LEVELS AND DETERMINANTS OF WANTED AND UNWANTED FERTILITY IN LATIN AMERICA

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1. Introduction: the elusive concept of fertility goals

Ever since attempts were made to construct quantitative measures of individual fertility preferences and intentions, the interpretation of these measures has been controversial. Women in developing countries often have more children than they desire. This is particularly the case in Latin America, where the relative gap between actual and desired fertility levels is larger than in any other major region of the world. As is pointed out by Bongaarts (1997), unwanted fertility typically varies with actual fertility levels according to an inverted U-curve, with the highest levels being attained in countries at intermediate levels of their fertility transition, which is where the bulk of the Latin American countries find themselves at present. Cuba, which is already in an advanced stage of its fertility transition, is an exception, in as far as the ideal family size declared by women in that country is typically larger than the actual Total Fertility Rate (Cuba, 1991). The measurement of the degree to which women are having births that are either undesired or mistimed provides much of the justification for the efforts undertaken by national governments and international agencies to promote universal access to contraceptive technology.

Yet, despite the policy relevance of the issue and substantial agreement on the existence of excess fertility beyond individual desires, its objective quantification and explanation have proven somewhat elusive. The most traditional measure to describe desired fertility is that of ideal family size, which is asked in most fertility surveys since it was first introduced in the US in the 1940s. However, the known deficiencies of this measure have stimulated the formulation of more refined indices, which rely on additional information, such as the desire to have additional children and whether the last live birth was desired or not. More recently, fertility surveys such as the DHS have further detailed this information by including questions on the desired timing of future births and the desired composition of offspring by sex. Furthermore, during the past decade more data have become available on the fertility preferences of men, in addition to those of women. Nevertheless, despite the availability of information on an increasing number of dimensions of desired and undesired fertility, the concept continues to be clouded by controversy.

To some extent, the reasons for this controversy are methodological, but the larger problems are conceptual. What goals or desires individuals or couples hold with respect to their fertility is influenced by social norms, by the negotiation between partners, by objective circumstances that may change over the course of a life time, and by psychological factors that may change in less predictable ways. In particular, it has proven too simplistic to hypothesize the existence of single, precisely defined numbers of children

that individuals or couples aspire to and that remain stable during the reproductive life course. The following lists some of the problems and ambiguities that have been identified in the literature.

1. In the early days, a major concern was whether desired fertility questions, and particularly the question on ideal family size, were correctly understood and meaningful within the cultural context of developing countries, where conscious fertility control was often not a common concept. Different wordings were experimented with, in order to emphasize the individual nature of the concepts and make them more independent of the interviewee's actual fertility, out of a concern that the answers might reflect social norms, rationalization after the fact, or even courtesy bias. Although these possibilities could not be entirely ruled out, empirical research strengthened confidence that in the majority of cases the responses were meaningful (Knodel & Prachuabmoh, 1973). Over time, it is likely that things have further improved as the notion of individual fertility control has gained more legitimacy in developing countries.

2. But even if the questions are correctly understood and meaningful to the interviewees, the latter may not have a definite fertility goal. Asking about ideal family size often evokes non-numerical responses ("As many as God will give"), which are difficult to interpret, although, more often than not, they are associated with high desired fertility. Retest data from the World Fertility Survey of Peru (O'Muircheartaigh & Marckwardt, 1981), for example, revealed that only 40% of the interviewees identified the same ideal family size in both interviews. According to Lightbourne (1985 a: 167-168), such a high degree of inconsistency suggests that "many individuals think in terms of a range of preferred family size rather than in terms of an exact number". Retest data on the desire for the last birth and especially future births tend to be more consistent, but even here shifts of opinion are not uncommon.

3. Considering that many individuals may not have clear-cut fertility goals, but rather ranges of acceptable outcomes, one may ask to what extent they are committed to particular goals. Objections to indicators of fertility desire which do not reflect individual costs or commitment have been heard ever since they were introduced (e.g. Hauser, 1967; Pritchett, 1994). After all, that a woman desires a family of two children, yet has four may not mean anything more than that the matter is of no great importance to her. The number of illegal abortions in the region should give some indication of the fact that at least some women are strongly committed to avoiding additional births (Coeytaux, 1993), but to others the cost exceeding their stated ideal family size may be negligeable. Bhushan (1997) mentions that, on average, about one third (in Latin America, probably not more than 20%) of the reported unmet need for family planning among women who do not intend to use contraception should be discounted, since it is attributable to weak motivation for fertility control, due to ambivalence about future childbearing. In the 1998 DHS of Bolivia (the only one analysed here that contains the information), 10.2% of the women who declared wanting no more children nevertheless said they would be happy to receive the news of being pregnant, with another 16.2% answering that it wouldn't matter or that they didn't know.

4. The more recent literature tends to reject the use of indicators based on the ideal family size in favour of those based on the desire for specific births, particularly future births, which are considered less biased. The time reference of the ideal family size is also ambiguous: does it refer to the present, to the end of the interviewee's reproductive life,

to the number of children he or she would like for support in old age, or the number he or she would like to leave behind after death ? In the latter cases, does it contemplate only losses due to infant and child mortality, or does it also discount other processes that may remove children from the respondent's social circle, such as migration or family break-ups ? This is not only a matter of one indicator being more correct than the other. They actually measure different things. It has been suggested that the ideal family size is more likely to reflect social conventions or aspirations, whereas the desire for additional children reflects more personal motivations. As Westoff and Moreno (1996: 242) observe, "the purpose of this question is to assess the fertility norms in different populations, rather than reproductive intentions". More importantly maybe, the ideal family size is more likely to abstract from contextual factors (marital problems in the present union, having a handicapped child, being out of work, etc.) that cannot be changed now, but that supposedly could have more desirable outcomes were the respondent to start his or her reproductive life all over again.

5. Individual fertility preferences are probably not constant over time. The emphasis here is on "probably", because based on the usual one time survey data, it is actually rather hard to tell. It has been shown repeatedly that the ideal family size declared by individuals in surveys increases with age and the number of surviving children. This may be because respondents change their mind as they grow older and have more children. In particular, it is often assumed that respondents "rationalize" their actual fertility behaviour by adjusting their desires in the direction of the number of children they have. But, as has been pointed out by some (Knodel & Prachuabmoh, 1973; Lightbourne, 1985 a), the empirical association between declared ideal family sizes and actual fertility would also be observed in survey data from populations that exercise substantial fertility control and where only those who desire many children actually progress to higher parities. This issue will be taken up in Section 5 of this paper.

6. Apart from being difficult to demonstrate empirically, the notion of rationalization of past fertility behaviour also meets with conceptual difficulties. In the words of Knodel and Prachuabmoh (1973: 627): "....it is possible that fertility experience can influence a person's family size preference in the direction of actual fertility without this being a rationalized response; instead it would reflect a genuine change in one's preference as a result of being personally exposed to a family size different from that previously considered to be most desirable. Operationally, however, it is difficult to distinguish this effect from rationalization". This observation opens up an entire area of ambiguity regarding the interpretation of past fertility preferences and behaviour. Is it valid to classify a woman who initially only wanted two children and did not plan to have a third, but who is genuinely happy with her third child after the fact, as being in denial of her "real" preference ?

7. Rationalization, if it exists, may also operate in the opposite direction, as women who have not reached their ideal family size but who have few remaining opportunities to correct this situation, may lower their expectations. As will be shown in Section 4, the situation where women do not attain their fertility goals is much more common in Latin America than one might think. As many as 25-40% of women reach the end of their reproductive period with less children than their declared ideal family size. As this phenomenon is not readily amenable to social policy intervention and the dominant concern is with fertility reduction, it has not received a great deal of attention and the wanted fertility indicators discussed in Section 3 simply ignore it. As will be argued

below, this may be correct for some purposes, but it projects a biased image of the degree to which individuals implement their fertility goals.

8. Among the objective circumstances which may cause individuals to revise their fertility preference, the literature has long recognized the desire to replace deceased children and to reach a certain sex composition. Sex preferences may cause women or couples to have more children than initially planned, but the opposite is also possible. As will be shown in Section 4, in some cases interactions between number and sex preferences may bring about the early conclusion of reproduction, before the ideal family size is reached. A related factor that has not received equal recognition in the literature, but that is of particular relevance to Latin America, refers to the instability of unions. Due to this instability, women who remarry, having children from a previous union, may choose to have additional children, beyond their stated ideal family size, in order to secure the emotional commitment of a new partner.

9. Even in the absence of new facts, the fertility desires of women may vary in time. For instance, it will be shown in Section 5 that the desire to have additional children tends to increase with the time elapsed since the last live birth, independently of whether the child is currently alive or not.

10. It is not only the woman´s fertility preference which matters, but also that of her partner. On average, men in Latin America desire slightly larger families than their spouses, but the differences are not dramatic. Consequently, the literature, while recognizing the issue, has not given it much importance, concentrating instead on the fertility preferences of women. However, in doing so, it has not given due attention to the possibility that the negotiation process between spouses may lead to outcomes that systematically increase or decrease joint fertility goals. For instance, what would happen if, in cases where the partners have different preferences, the tendency would be for the largest of the two to prevail ? The implications of this and other scenarios will be investigated in Section 6.

The present paper will address several of the issues raised above, based on the concrete case of Latin America. Specifically, it will discuss the Bongaarts and Westoff indicators of wanted fertility for some countries of Latin America and comment their adequacy, in Section 3. In Section 4, it analyses the incidence and determinants of fertility deficits in the region. Section 5 addresses the issue of changing fertility preferences over time, specifically the measurement of fertility desires as a function of the time since last childbirth and of rationalization effects. Although rationalization of actual fertility does occur, it will be shown that women's fertility preferences also change in other ways. The implications of conflicting fertility preferences between spouses will be taken up in Section 6, including the question of whose preference typically predominates in the actual reproductive outcome. Finally, Section 7 analyses some factors associated with the failure of women or couples to implement their fertility preferences. It will be argued that, although limited access to effective contraception may be part of the explanation, there are several contextual factors whose influence on the outcome is at least as important.

2. The data

Most of the assessments of reproductive desires and consequent demand for contraception have been made based on data from the WFS and DHS surveys. The number of questions

on fertility preferences in these surveys has increased over time. In the third round of the DHS, the following items were included:

1. (After the child you are expecting,) would you like to have (a/another) child or would you prefer not to have (any more) children ?
2. How long would you like to wait (from now on/after the birth you are expecting) before the birth of (a/another) child ?
3. If you could (return to the time when you still had no children and) choose exactly how many children to have during your entire life, how many would that be ?
4. Idem number of boys.
5. Idem number of girls.
6. Idem number of either sex.
7. Do you think your spouse/partner wants the same number of children as you or does he/she want more or less than you ?
8. When you became pregnant with ...... (births occurred during the past 3 or 5 years), did you want to get pregnant then ? Did you want it later ? Or didn't you want any more children ?
9. Did you desire your current pregnancy now ? Did you want it later ? Or didn't you want any more children ?
10. After the child you are expecting, would you like to have another child or would you prefer not to have any more children ?
11. (In the case of women who reget having been sterilized or that their partners were sterilized), why do you regret that (you/your partner) had the operation not to have any more children ?
12. How would you feel if you became pregnant at this moment ?

The analysis in the following sections of this paper is based on these data, for eight countries of the region: Bolivia (1998), Brazil (1996), Colombia (1995), the Dominican Republic (1996), Guatemala (1995), Haiti (1995), Nicaragua (1998), and Peru (1996).

Despite the substantial number of questions asked, the DHS has a number of limitations from the viewpoint of the analysis of desired fertility, which can be classified as follows:

1. Some lacunae in the information on preferences. These affect especially women at the extremes of the age range. In the case of older women, complete reproductive histories are available, but since very few of their births have occurred during the past 3 or 5 years, it is usually impossible to relate these reproductive histories to retrospective fertility preferences. Of course, this problem is almost inevitable, as the reliability of retrospective data on fertility preferences decreases rapidly with time. The other major limitation refers to the unavailibility of data on future fertility intentions (other than the ideal family size) for very young and for infecund women. In the case of women that were never sexually active, whose fertility intentions were only asked in the Dominican Republic and Nicaragua, it can usually (but not always) be assumed that the declaration of an ideal family size larger than zero implies the desire to have at least one child. From the viewpoint of contraceptive demand, information on the fertility intentions of infecund women is not relevant, of course, but it is of some importance in assessing the satisfaction of women with their *de facto* childbearing history and potential. In Haiti, the question was not asked in the case of widowed or divorced women. In all countries

but one (Bolivia), the question on how a woman would feel about becoming pregnant was only asked to women who wanted more children or were undecided, thereby losing an opportunity to quantify ambivalence about future childbearing.

2. Lack of some contextual data. On some topics that affect women's childbearing decisions and preferences, the information of the DHS is rather incomplete. No complete marital history is provided, for example. Although the date of the first union and the current marital status of the respondent are known, the only additional information refers to whether he or she has had one or multiple unions. Hence, it is often unknown what the marital status of the respondent was when a particular child was born. Similarly, data on labour force participation are sketchy. Unlike some other fertility surveys (e.g. those assisted by the CDC), the DHS contains little information on access to family planning services, which would be relevant for the analyses in Section 7. In the case of adolescent childbearing, it would also be important to know the age at which the woman left school. The more recent DHS surveys contain a question about whether the reason to leave school was related to pregnancy or marriage, but in general it is not possible to know if, for example, a woman got pregnant soon after leaving school.

3. Cross-sectional characteristics of the data. This limitation refers to the very design of the DHS which, in most countries, does not allow a follow-up of the same women at different points in time. Drawing conclusions on the behaviour of individuals or couples over time based on cross-sectional data has serious limitations and pitfalls (e.g. see Rodríguez and Trussell, 1981; Lightbourne, 1987). Specifically, questions such as those regarding rationalization of past fertility behaviour, can only be analysed rigorously based on longitudinal data. Nevertheless, Section 5 will make an attempt to circumvent this problem, at least in part, by comparing the results from two successive surveys.

3. Indicators of fertility preference

As will be clear from the long list of conceptual ambiguities in Section 1, many of the problems identified concern the concept of ideal family size, which is considered subject to several likely biases and difficulties of interpretation. Consequently, the literature on fertility preferences of the past two decades, such as such as Westoff (1981), Lightbourne (1985 a b), and Bongaarts (1990), has tended to reject this measure in favour of indicators that are considered less biased and more meaningful within the concrete context in which fertility decisions are taken. All of these specific indicators are based on the concept of "wanted fertility", i.e. they start from actual fertility levels and discount all births that are considered "unwanted", where "unwanted" is defined differently according to the specifics of each method. This concept removes many of the conceptual ambiguities that plague the ideal family size. Yet, as will be argued below, this greater clarity comes at a cost.

The "purest" index of wanted fertility is probably the one developed by Bongaarts (1990). Estimates of this so-called New Wanted Total Fertility Rate (NWTFR) have been computed for several Latin American countries, based on WFS and DHS data (Bongaarts & Lightbourne, 1996). These data, complemented by results from recent DHS surveys for some countries, are displayed in Table 2, which can be compared to actual fertility levels in Table 1.

TABLE 1

Latin America and the Caribbean: TFRs in period 0-24 months before survey by level of education and area of residence, selected countries

Country, survey	Education			Area of Residence		Total
	None	1-6 years	7+ years	Rural	Urban	
Colombia						
WFS, 1976	7.4	4.9	2.8	6.7	3.6	4.6
DHS, 1986	4.8	3.9	2.3	4.6	2.6	3.1
DHS, 1995	5.5	3.6	2.4	4.1	2.5	3.0
Costa Rica						
WFS, 1976	4.7	3.8	2.7	4.3	2.9	3.5
ADC, 1985	-	4.4	2.8	4.4	3.0	3.6
Dominican Rep.						
WFS, 1975	6.9	5.9	2.7	7.0	3.6	5.2
DHS, 1986	5.4	4.1	2.8	4.8	3.0	3.6
DHS, 1996	4.4	3.9	2.6	3.9	2.7	3.1
Ecuador						
WFS, 1979/80	7.5	6.1	2.7	6.5	3.9	5.2
DHS, 1987	6.7	5.1	3.0	5.4	3.6	4.3
Jamaica						
WFS, 1975/76	4.7	4.9	2.9	4.9	3.8	4.4
NFPB, 1989	-	3.4	2.5	3.0	2.6	2.8
Perú						
WFS, 1977/78	6.9	4.9	3.0	7.1	4.4	5.3
DHS, 1986	6.5	5.0	2.7	6.3	2.9	4.0
DHS, 1996	7.0	4.6	2.6	5.6	2.7	3.5
Trinidad & Tobago						
WFS, 1977	-	3.7	2.8	3.5	3.0	3.2
DHS, 1987	-	3.5	2.9	3.0	3.1	3.0

Source: Bongaarts & Lightbourne, 1996: 235
DHS figures for Colombia (1995), Dominican Republic (1996), and Peru (1996) based on author's computations with data from the DHS III.

The advantage of the NWTFR is that it is entirely based on actual fertility data for the past one or two years and on whether women want more children in the future. This avoids *a posteriori* rationalization of past fertility behaviour, whereas it incorporates desires resulting from the need to compensate for past or expected infant and child mortality or for an undesirable sex composition of surviving offspring. Despite these methodological advantages, Bhushan and Hill (1995) criticize the NWTFR for yielding misleading estimates under conditions of changing fertility, specifically a tendency to over-estimate desired fertility in the context of increasing mean ages at childbearing. Their alternative index, the Prospective Desired Total Fertility Rate (PDTFR), does not use past fertility, but rather the fertility intentions of women during a fixed period of one or two years into the future. However, as the authors themselves admit, this measure is sensitive to the proposed timing of future births.

TABLE 2

Latin America and the Caribbean: NWTFRs in period 0-24 months before survey by level of education and area of residence, selected countries

Country, survey	Education			Area of Residence		Total
	None	1-6 years	7+ years	Rural	Urban	
Colombia						
WFS, 1976	3.9	2.7	2.2	3.3	2.4	2.7
DHS, 1986	2.0	2.2	1.8	2.3	1.8	2.0
DHS, 1995	2.1	2.0	1.9	2.1	1.9	1.9
Costa Rica						
WFS, 1976	3.3	3.2	2.6	3.2	2.7	3.0
ADC, 1985	-	3.0	2.3	3.1	2.3	2.7
Dominican Rep.						
WFS, 1975	3.9	3.6	2.4	4.0	2.7	3.3
DHS, 1986	3.1	2.7	2.4	2.8	2.4	2.5
DHS, 1996	2.8	2.6	2.3	2.8	2.2	2.4
Ecuador						
WFS, 1979/80	4.4	3.8	2.4	3.9	2.8	3.4
DHS, 1987	2.9	2.5	2.2	2.8	2.2	2.4
Jamaica						
WFS, 1975/76	2.8	3.3	2.5	3.3	2.7	3.0
NFPB, 1989	-	1.9	2.0	2.0	1.9	1.9
Perú						
WFS, 1977/78	3.6	2.6	2.4	3.8	2.5	3.0
DHS, 1986	2.9	2.2	1.8	2.6	1.8	2.0
DHS, 1996	2.0	1.9	1.8	2.1	1.8	1.9
Trinidad & Tobago						
WFS, 1977	-	2.8	2.6	2.7	2.5	2.6
DHS, 1987	-	2.2	2.2	2.1	2.3	2.2

Source: Bongaarts & Lightbourne, 1996: 236
DHS figures for Colombia (1995), Dominican Republic (1996), and Peru (1996) based on author's computations with data from the DHS III.

There are two other criticism which one can raise with respect to the NWTFR: one conceptual, the other methodological. The conceptual criticism derives from the fact that the NWTFR, like all wanted fertility measures, is based on actual births discounted to eliminate unwanted fertility. It does not contemplate those births that women may desire but that did not occur because of various circumstances. In a sense, the name NWTFR is even a bit of a misdenomer, for it is most useful as a measure of *unwanted* fertility; *wanted* fertility would have to include births which are desired, but not effectuated. From a practical point of view, of course, it is convenient to have an indicator (in Table 2) that can be directly compared to actual fertility levels (Table 1), in order to obtain a measure of insatisfaction, without having to consider discrepancies on both ends. But it is not just convenient; the authors of the wanted fertility concept actually present the exclusion of fertility deficits as one of the conceptual advantages of their approach. In the words of

Lightbourne (1985 a: 180): "An intrinsic property of the wanted total fertility rate approach is that it is not a pure measure of the demand for children because it only deletes unwanted births and does not add back in the hypothetical wanted births that were wanted at the time but were not born because the intending mothers had fecundity impairments or were slower at reproducing than they wanted to be. In our view, this property is not a shortcoming but a virtue since interest is focused on what would happen to the fertility level if women fully implement their stopping and postponing preferences".

Whether indeed this characteristic of the approach is to its credit or debit depends on the particular concept of fertility preference that one seeks to express. Preferences are not stated in a vacuum. They are conditional on a set of constraints over which the respondent is hypothetically given control, e.g. having one's fecundity restored, having unlimited financial resources, having a perfectly satisfactory marital life, being able to control or at least to foresee the characteristics of future children, being able to dedicate oneself full-time to child rearing, etc. In this sense, the wanted fertility approach expresses what would happen under the hypothesis that the respondent were to acquire total control over the means to avert births, but would otherwise continue to face the same constraints. It thus derives its rationale from the quantification of unmet demand for contraception. If, in addition, the respondent were to acquire control over, for instance, the sex of his or her next child or over some of the conditions of child rearing, the outcome would almost certainly be different.

Conceptualizing wanted fertility merely as an upper bound for the demand for contraception implies the use of an asymmetric utility function in which each unwanted birth averted represents a utility in that it contributes to the larger goal of lowering fertility rates, but there is no corresponding cost of fertility deficits. Westoff and Moreno (1996: 244) express some of this sentiment when, in the context of preferences for shorter or longer birth intervals, they state that "The more important demographic potential of longer birth intervals lies in the 'later means fewer' effect, which reduces the amount of exposure to the risk of unwanted births". While this is correct, the next section will show that the 'later means fewer' effect also means that many women will not reach their stated fertility goals. In this post-Cairo era, in which the objective of maximizing the use of contraceptive methods has given way to the more consensual objective of ensuring the best possible correspondence between individual reproductive desires and results, the costs and benefits of wanted and unwanted fertility may have to be evaluated in different terms.

Again, the woman who declared wanting two children but who has four, because the matter was of no great importance to her, serves as an example. Had this woman been interviewed at the time when she had only two children, it is likely that she would have manifested her preference to stop childbearing. Seen from the viewpoint of contraceptive marketing, therefore, it may be that, had this woman been targeted for free reproductive health service when she had two children, she might have become a contraceptive user and not progressed to three or four children. In that case, two births might have been averted, with the corresponding social utility that such a result represents from the viewpoint of bringing down fertility rates. Consequently, not having averted these two births is a lost opportunity. On the other hand, the fact that this woman did progress to a higher parity may affect her personal satisfaction with the result only marginally.

On the other side of the spectrum, the woman who became infecund or was abandoned by her spouse before reaching her desired family size does not represent a relevant cost from the viewpoint of contraceptive demand. Helping her to realize her fertility goal, if at all possible, requires other types of interventions, some of which may not even be in the public domain. From the viewpoint of the woman, however, not reaching her fertility goal definitely represents a negative utility, the magnitude of which one can only guess. Therefore, if the individual satisfaction of women or couples with their reproductive history is the focus of concern, falling short of reproductive goals cannot be ignored so easily. As the following section will demonstrate, this situation is surprisingly common in Latin America.

The second limitation of the NWTFR is methodological. As will be demonstrated in Section 5, women's desire for additional children is typically lowest immediately after a childbirth, but it increases gradually thereafter. Conversely, this means that women who desire additional children are less likely to have had a birth during the last year or the last two years before the survey date. Consequently, computing the NWTFR based on the actual fertility of women who desire additional children, as assessed during this period, when prospective fertility desire is at a low, rather than later, when it has recovered, introduces a downward bias.

The other frequently used measure of wanted fertility is the Wanted Total Fertility Rate (WTFR) introduced by Westoff (1981), which was popularized by Lightbourne (1985 a b). This indicator uses the ideal family size and calculates the TFR that would result if all births were discounted that raise the number of surviving children above the respondent's declared ideal family size. Based on this measure, the recent DHS Country Report of Guatemala (1998/99), for example, computes a WTFR of 4.9 for 1987, 4.0 for 1995 and 4.1 for 1998, compared to actual TFRs of 5.6, 5.1, and 5.0, respectively. The figure of 4.0 in 1995 can be compared to the NWTFR, which yields 3.0 for this same survey. The recent DHS Country Report of Colombia (2000) lists a sequence of 2.2 for 1990 and 1995, and 1.8 in 2000, compared to actual TFRs of 2.9, 3.0, and 2.6, respectively. The figure of 2.2 in 1995 can be compared to the NWTFR of 1.9 found in Table 2. More details on wanted fertility in Latin America, according to this criterion, can be found in Westoff and Moreno (1996).

On the whole, the WTFR estimates based on the Westoff-Lightbourne criterion are somewhat higher than Bongaarts' NWTFRs, due to the fact that many women stop wanting additional children before reaching their ideal family size (more about this in Section 5). Although its reliance on the desired family size makes the WTFR less "pure" than the NWTFR, it allows one type of analysis that cannot be carried out with the NWTFR. With the WTFR it is possible to analyse the life experiences of cohorts, reconstructing whether each individual birth was desired or not. The results of this type of analysis are presented in Table 3.

TABLE 3

Latin America: Actual and desired family sizes under different criteria of women aged 45-49, by socioeconomic strata, selected countries

Country, survey		Mean CEB	Mean Children Surviving	Mean Ideal Family Size	Mean CEB under West-off criterion	Mean Children Surviving under Westoff criterion
Bolivia, 1998	All women	5.03	4.25	3.05	2.98	2.51
	Poorest 20%	6.58	5.22	2.90	3.38	2.59
	Richest 20%	3.19	3.01	3.10	2.52	2.37
Brazil, 1996	All women	3.92	3.50	2.92	2.46	2.23
	Poorest 20%	6.38	5.44	3.29	3.25	2.73
	Richest 20%	2.85	2.68	2.78	2.14	2.03
Colombia, 1995	All women	3.95	3.63	3.12	2.62	2.40
	Poorest 20%	6.09	5.41	3.97	3.72	3.28
	Richest 20%	2.57	2.43	2.80	2.05	1.95
Dom. Rep., 1996	All women	4.58	4.12	4.28	3.31	2.96
	Poorest 20%	6.42	5.66	4.97	4.13	3.54
	Richest 20%	3.37	3.17	3.56	2.86	2.68
Guatemala, 1995	All women	5.53	4.70	4.49	4.22	3.54
	Poorest 20%	7.89	6.18	5.60	6.02	4.61
	Richest 20%	3.35	3.04	3.20	2.71	2.47
Haiti, 1994/95	All women	5.41	4.14	3.91	3.82	2.85
	Poorest 20%	6.98	5.09	4.08	4.71	3.31
	Richest 20%	3.19	2.73	3.21	2.45	2.13
Nicaragua, 1998	All women	5.77	5.05	3.59	3.43	2.97
	Poorest 20%	8.10	6.86	5.08	4.88	4.07
	Richest 20%	4.05	3.72	2.99	2.76	2.53
Peru, 1996	All women	5.18	4.48	3.13	3.06	2.63
	Poorest 20%	7.67	6.17	3.55	4.00	3.11
	Richest 20%	3.28	3.06	2.83	2.35	2.19

Source: Computed from DHS III

Table 3 is based on the ideal family size declared at the time of the interview. In the case of women aged 45-49, this number may be larger or smaller than the ideal family size at the time when specific births occurred. However, in the former case it is likely that the woman has revised her ideal family size downward because she could not reach her fertility goal; this would not affect the WTFR. In the opposite situation, where fertility goals have increased, especially if this increase is due to rationalization of actual fertility, the WTFRs in Table 3 would be higher than those that would have been obtained had it been possible to monitor the woman's declared ideal family size prior to or soon after each birth.

The WTFR of an actual cohort may be higher or lower than the mean ideal family size, depending on the level of mortality, the incidence of infecundity and other factors which may keep women from having children even though they have not yet reached their ideal family size. In the case of the countries listed above, all national WTFRs are lower than the corresponding mean ideal family sizes, suggesting that a substantial number of women do

not reach their ideal family size. Among the poorest 20% the relationship is the other way around in some countries, suggesting higher infant and child mortality and earlier child-bearing, which results in fewer cases of infecundity before the attainment of women's ideal family size.

Although the WTFR takes account of infant and child mortality to some extent, by computing the wantedness of each birth based on the number of living siblings at the time, it does not make allowance for the fact that additional deaths may occur afterwards. As shown in Table 3, this effect may be substantial in some cases. For instance if the Guatemalan women aged 45-49 and belonging to the poorest quintile had only had the births considered "wanted" under the Westoff criterion, their total number of live births would have been 6.02, but their mean number of surviving children would be only 4.61.

In a separate analysis (not shown here), the mean number of live births was computed for women aged 45-49 who had exactly the number of surviving children that they declared as their ideal family size. In Bolivia, for example, the mean ideal family size was 3.05, but due to infant and child mortality women with the number of surviving children they desired (25.8% of the total) had an average of 3.44 live births, whereas the WTFR was only 2.98. The largest difference was found in Peru, where the 20.0% of women in this situation had an average of 3.73 live births, against a mean ideal family size of 3.13 and a WTFR of 3.06.

Finally, the same analysis was repeated for women who, in addition to having attained at least their ideal family size, had the minimum amount of births necessary to ensure that they would have at least the number of surviving children of each sex that they declared as their ideal.[2] In Bolivia, 19.3% of the women aged 45-49 were in this situation, with an average of 3.91 live births, in Brazil 24.3% with an average of 3.58 live births, in Colombia 17.5% with an average of 3.60 live births, in Nicaragua 15.5% with an average of 4.36 live births, and in Peru 14.0% with an average of 4.19 live births.

4. Fertility deficits

As was mentioned earlier, a surprisingly high percentage of women in Latin America reach the end of their reproductive lives with less surviving children than their ideal family size. According to Table 4, this percentage ranges from 24.2% of all women aged 45-49 in Nicaragua (1998) to 41.1% in the Dominican Republic (1996). In the Dominican Republic and Guatemala, the percentage is even higher than that of women aged 45-49 who have exceeded their declared ideal family size. The percentages might be even higher if it were taken into account that some women who could not attain their original ideal family sizes may have adjusted them downward. Although it is probably fair to say that the emotional and economic cost associated with this unmet demand is often smaller than that of excess fertility, it is nevertheless a fact that cannot be ignored if the objective is to quantify the correspondence between individual fertility preferences and outcomes.

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[2]) This means that these women had: At least the number of surviving children declared as their ideal family size, and in addition 1. Exactly the number of boys and at least the number of girls they desired, with a boy at last birth; or 2. Exactly the number of girls and at least the number of boys they desired, with a girl at last birth.

TABLE 4

Latin America: Percentages of women aged 15-49 and 45-49 by actual and desired fertility condition, selected countries

Country, survey	Women aged 45-49					Women of all ages below ideal family size who want no more children
	Below declared ideal family size			At declared ideal family size	Above declared ideal family size	
	Total	Sterile/ infecund	Wants no more children			
Bolivia, 1998	25.3	11.3	9.6	25.7	49.0	9.6
Brazil, 1996	29.9	16.1	8.9	34.8	35.3	7.0
Colombia, 1995	31.8	11.5	12.0	29.1	39.1	8.8
Dominican Rep., 1996	41.1	25.1	11.0	24.1	34.9	6.8
Guatemala, 1995	40.0	10.0	20.3	26.3	33.7	11.0
Haiti, 1995	35.3	16.1	9.1	18.9	45.8	9.0
Nicaragua, 1998	24.2	8.8	11.5	23.4	52.4	9.8
Perú, 1996	24.3	8.3	12.0	20.0	55.7	8.4

Source: Computed from DHS III

In addition, Lightbourne (1985 a) calls attention to the large percentage of women of all ages who have not reached their declared ideal family size, yet do not want additional children. In his analysis of World Fertility Survey data, this percentage accounted for as many as 36% of all women who did not want additional children. The last column of Table 4 computes this number as a percentage of all women of reproductive age. When computed as a percentage of women who do not want additional children, most of the figures are lower than those found by Lightbourne, with a maximum of 38.3% in the Dominican Republic and 35.1% in Guatemala. One possible explanation for this inconsistency, according to Lightbourne, is that respondents may have interpreted the question as referring to their desire for additional children in the near future. This may explain why the percentages are lower in the DHS data, where more care was taken to detail the question. On the other hand, even in the DHS data, they are far from negligible. According to Palmore and Concepción (1981), these women may be "older or had other life circumstances (current economic problems, marital problems and the like) which could lead to the realization that they did not want additional children now, but, if they had life to live over again, would have wanted more". Similarly, Pullum (1981) has suggested that these women wanted more but could not afford them.

TABLE 5

Number and sex preference order for Puerto Rican women

		Number of girls			
		0	1	2	3
Number Of Boys	0	16	13	10	11
	1	15	2	3	8
	2	12	4	1	6
	3	14	9	7	5

Source: Myers & Roberts, 1968

There is, however, another possibility. Depending on the structure of number and sex preferences, the tendency to stop childbearing before reaching one's ideal family size may actually be quite rational. Coombs scales (Coombs, Coombs & McClelland, 1975) provide a vivid illustration of the way in which sex and number preferences are intertwined, but they have only rarely been applied in fertility surveys in developing countries, particularly in Latin America. Table 5 shows the preference order for family size and composition among Puerto Rican women in the 1960s. At that time, the ideal family size, on average, was to have 4 children: 2 girls and 2 boys. The second preference, which is not identified by data such as those of the DHS, was a size of 2, with 1 boy and 1 girl. However, for the woman who had 1 girl and 1 boy (preference order 2), the utility of a next birth would be negative, since this would change the family size and composition to either 2 girls and 1 boy (preference order 3) or 2 boys and 1 girl (preference order 4). Only by having two additional children could she reach her ideal family size and composition, but at the risk of ending up with 3 girls and 1 boy (preference order 8) or 3 boys and 1 girl (preference order 9). The most rational strategy, therefore, would be to have no more children, even though this means falling short of the ideal family size. Supposing, for the sake of argument, that the preference numbers in Table 4 constitute an interval scale (even though, of course, in fact only the order is meaningful), that the sex ratio at birth is 1.05, and that women only consider the costs and benefits of their next birth, the rational strategy for women would be stop childbearing after an average of 2.63 children. Nevertheless, if they could select the sex of their children, they would go on to have 4.

TABLE 6
Latin America: Logistic regression coefficients for the probability of not reaching one's ideal family size for fecund women aged 40-49, selected countries

	Bolivia, 1998	Brasil, 1996	Colombia, 1995	Domin. R., 1996	Guatem., 1995	Haiti, 1995	Nicaragua 1998	Peru, 1996
Ideal family size	1.0105**	0.9439**	0.9388**	1.0713**	0.6658**	0.5613**	0.7638**	1.0566**
Partner's prefer.	0.4304 *	0.3732 *	0.0627	0.6936**	0.8338**	0.3414	0.7277**	0.4732**
40% poorest	0.4443	- 0.1958	- 0.5522 *	- 0.3592	- 0.4400 *	- 0.1798	- 0.8664**	- 0.5786**
40% richest	0.6844**	0.2766	0.2087	0.4248	0.5692**	0.5786	0.2888	0.4863**
Rural residence	- 1.5119**	- 0.7952**	- 0.2233	- 0.1896	- 0.4299**	- 0.6214	0.0067	- 0.1213
Education	0.0428 *	0.0189	0.0702**	0.0233	0.0507**	- 0.0358	0.0384 *	0.0696**
Work	- 0.1334	0.0813	0.1947	0.2930	- 0.1376	- 0.0897	- 0.1025	0.1527
Age at first birth	0.1804**	0.1965**	0.1798**	0.1986**	0.1675**	0.1192**	0.1723**	0.1820**
Children died	0.0945	0.3366**	0.3979**	0.3259**	0.5202**	0.1692 *	0.2044**	0.1400 *
Never married	2.4276**	1.2420 *	1.5343**	2.2977 *	2.8594**		2.2184 *	2.7529**
Widow	0.9789**	- 0.1915	- 0.2660	1.3314**	1.4336**	- 6.1908	0.1907	0.6190 *
Separated/Divor.	0.2044	0.4306 *	0.5350**	0.5117 *	1.3541**	- 6.2389	0.5942**	1.1804**
Number of cases	1773	2152	1899	1365	1814	515	1987	4440

*   Significant at the 5% level;   ** Significant at the 1% level.

Source: Computed from DHS III

But not all fertility deficits can be attributed to the behaviour of the number-sex preference function, especially nowadays, as fertility preferences are lower now than in the 1960s and the situation depicted in Table 5 is less likely to occur. One obvious reason is infecundity, but as Table 4 demonstrates, this accounts for only about 40% of the deficit. In order to understand the factors responsible for fertility deficits among women approaching the end of their reproductive lives, Table 6 displays the coefficients of a logistic regression for the probability of not reaching one's ideal family size for fecund women aged 40-49. Obviously, the more children women want, the larger is the probability that they will not reach their goal, hence the consistently significant positive coefficient of the ideal family size. The second variable that is consistently positive and significant is the age at first childbirth: women who started childbearing relatively late are more likely not to implement their desired family size. Also significant in most cases and consistently positive is the coefficient of the number of children that died: women with deceased children may not have the desire or opportunity to replace them. The next most important variable is the partner's fertility preference: women whose partners want less children than they do are more likely to end up with a deficit. Never married women also end up with less children than they desire. Similar relationships exist in the case of widows and women that are divorced or separated (including those that are formally married but do not live with their husbands), but these are less consistent. Finally, fertility deficits seem to occur more frequently among better educated urban women from the higher social strata. Whether the woman works or not does not appear to have any importance.

5. Changing fertility preferences over time

Fertility preferences change over time, not only because the objective circumstances that determine the desire for children change, but also because the subjective evaluation that men and women make of their parenting experiences and aspirations are not stable. A woman who recently passed through all the discomfort of childbirth may not be keen on repeating the experience a next time, but as the memory of its unpleasant aspects fades and is substituted by other, more pleasant connotations, her disposition to face another pregnancy may change.[3]

On the other hand, the ideal number of children that couples want tends to rise as their actual offspring increases. This tendency has often been interpreted as evidence for the existence of ex post rationalization of actual fertility behaviour, i.e. the tendency for individuals to adjust their fertility desires in the direction of what actually happened. Although the thesis of ex post rationalization is intuitive appealing, empirical support for its existence is not strong. An alternative explanation for the observed cross-sectional correlation between parity and ideal family size is that, to the extent that individuals have some control over their fertility, those with the highest fertility aspirations will be the ones to progress to higher parities, whereas the ones with lower fertility aspirations will end up with fewer children. Without longitudinal data to monitor preferences at different points in time, it is nearly impossible to distinguish between these two mechanisms. Some authors

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[3]) Lightbourne (1987) has investigated the desire to conceive in the near future, rather than later, as a function of the time elapsed since the last live birth, using a simulation model. What the analysis here is concerned with is the desire to conceive at all, at any time in the future.

(e.g. Knodel & Prachuabmoh, 1973) discard the second explanation in the populations they studied, due to the limited availability of means of individual fertility control. There is also patchy evidence based on reinterview data, such as those collected by Stycos (1984) on the WFS of Costa Rica and a re-survey 18 months later. Recently, some more longitudinal data have become available from repeat surveys (Bankole & Westoff, 1998; Miller & Pasta, 1995), but not on Latin America. By and large then, one has to conclude that, for all of its plausibility, the rationalization effect has so far been difficult to demonstrate quantitatively.

The same applies to the tendency, noted by Lightbourne (1985 a), for the percentage of women who desire more than N children to increase with their actual number of surviving children n (n<N+1). While it is intuitively plausible that women have less desire for an N+1st child when they are still childless than by the time they have N children, the empirical association may also be attributable to self-selection, in the same way as in the case of rationalization. Finally, even if it is assumed that at least some of the empirical association is due to actual changes in declared preferences, there is some dispute as to whether these changes are age driven, cohort driven, or parity driven. With respect to this issue, Lightbourne and MacDonald (1982) conclude, based on their analysis of World Fertility Survey Data, that the association between age and ideal family size largely disappears when the number of surviving children is controlled for.

TABLE 7

Latin America: Percentage of women who desire a second, third, or fourth birth, by time elapsed since the previous birth, selected countries

Country, survey	Second birth		Third birth		Fourth birth	
	0-1 years	2-4 years	0-1 years	2-4 years	0-1 years	2-4 years
Bolivia, 1998	55.0	67.7	26.4	43.4	15.9	25.2
Brazil, 1996	60.7	62.3	22.3	26.6	7.5	15.7
Colombia, 1995	67.1	72.2	29.5	37.4	16.4	18.0
Dom. Rep., 1996	84.7	88.0	52.5	62.4	26.9	32.4
Guatemala, 1995	70.6	84.6	54.2	67.2	34.8	49.6
Haiti, 1994/95	69.4	74.1	39.5	57.8	33.0	38.7
Nicaragua, 1998	61.5	73.8	31.7	46.7	17.6	34.5
Perú, 1996	62.4	69.4	25.6	36.0	14.3	17.6

Source: Computed from DHS III

This section first addresses the issue of desire for additional children as a function of time since the last live birth. Table 7 shows the percentages of women who desire a second, third, or fourth birth as a function of the time elapsed since their last live birth. Clearly this desire is greater in women who have had a birth 2-4 years before the survey than in those whose last birth occurred during the past two years. However, some explantion is in order with respect to the way these percentages were computed. A direct tabulation of the desire for additional children by the time since the last birth will not reveal a trend of the kind shown in Table 7. This, however, is because the data are censored by new births. Those

women most motivated to have another child will likely have moved on to a next birth, so that they are removed from the observations, whereas the observations that remain increasingly refer to women wanting no additional births (and having the means to avoid them). A similar problem affected the initial attempts to construct synthetic cohort estimates of desired family size based on the proportions of women of different parities wanting no additional births (on this issue, see Rodríguez & Trussell, 1981).

In order to correct this problem, the following strategy was adopted:
1. All women who had their N^{th} birth n years before the survey were identified;
2. In the case of those who did not have additional births, the desire for another child could be observed directly.
3. In the case of women who had an $N+1^{st}$ child in the interim, the woman was classified as wanting an $N+1^{st}$ child if this birth was both declared to have been desired and complied with the Westoff criterion. In all other cases, she was classified as not having wanted an $N+1^{st}$ child.

Of course, this third procedure is debatable. To the extent that women may rationalize their desire for past births and some women do not want additional children even before they reach their ideal family size, it is not inconceivable that some of the $N+1^{st}$ births are erroneously classified as resulting from a desire, prior to this pregnancy, to have additional children. It is more likely, however, that the gradients implied by the figures in Table 7 are understated. This is because the $N+1^{st}$ births took place some years prior to the survey when the woman's prospective desire for additional children was lower than supposedly it would have been at the time of the survey, had the $N+1^{st}$ birth not occurred. A simulation model incorporating differential levels of prospective desire for additional children and differential probabilities of conception by fertility desire, which was designed to verify these results, confirmed that the gradients of Table 7 were indeed under-estimated.

If it is true that the prospective desire for children increases with the time elapsed since the last birth, as Table 7 seems to suggest, it follows that Bongaarts' NWTFR must be biased downward due to the fact that women who had a birth during the past year or two years are less likely to want additional children at the time of the survey. The NWTFR is sensitive to this interaction. A simulation, based on the assumption that the "real" prospective desire is the one that becomes apparent 4 years after the last live birth, suggests that the figures in Table 2 are under-stated by as much as 0.5 points.

The exploration of the second issue raised in this section, of shifts in the declared ideal family size over time, ideally requires longitudinal data. In the absence of such data, it was attempted to do the next best thing and compare data from successive fertility surveys. As this methodology is still experimental, it is presented here only for the illustrative case of Colombia. The model employed has the following structure:
1. Ideal family sizes (0, 1, 2, 3, 4, 5, 6+) were obtained from the 1990 DHS for women who had 0, 1, 2, 3, or 4 surviving children at the time;
2. It was hypothesized that the probability p(x) of having an additional live birth in any specific year is a function of x, the difference between the actual number of surviving children and the ideal family size at the time. The estimation was constrained to guarantee that p(3 or more) ≤ p(2) ≤ p(1) ≤ p(0) ≤ p(-1) ≤ p(-2) ≤ p(-3 or less), i.e. the probability decreases as women approach and eventually exceed their ideal family size.

3. On the other hand, it was hypothesized that the probability D(x) of adjusting one's ideal family size upward by one child, in any given year, also depends on the same difference, but in such a way that D(-3 or less) ≤ D(-2) ≤ D(-1) ≤ D(0) ≤ D(1) ≤ D(2) ≤ p(3 or more), i.e. the probability increases as women approach and eventually exceed their ideal family size.
4. Finally it was supposed that the probabilities D(x) suffer a proportional increase or decrease by a factor Δ in the years in which a birth took place if this birth raised the number of surviving children to more than the ideal family size at the moment.
5. Based on these assumptions, the distribution of women by numbers of surviving children and ideal family sizes was projected from 1990 to 1995.
6. The projected distribution was then compared to the actual distribution of women who had 0, 1, 2, 3, or 4 surviving children in 1990 and the difference between the observed and the projected distributions was minimized by varying the parameters p(x), D(x), and Δ.

The approach still has some limitations. It does not explicitly consider mortality or infecundity. Children who died are considered never to have been born. Also, it does not allow for downward shifts in the ideal family size. In addition, it had to be assumed, for technical reasons, that the time interval between both surveys was 4 years, when in fact it was closer to 5. Nevertheless, the results show a reasonable and consistent pattern:

p(-3 or less) =	0.1462	D(-3 or less) = 0	Δ = 0
p(-2) =	0.1462	D(-2) = 0	
p(-1) =	0.1462	D(-1) = 0.0172	
p(0) =	0.0743	D(0) = 0.0289	
p(1) =	0.0743	D(1) = 0.0289	
p(2) =	0.0743	D(2) = 0.0289	
p(3 or more) =	0.0743	D(3 or more) = 0.0289	

What these results suggest is that the distribution of women by numbers of surviving children and ideal family size is affected both by differential fertility and by shifts in the ideal family size. The fertility rate is cut in half once women reach their ideal family size, suggesting that in Colombia there is a substantial amount of individual fertility control and that women use it in a way that is consistent with their declared fertility intentions. Shifts in the ideal family size do not occur until the woman is one child short of reaching her goal. Once she has reached or exceeded her goal, the probability of adjusting her ideal family size goes up further, but then remains constant. As Δ = 0, no such adjustments take place in the years when a new child is born. Rationalization, according to these figures, does occur, but not to any larger extent than the adjustment of fertility intentions by women who are exactly at their ideal family size.

6. Male and female fertility preferences

It has long been realized that fertility preferences depend on a process of negotiation between both partners and that relying exclusively on data obtained from women may project a biased image of the joint preference function of the couple. Although Lightbourne

(1985 a) does present some preference data for males, from Thailand and Egypt, it has not been until recently that more comprehensive male preference data became available in Latin America. By merging the data of male respondents with those of their spouses, the third round of the DHS[4] makes it possible to analyse the interaction between the preferences of spouses in much more detail than has been the case so far.

TABLE 8

Latin America: Actual and perceived agreement on the ideal family size between spouses that declared definite numbers, selected countries

Country, survey	Number of cases	Agreement between spouses			
		Actual	Perceived		
			By both	By husband	By wife
Bolivia, 1998	1573	507	638	1032	897
Brasil, 1996	1273	483	569	891	748
Dom. Rep., 1996	771	230	293	493	406
Nicaragua, 1998	1299	432	600	926	844
Peru, 1996	528	186	257	405	337

Source: Computed from DHS III

To what extent do the ideal family sizes of husbands and wives coincide ? The second data column of Table 8 shows that only in about a third of the cases the same number was declared by both spouses. This can be compared with the perception of each of the spouses, as to whether the other spouse has the same or different preferences, which is asked both on the male and female questionnaire. Interestingly, a lot of couples do not appear to perceive that they hold different goals; in all of the countries, there is a larger number of couples who both declare to be in agreement than the number where this is indeed the case. The husbands in particular are usually convinced that their spouses hold the same views on ideal family size, when in fact they often do not. All of this indicates a lack of communication on fertility goals and a certain amount of "machismo" on the part of the men, who naturally assume that their spouses share their preferences.

As is shown in Table 9, men tend to want more children than their spouses, but the differences are not great. In about 36% of the cases it is the men who want more children, whereas in about 28% of the cases it is the women. Does this imply that, for the purpose of determining couple's joint fertility goals, it does not matter much who of the couple declares his or her fertility preference ? Not necessarily. As Bongaarts (1990: 503) observes: "The fertility implications of these preference differentials are unclear. Fertility would be roughly the same if either the husband or the wife was the sole decisionmaker, but fertility would be higher if childbearing continued until both partners wanted no more

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[4]) The relevant data are available for all the eight coutries, with the exception of Colombia and Guatemala. Haiti is not analysed here, due to technical problems with the merging of the male and female respondent files.

offspring, and fertility would be lower if childbearing stopped when either partner wanted no more."

TABLE 9

Latin America: Percentages of relative preferences regarding ideal family size between spouses, selected countries

Country, survey	Husband more than wife	Agreement between spouses	Wife more than husband	Non-numerical response from either
Bolivia, 1998	38.0	30.6	25.9	5.4
Brasil, 1996	34.6	37.3	26.8	1.3
Dom. Rep., 1996	37.7	28.8	29.7	3.8
Nicaragua, 1998	35.0	31.4	28.3	5.2
Peru, 1996	32.6	33.4	27.3	6.6

Source: Computed from DHS III

TABLE 10

Latin America: Mean ideal family size among couples where at least one declared a definite number, selected countries

Country, survey	Smallest number	Wife's preference	Husband's preference	Largest number
Bolivia, 1998	2.41	2.85	3.23	3.70
Brasil, 1996	2.04	2.57	2.88	3.41
Rep. Dom., 1996	2.76	3.35	3.74	4.36
Nicaragua, 1998	2.61	3.08	3.40	3.94
Peru, 1996	2.26	2.70	2.91	3.37

Source: Computed from DHS III

The implications of this reasoning are displayed in Table 10 and Table 11. Table 10 shows the mean ideal family sizes of men and women. Those of men exceed those of women by about 0.2-0.4 children, not a big difference. However, if disagreements between the spouses are systematically resolved by assuming the bigger number as the joint ideal family size of the couple, this would yield numbers that are, on average, larger by 1.1-1.4 children than those that would be obtained by resolving conflicts through the systematic adoption of the smallest number.[5] Table 11 shows the implications of the different options mentioned by Bongaarts for his NWTFR. One additional alternative is included, namely the "mixed agreement". This refers to the negotiation outcome whereby the couple will continue having children until both want no more or until one of the spouses wants no more and the

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[5]) If one of the spouses gave a non-numerical answer or didn't state a preference and the other mentioned a number, the latter was used both for the minimum and for the maximum. It should also be emphasized that the numbers displayed in Tables 10 and 11 refer to men and women that live in couples, not to the entire population.

other spouse has already reached his or her ideal family size in terms of the number of surviving girls and boys. For example, if the couple has one surviving girl and one surviving girl, the wife wants no more, the husband wants at least one boy and a girl, but would like to have one more child, without sex preference, this criterion considers that no more births are desired. As the numbers show, the range of possible outcomes can be quite wide, e.g. from 2.37 to 4.25, in the case of Bolivia. The numbers for Peru seem suspiciously low, possibly due to the small number of cases (638).

TABLE 11
Latin America: NWTFR under different scenarios of the outcome of negotiation among couples, selected countries

Country, survey	Smallest number	Wife's preference	Husband's preference	Mixed agreement	Largest number
Bolivia, 1998	2.37	3.20	3.63	4.09	4.25
Brazil, 1996	2.27	2.62	3.01	3.05	3.13
Dom. Rep., 1996	2.97	3.56	3.83	4.15	4.18
Nicaragua, 1998	2.27	2.75	3.18	3.13	3.53
Peru, 1996	1.54	2.52	2.17	2.72	3.09

Source: Computed from DHS III

The same kind of figures can be prepared using the Westoff-Lightbourne WTFR indicator. In the case of Bolivia, for example, this yields a desired fertility of 3.44 for women, 3.47 for their husbands, 3.87 for the maximum, 3.03 for the minimum, and 3.44 for the mixed agreement, i.e. a smaller range of variation than in the case of Bongaarts' NWTFR. An interesting (though probably extreme) scenario for the WTFR is the case where each successive birth is considered desired until both partners have reached their ideal family size, not only in terms of the total number of surviving children, but also in terms of children of each sex. This yields 4.08 for the couple's joint WTFR.

Finally, in those cases where the spouses have different fertility preferences, whose preference prevails ? In order to answer that question, the number of surviving children of couples where the wife was between 40 and 49 years old and who both gave a numerical answer to the question on ideal family size was compared with the number declared by either spouse. To begin with, the final fertility outcome was compared with the desired family size among those couples that did hold the same fertility goal, as displayed in Table 12. In Bolivia, for example, of the 112 couples who had the same declared ideal family size, 15 (13.4%) ended up with less children than desired, 49 (43.8%) hit their target, and 48 (42.9%) had more surviving children than they desired.

TABLE 12

Latin America: Attainment of wife's and husband's fertility goals among couples with
wives aged 40-49, according to whether spouses have the same goal, selected countries

| Country, survey | Agreement between spouses | | | No agreement between spouses | | | | | |
| | | | | Wife's goal attainment | | | Husband's goal attainment | | |
	Deficit	As desired	Excess	Deficit	As desired	Excess	Deficit	As desired	Excess
Bolivia, 1998	15	49	48	75	43	141	62	69	128
Brazil, 1996	18	80	20	77	59	91	60	61	106
Dom. Rep. 1996	10	14	25	55	23	25	51	20	48
Nicaragua, 1998	9	24	30	37	31	84	41	21	90
Peru, 1996	9	21	22	28	20	53	21	10	70

Source: Computed from DHS III

The second stage of the analysis details the attainment of fertility goals by wives and
husbands concerned couples that held distinct fertility goals. As shown in Table 12, among
the 259 Bolivian couples whose fertility goals did not coincide, the husband attained his
goal in 69 cases and the wife in 43 cases. This situation, however, was not replicated in all
countries. In Brazil, the cases where either spouse's goal was attained were split almost
evenly between husbands and wives: 61 against 59. In the other three countries, wives more
often attained their fertility goal than husbands.

The implicit criterion for gender bias in the attainment of fertility goals that was used in the
preceding paragraph is not entirely fair in that, in a situation where even couples who share
a common fertility goal often tend to exceed this goal, the process is obviously biased in
favour of whichever partner holds the higest preference. In order to correct this problem, a
more refined index of gender bias was constructed. This index compares the actual data in
the last six columns of Table 12 with the figures that would result if the distribution of
outcomes (deficit, as desired, excess) were not affected by the other partner's preferences,
i.e. if they were distributed in the same way as they would in the case of a consensual goal.
This was done separately for the husband and the wife. The index, which varies between –1
(bias entirely favorable to wife) and +1 (bias entirely favorable to husband), is obtained by
comparing the three distributions: the actual distribution, the hypothetical distribution that
would result if the husband's preferences played no role, and the distribution that would
result if the wife's preference played no role. This resulted in a male bias of 0.29 for
Bolivia, 0.08 for Brazil, -0.09 for the Dominican Republic, -0.29 for Nicaragua, and –0.41
for Peru. These outcomes suggest that the situation varies between countries, with a slight
tendency for women's preferences to predominate over those of their partners.

7. Determinants of the implementation of fertility preferences

Although the previous sections raise additional doubts about the precise meaning of
"wanted fertility" or "fertility goals", nobody doubts that many individuals or couples end
up not having the number of surviving children they desire. Section 4 explored some of the
reasons why substantial numbers of women in Latin America have fewer surviving children

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than their stated ideal family size. The present section analyses two other aspects of the correspondence between actual fertility and stated intentions. The first analysis concerns the desire for the last live birth, if it occurred during the last 3 or 5 years before the survey, and its determinants. The second refers to women who have exceeded their stated ideal family size and explores the correlates of this condition.

TABLE 13

Latin America: Logistic regression coefficients for the probability that the last live birth was desired for women with children born during the last 3 or 5 years, selected countries

	Bolivia, 1998	Brasil, 1996	Colombia, 1995	Domin. R., 1996	Guatem., 1995	Haiti, 1995	Nicaragua 1998	Perú, 1996
Age under 20	- 0.6067**	- 0.3058 *	- 0.5167**	- 0.3648 *	- 0.6506**	- 1.3992**	- 0.5865**	- 0.4696**
Age 20-24	- 0.3774**	0.0333	- 0.1569	- 0.1895	- 0.1837	- 0.2362	- 0.3063**	- 0.2952**
Age 25-29	- 0.0568	0.3577**	0.1218	0.1091	0.0502	0.0347	- 0.0364	0.0377
Age 30-39	0.2728**	0.3362**	0.5569**	0.2775	0.1819	0.3877 *	0.1151	0.3083**
First child	0.4409**	0.2853**	0.4520**	0.8151**	1.0635**	0.3132 *	0.9054**	0.4228**
Child was boy	0.1140	- 0.0376	0.0053	- 0.1188	0.0148	- 0.0882	- 0.0358	0.0619
Excess over ideal	- 0.2273**	- 0.2456**	- 0.2074**	- 0.1784**	- 0.2179**	- 0.2091**	- 0.1358**	- 0.2057**
Living children	- 0.2249**	- 0.1735**	- 0.3541**	- 0.1530**	- 0.0324	- 0.3281**	- 0.0842**	- 0.2215**
Previous deaths	- 0.1185**	- 0.0461	- 0.0736	0.0583	- 0.0694	- 0.1363 *	0.0333	- 0.2241**
Child died	- 0.2212	0.6514 *	- 0.0297	0.4574 *	0.0356	0.0257	- 0.0499	0.2345
Partner wants more	- 0.2047 *	- 0.2393 *	- 0.2027 *	- 0.2250 *	- 0.1371	0.0387	- 0.2319**	- 0.1228 *
Partner wants less	- 0.4114**	- 0.4223**	- 0.3413**	- 0.2427	- 0.5531**	- 0.6921 *	- 0.5140**	- 0.3416**
Time since last	0.0322	0.0274	0.0788**	0.0003	0.0689**	0.1126**	0.0667**	- 0.0024
40% poorest	0.1432	- 0.0377	- 0.0510	- 0.2204**	0.1681 *	0.3381**	0.0940	- 0.0533
20% richest	0.3680**	- 0.0369	0.1188	0.0877	0.0303	0.1283	0.0114	0.0426
Education	0.0054	- 0.0042	- 0.0347**	- 0.0297 *	0.0169	- 0.0411 *	- 0.0065	0.0116
Left school for pr.	- 0.1218	- 0.5202**	- 0.4990 *	- 0.3144	- 0.9004		0.1524	- 0.3658**
Left school for m.	0.1408	0.2862	0.1933	- 0.1352	- 1.0604**		0.4145	0.5130**
Left school for ch.	- 0.5414	- 0.1190	0.7941	0.1344	1.4558		0.6058	- 0.0995
Married	0.7211**	0.8279**	0.6997**	0.3011**	0.6890**	0.5504**	0.5456**	0.6301**
Urban residence	- 0.2356 *	0.0634	0.0117	- 0.0607	- 0.2544 *	0.3307	0.0379	0.0017
Knowledge contr.	- 0.0341	- 0.0925**	- 0.0681**	- 0.0028	- 0.1357**	- 0.0558	- 0.0343	- 0.0316**
Knowledge cycle	0.0528	0.0502	0.0545	0.2268 *	- 0.2297 *	0.3832 *	- 0.1024	0.0393
Number of cases	4609	3705	3796	3109	4942	2243	5556	11760

Left school for pr.: Women with one child who left school because of pregnancy;
Left school for m.: Women with one child who left school to get married;
Left school for ch.: Women with one child who left school to "look after children";
Married: Formally married or in consensual union;
Knowledge contr.: Number of contraceptive methods that the woman can cite spontaneously;
Knowledge cycle: The woman correctly identifies her fertile period.

*   Significant at the 5% level;   ** Significant at the 1% level.

Source: Computed from DHS III

It is often assumed that reproductive health knowledge and access to contraception play a major role in both processes. Women who know more about reproductive health and have access to family planning methods would be less likely to have unwanted pregnancies or to exceed their fertility goals. Unfortunately, the DHS surveys do not have detailed information about access to contraception. Consequently, the measures used here are limited to knowledge of contraceptive methods (the number of methods that the respondent can name spontaneously) and knowledge of her fertile period. Surprisingly, in both analyses these variables turn out to be less significant than nearly all of the other, contextual factors.

Table 13 analyses the desire for the last child, using logistic regression. Positive outcomes are defined as those where the woman declared wanting the child at the time when she became pregnant. Negative outcomes are those where she wanted the child later or not at all. As would be expected, negative outcomes are strongly associated with having exceeded one's ideal family size, which has the only consistently significant negative coefficient at the 1% level in all countries. Curiously, even after this factor is controlled for, the number of living children also shows a separate negative association with the desire for the last child in all countries except Guatemala. Another factor that is consistently significant in almost all countries is the one indicating whether the birth was the woman's first. This factor is so strong that it largely compensates the negative association of wantedness of the child with ages of the mother under 20. Hence the counter-intuitive finding that adolescents in Latin America, with the exception of Brazil, are the age group with the highest percentage of wanted births. In some countries, the coefficient for the 20-24 age group is also negative, whereas the 30-39 age group seems to be the one where the desire for children is highest. Being married is another strong positive predictor for wanting the last born child. In some countries, having left school because of a pregnancy is a negative predictor among young women, but the relationship is far from consistent. Having left school in order to get married tends to be positively associated with the wantedness of the child, but again the association is somewhat erratic. Male preference, socio-economic level, education and urban residence play no consistent role whatsoever.

Although the relationship is not consistent, the number of previously deceased children is negatively associated with the wantedness of the last child. The death of the child itself shows a weak and not entirely consistent relationship with its wantedness after the fact. Any perceived discrepancy in the reproductive goals of the couple has a negative effect on the wantedness of the last child. Interestingly, this happens both if the partner's ideal family size is larger and when it is smaller than that of the respondent. There is also some evidence of rationalization after the fact, as the coefficient of the time since childbirth is positive in some countries.

Knowledge of the woman of her fertility cycle has no consistent relationship with the wantedness of the child. Knowledge of contraception does have some relationship, reaching 1% significance in four of the countries, but surprisingly its sign is negative: the more women know about contraceptive methods, the more likely it is that their last live born child was not desired. The most plausible explanation for this counter-inituitive finding is that women become more knowledgeable about contraception after they are close to or have exceeded their ideal family size.

TABLE 14

Latin America: Truncated regression coefficients for the number of living children in excess of the desired family size, selected countries

	Bolivia, 1998	Brasil, 1996	Colombia, 1995	Domin. R., 1996	Guatem., 1995	Nicaragua 1998	Perú, 1996
Age	0.0840**	0.0837**	0.0759**	0.0860**	0.0820**	0.1070**	0.1001**
Desired family size	- 0.5903**	- 0.8868**	- 0.5997**	- 0.7703**	- 0.5342**	- 0.7121**	- 0.5489**
Education	- 0.0859**	- 0.1479**	- 0.1066**	- 0.1209**	- 0.1380**	- 0.1607**	- 0.1446**
40% poorest	0.6683**	0.9747**	0.7969**	0.6390**	0.5828**	0.6937**	0.5018**
20% richest	- 0.6153**	- 0.2216**	- 0.3194**	- 0.3323**	- 0.7706**	- 0.6160**	- 0.5354**
Urban residence	0.1390 *	- 0.0583	0.0115	- 0.2095	0.1009	- 0.1236 *	0.1192**
Partner wants more	0.4081**	0.3155**	0.2716**	0.4774**	0.3522**	0.1865**	0.1083**
Partner wants less	0.5780**	0.5345**	0.4751**	0.6669**	0.1718	0.9762**	0.4230**
Children that died	- 0.8908**	- 0.5730**	- 1.0485**	- 1.3000**	- 1.3791**	- 1.3232**	- 1.1714**
Children not at home	0.9040**	0.7523**	0.5416**	0.3416**	0.5101**	0.6668**	0.6876**
Less boys than desired	0.6141**	0.6397**	0.4605**	0.4107**	0.4960**	- 0.1171	0.1035**
Less girls than desired	0.3944**	0.5387**	0.4402**	0.5868**	- 0.1020	0.1419	- 0.1076**
Infecundity	- 1.0232**	- 0.5200**	- 0.8717**	- 0.3880 *	- 0.8960**	- 0.8885**	- 0.6713**
Married	0.3827**	- 0.1031	0.1422**	0.0824	0.6493**	0.5163**	0.5735**
Married more than once	0.5541**	0.6558**	0.5384**	0.0443	0.2780**	0.4452**	0.4975**
Knowledge contraception	0.0570**	0.0166	0.0849**	0.1261**	0.0442**	0.0706**	0.0406**
Knowledge of cycle	- 0.0987 *	- 0.2799**	- 0.1295**	- 0.0727	0.3121**	0.1763**	0.0279
Number of cases	5405	6508	5352	3714	4341	6184	13597

*   Significant at the 5% level;   ** Significant at the 1% level.

Source: Computed from DHS III

Finally, Table 14 analyses the correlates of having exceeded one's ideal family size. Obviously, this is a condition that only becomes relevant after women reach a certain age. In order not to contaminate the results with data referring to very young women who, almost by definition, have not yet reached their ideal family size, the analysis was limited to women who had reached at least the mean age associated with births of the birth order corresponding to their ideal family size. The results were analysed using a truncated regression that assigns a value of 0 to all women whose expected number of surviving children is less than their ideal family size. The observations were truncated in the same fashion. This implies that the size of the shortfall in a woman's number of surviving children with respect to her fertility goal plays no role in the analysis, but the size of her excess fertility (if applicable) does.

As can be seen in Table 14, almost all the explanatory variables are significant at the 1% level. In the case of age and desired family size, the associations are more or less obvious. These variables were included primarily as controls. However, the more substantive factors are also generally significant, with the expected signs. In particular, note that remarriage is generally associated with a higher probability of exceeding one's ideal family size, due to the perceived need to consolidate a new family by having children with the new partner. The only exception is Guatemala. As the dependent variable is the number of surviving children, there is a predictable relationship with the number of children that died. However, there is also a strong relationship with the number of children that live elsewhere. This may

have different explanations. On the one hand, women who have children living elsewhere may be further advanced in the course of their fertility history and therefore have more surviving children. On the other hand, this finding too may be associated with the family break-ups and the desire to have additional children in a new union.

Imbalances in the number of boys or girls are also generally associated excess fertility, as women try to correct the situation by having additional children. Apparently, his tendency is slightly more consistent in the case of a shortage of boys than in the case of missing girls. Education and belonging to the highest socio-economic stratum systematically reduce the likelihood of exceeding one's fertility goal, whereas belonging to the poorest 40% increases it. Urban residence does not appear to have a systematic relationship to excess fertility. As expected, the fact that the partner has higher fertility goals than the respondent is associated with excess fertility, but surprisingly, the effect is even stronger if the partner holds a *lower* fertility goal.

Finally, again the effect of knowledge of reproductive health and contraception is ambiguous. Knowledge of the fertility cycle is significant in some countries, but the signs of the coefficients are inconsistent. The coefficients of the number of contraceptive methods identified by the respondent are more consistent, but all point in the opposite direction from what one would expect. Again, the most likely explanation is that women only acquire this knowledge after having faced problems of unwanted fertility.

8. Final remarks

This paper has explored several issues relating to the wanted and unwanted fertility of women and couples in Latin America. On the whole, it confirms that the issue of fertility goals is characterised by considerable ambiguity. While the wanted fertility approach proposed by Westoff, Lightbourne, and Bongaarts has considerable advantages in terms of conceptual clarity, it only provides a partial view of the degree to which women and couples implement their fertility desires. Bongaarts' NWTFR, in particular, may be affected by a downward bias. The ideal family size is rightly criticized for its ambiguity and possible biases, but on the whole it provides a more complete picture of individual fertility goals. The fear that the ideal family size may be affected by rationalization effects seems to have some basis in fact, but the cross-sectional association between the ideal family size and the number of living children is also attributable to conscious fertility control and to changing preferences, even before women reach their stated fertility goals. Although, on average, the fertility goals of men are not very different from those of their spouses, the negotiation process between spouses to resolve differences may result in outcomes that are systematically higher or lower than those based on the perceptions of either spouse. Contrary to the common sense view, no evidence was found that men's preferences tend to prevail over those of their spouses in defining the final fertility outcome. Finally, the analysis suggests that contraceptive knowledge is only one of the factors that affect the implementation of individual fertility goals. Contextual factors such as marital instability, divergent goals between spouses, and sex imbalances of the surviving offspring seem to be at least as important.

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