127	0.870	7.85	9.02	7.53	0.78
Disc (H>W)	0.114	0.884	7.54	8.53	7.17	0.73
Disc (W>H)	0.148	0.849	8.32	9.80	8.09	0.87
Type of union						
Monogamous	0.141	0.856	8.03	9.38	7.72	0.81
Polygamous	0.054	0.945	7.75	8.20	7.64	0.80
Status of union						
Formal	0.104	0.894	7.99	8.94	7.78	0.82
Cohabiting	0.37	0.623	8.87	14.25	7.98	0.86
Total	0.11	0.888	7.99	9.00	7.76	0.81

Discussion and conclusion

Results showed that the extent to which fertility preference is achieved in Nigeria was generally high. This is attributable to the high number of wanted fertility, which is often almost at the level of actual fertility. Given this close association between wanted and actual fertility, possible effect of rationalization of birth cannot be excluded. Rationalization of births occurs when people state that a pregnancy is wanted (probably because the child has become a loving member of the family, whereas, the pregnancy was unwanted at the time of its conception) or when people adjust stated desired family size upward so that it is close or equal to actual number of children that they have. This rationalization effect is well

documented in fertility literature (Ade-tunji, 2001; Eggleston, 1999; Rasul, 1993; Bongaarts, 1990).

The fertility preference implementation index increased between 1990 and 2003 except among women with tertiary level of education and women from the South West. Increase in the index typically implies that it is playing an increasing positive role in fertility changes. However, this study was unable to show this among couples, as the decomposition of fertility into its determinants and estimating their percentage contribution to observed fertility changes was done for only one time period here. The index was higher among women in the urban areas compared to women in the rural areas; increased with level of education, low-

est in the North East and highest in the South West showing the internal diversity that exist across the country. The higher index of fertility preference implementation among the rural respondents was consistent with the higher decline in their actual and wanted fertility compared to respondents from the urban. For respondents with no education and those from the North East, the high fertility preference implementation was due to increase in both their actual and wanted fertility over the period of analysis.

It is worthy to note that where fertility indicator is high compared to the others within the same characteristic group, it has more potential to decline faster than the others (as there is always a steep decline at early stage of transition, before a slowing down and eventual stall), and this magnifies the percentage change observed in such category relative to the others. This was so for wanted fertility in the rural-urban areas in this study. This could also explain the reduction in the extent to which women with tertiary level of education and those from the South West are able to implement their fertility preferences over the period as their actual fertility levels were already low compared to the others in their categories. The results could also imply that the gaps that are typically found between the rural and urban areas and among education categories are reducing.

Between 1990 and 2003, total fertility rates (F) in the total sample declined by 0.5 births per woman accounted for by a decline of 0.43 births in wanted fertility, 0.04 births decline in natural fertility and 0.03

births decline in the implementation index. These births translated into 86%, 8% and 6% contribution by wanted fertility, natural fertility and the index of fertility preference implementation, respectively. Thus, reduction in wanted fertility was responsible for a substantial portion of the fertility change while the extent to which fertility preference was implemented played the least role (amongst the three determinants) in the observed fertility change between 1990 and 2003. The results of this study are consistent with those found by Bongaarts (1993) Ibisomi (2002) and Ibisomi, Odimegwu, Otieno and Kimani (2005) for the country although at the regional level (developing countries altogether), fertility preference implementation was a more important determinant of fertility decline than wanted fertility.

General decline in fertility was also observed between the periods among all sub groups except for respondents with no education, those with tertiary level of education and those from the North East. The increase in fertility among respondents with no education and those from the North East was contributed to by increase in wanted and natural fertility while increase in wanted fertility and reduction in fertility preference implementation index were responsible for the state of affair among women with tertiary level of education.

In the exploration of the fertility preference implementation among couples, it was found that the extent to which matched couples in the analysis sample were able to implement their fertility preference was high at 0.81 compared to the general sample of women, which was at 0.76. The pattern

among the different categories of couples showed that index of fertility preference implementation was higher among cohabiting couples compared to the formally married ones—higher among monogamously married couples compared to the polygamously married ones—higher among concordant couples compared to discordant ones and higher among discordant couples where the wives desire more children than the husbands compared to where the husbands desire more than the wives.

The higher fertility preference implementation index among concordant couples compared to the discordant ones should be taken with caution, as agreement between couples on the same number of children or any issue for that matter does not imply equal inputs from both partners into the process nor necessarily imply that the woman is able to implement her true desire. The relatively lower index of fertility preference implementation among polygamously married women compared to the women in monogamous union may be due to the women having more than they actually desired to enable them compete with their co-wives. For the formally married couples also, the achievement of the women could have been greatly influenced by their husbands whereas for the cohabiting couples, the influence of the man on the woman may not be so strong as the relationship itself is informal.

A pointer to the influence of the males on fertility preference achievement by the wives was that of discordant couples where the males desired more children than their partners. Results show that the extent to which

these women were able to achieve their fertility preferences was less than that of the women who desired more children than their husbands. For the first group of women, it could be that they had to adjust their preferences upward to meet their partners' demand (thereby decreasing the extent of achieving their individual preferences) while the latter group could have used their influence as the people directly in charge of reproduction to achieve their preferences, showing that the two partners are influential in fertility outcomes depending on the situation at hand. Thus, making a case for the inclusion of the role of the males in the framework was right. The framework used was also well suited to and relevant in this study in that the observed fertility exceeds wanted fertility.

Although the extent to which people were able to implement their fertility preferences increased between 1990 and 2003 by about 4%, the contribution of this to actual fertility decline of 0.5 births between the periods was small (about 6%). Reduction in wanted fertility was responsible for a substantial portion (86%) of the fertility change with an 8% contribution by natural fertility. The extent to which fertility preference was implemented actually played the least role (amongst the three determinants) in the observed fertility change between 1990 and 2003 in Nigeria.

In conclusion, the extent to which women in Nigeria have been able to implement their fertility preferences is high and has been increasing over time. However, disparities exist between the urban and the rural—between the North and the South, among education cate-

gories, by whether the number of children desired between couples are similar or not and by type and status of union. Certainly, it is desirable that actual fertility and wanted fertility become similar in the country. It is therefore recommended that:

1. Existing family planning programme is strengthened and expanded to ensure that all couples and individuals who require them have uninterrupted access to a reasonable range of effective contraceptive methods at affordable prices to bring actual fertility to the level of wanted fertility and to close the gap that exists between and within sub-groups in the country.
2. Further exploration is carried out into the fertility preference implementation of couples especially those with similar desires to provide greater insight into the context of those achievement and the underlying decisions.

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