

WHAT WILL HAPPEN TO BRAZILIAN FERTILITY?

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BACKGROUND

Despite the absence of an official family planning policy, demographic changes in Brazil occurred at an unprecedented pace in the second half of the twentieth century, ushering in an era with total fertility rates near the replacement level. According to the population censuses, the total population in Brazil was 52 million in 1950 and 170 million in 2000. This reflected a mean annual growth rate of about 3 per cent at the beginning of the period, which fell to 1.5 per cent per year in recent years. Brazilian life expectancy at birth increased from 44 to 68 years and the total fertility rate declined from 6.2 to 2.2 in the same period. The changes in life expectancy and in the total fertility rate were pervasive, extending through all social strata, ethnic-race groups and regions, transforming the “average” life course and family structure for Brazilians. Although the demographic components of such changes are well known, there are currently no integrated explanations for their rapid pace.

Several authors have discussed the multiplicity of factors underlying Brazil’s rapid fertility decline and reviews of these studies mostly agree that despite important contributions, we still lack of a full understanding of the phenomena. Martine’s revision of the studies points to a consensus that several institutional actors, including the State, the Catholic Church, women’s movements, the Population establishment and health sector professionals contributed to fertility decline but that their influences were mainly unanticipated and unintended. He also notes that many studies have focused on the effects of “modernization”, generally confirming the inverse relation between fertility and both income and education although they are less clear about the impact of women’s labor force participation. The urbanization process was another important factor contributing to the acceleration of the fertility decline “because it is associated with a wide range of social, economic and political changes that transformed the country during the last half-century” (Martine, 1996, p. 70).

During this period, the state led import-substitution industrialization model, which characterized the growth regime of the Brazilian economy from the 1950s until the 1970s, entailed an active –even if not very efficient- role of the State in the provision of basic goods and services. In the late 1970s and especially in the early 1980s, with an economic crisis, most of the social protection systems began to show signs of deterioration and even collapse, consequently generating further social exclusion. At the same time, the pattern of urban industrial growth with social exclusion generated a Brazilian mass and consumer society as Faria (1991) describes. Governmental policies regulating direct consumer credit, telecommunications, social security benefits and health care led to a “real or symbolic integration of the population in a consumer market”, which have changed individual behavior, including increasing the demand for marital fertility regulation (Faria, 1997/98, p. 187)¹.

Among the challenges to Brazilian demographers in analyzing their country’s fertility behavior over time is the great regional diversity that has characterized its development. Recent findings for regions show a strong and consistent relationship between fertility decline and measurable changes in

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social and economic circumstances between 1960 and 1991. For instance, they show the relevance of changes in mother's schooling and household electrification on the pace of fertility decline throughout the transition (Potter and others, 2002). During the same period, growing women's participation in the labor market and women's education increased, which are closely correlated with period and cohort-fertility decline (Lam and Duryea, 1999; Rios Neto, 2000). High levels of social inequality along with substantial social mobility characterize Brazilian society and seem to be important factors for understanding recent fertility trends (Pastore and Silva, 2000)² but these factors seem to have lost significance for demographers³ given the widespread and rapid pace of fertility decline, largely attributed to female sterilization. Female sterilization among Brazilian married women rose from 27 to 40 per cent in the period 1986-1996 and oral contraception remained the only other widely used modern method or birth control (BEMFAM, 1997).

The critiques of feminists⁴ that such structural explanations overlooked the high costs paid by women for the fertility transition through sterilizations, Cesareans and clandestine abortions⁵, led demographers to pursue these as new explanations for fertility decline. Although sterilization emerged initially among the upper class in Brazil, it is common today in all classes, generations, racial groups and other segments of society, leading to a "culture of sterilization" (Berquó). The prevalence of pairs of mothers and daughters or sisters who have been sterilized increases in number with educational level, although it is present as well among women with no education" (1999a, p. 214)".

Demographers have also concluded that the adoption of new contraceptive technologies in Brazil is not a result of individual choices but of "collective processes", where doctors appear to have played an important role in the choice process and to have been heavily influenced by the behavior of the community of medical doctors (Potter, 1999; Caetano, 2001). Potter notes that in the early years of fertility decline, as Brazilian medicine and public health policy changed from prevention and control of diseases to specialized, hospital-based curative care, women increasingly demanded surgical interventions including sterilization in private hospitals affiliated with the social security system. Aside from women's growing demand for birth control, doctors and hospitals in the public system encouraged Cesarean deliveries since they were paid double to perform these procedures compared to vaginal deliveries⁶. Thus, many Cesarean sections were unnecessary and in 1996, they accounted for fully 71 per cent of all Brazilian sterilizations. While in the majority of Brazilian regions, sterilizations are more likely to be performed during a cesarean delivery and paid by the patient, in the Northeast a larger fraction of non-cesarean sterilizations were performed and the majority of them, 70 per cent, were paid for by politicians and doctors (Caetano, 2001).⁷

Therefore a general explanation for sterilization in Brazil is that it is the "result of the association of an increasing demand for contraception along with the absence of effective public policies, and poor birth control options, the influence of doctors amidst the diffusion of a hospital-based curative medicine, and the pervasiveness of a political behavior in which politicians provide goods and services to the poor in exchange for votes [as in the specific case of the Northeast region]" (Caetano, 2001, p. 1).

By emphasizing the need for a historical reconstruction of the various ways in which changes in social roles, purposes, motives and intentions are crucial to understanding the processes and causes of fertility change in Brazil, I suggest that although the mid-1960s may be an important turning point towards a generalization and acceleration of the process of decline, it does not represent its onset as frequently mentioned in Brazilian studies⁸. Furthermore, I believe that I conclude that the hygienist medical discourse in the middle of the nineteenth century, reinforced by the eugenics movement at the beginning of twentieth century, and the contraceptive revolution in the 1960s was socially absorbed and legitimated by what Brazilians believed it could offer. I also sustain that through this complex interaction, an interesting set of elements emerges pointing towards a profile of a policy

affecting population reproduction that go beyond contemporary neo-malthusian conceptions or measures aimed to control population growth (Goldani, 2001).

Also, through the institutional arrangements and interactions I described, there are relevant indications of how gender systems; labor market practices and aspects of the national legal administrative system have constrained women's reproductive behavior. Women's movement victories since the 1970s, in part encoded in the Brazilian Constitution of 1988, changed the official perspective on family and reproduction. Since then, government and civil society has been instrumental in creating, both legally and in practice, more equality and equity between men and women. However, as the discussions about sterilization practices show, there continues to be an enormous gap between the legal victories and actual life conditions.

PERSPECTIVES ABOUT FUTURE FERTILITY FROM BRAZILIAN DEMOGRAPHERS

Recent declines in Brazilian fertility, the continued use of sterilization as the main mechanism of fertility control and their concentration at early ages have led to a consensus in the demographic community that Brazilian fertility will soon be below replacement. There is little disagreement among Brazilian demographers that fertility in Brazil will reach below replacement levels in the next decade although the official projections maintain that total fertility rates will be around replacement levels by 2050. There are different views regarding the pace and levels at which below replacement fertility rates could be reached. Moreover, there is no agreement about the irreversibility of this tendency or for how long Brazilian fertility rates will be below replacement.

TABLE 1. DEMOGRAPHIC INDICATORS FOR BRAZIL AS ESTABLISHED AND PROJECTED BY THE GOVERNMENT OF BRAZIL, 1970-2050

| <i>Indicators</i> | <i>Censuses</i> | | | <i>Projections</i> | | |
|---------------------------|-----------------|-------------|-------------|--------------------|-------------|-------------|
| | <i>1970</i> | <i>1980</i> | <i>1991</i> | <i>2000</i> | <i>2025</i> | <i>2050</i> |
| Total Fertility Rate | 5.76 | 4.35 | 2.61 | 2.20 | 2.06 | 2.06 |
| Infant Mortality | 116.9 | 69.1 | 44.1 | 33.8 | 24.2 | 15.1 |
| Life Expectancy at Birth | 52.7 | 61.8 | 65.9 | 68.6 | 71.0 | 73.6 |
| per cent Less than Age 20 | 53.1 | 49.7 | 45.0 | 39.1 | 29.9 | 25.7 |
| per cent More than Age 65 | 3.1 | 4.0 | 4.8 | 5.0 | 9.6 | 16.2 |
| Population in 1000s | 93140 | 119003 | 146825 | 170143 | 216952 | 238162 |

Source: Instituto Brasileiro de Geografia e Estatística (IBGE), Various Statistical Yearbooks, Censuses and Population Projections.

The facts are that the recent steep fertility decline from 4.3 in 1980 to 2.2 in 2000 comes with increasing female sterilization among young married Brazilian women, which rose from 4 to 11 per cent for women age 20-24, between 1986 and 1996 (BEMFAM, DHS1986, 1996). Also, a steep decline in infant mortality from 116.9 in 1970 to 44.1 in 2000 contributed to the decline in fertility and increase in life expectancy. However, a large increase in mortality among young men 15-34 from external causes during the 80s limited the gains in male life expectancy and increased the gender gap. From 1991 to 2000, male life expectancy increased from 62.6 to 64.8 while females increased from 69.8 to 72.6 (IBGE, 2002).

Below replacement fertility rates are already part of the demographic regimes of almost all Brazilian metropolitan areas, ranging from 1.8 in Belo Horizonte to 2.2 in Curitiba, compared to an average of 2.4 for Brazil in 1999. Seven of ten married women in metropolitan areas that use some form of contraception have chosen sterilization for themselves or their partners (Wong, 2001). This high rate of sterilization may also explain the lack of a correlation between fertility and infant mortality among

metropolitan areas. For instance, the metropolitan area of Salvador (Bahia) had one of the highest infant mortality rates (62 per thousand) and one of the lowest total fertility rates (1.8 children).

Recent estimates and projections of total fertility rates by cohort and period suggest that fertility for Brazil will continue to decline and will soon reach sub replacement levels. A concern among Brazilian demographers that the exclusive reliance on the conventional age-based total fertility rate (TFR) and period measures might contribute to the confusion about whether the current trends are real or short term fluctuations led to the generation of cohort age-fertility rates. The most recent findings confirm a systematic decline of fertility by cohort during the twentieth century with a total fertility rate of 6.9, 5.8 and 4.2 for cohorts of women beginning their reproductive periods respectively, in 1903, 1933 and 1963 (Horta and others, 2000). Another study projects fertility rates by cohort and suggests that total fertility rates below replacement (1.9) will be reached by women that began their reproductive years in 1988. The projection of fertility in the same study shows a total fertility rate of 2.0, 1.8, 1.6 and 1.5, respectively, for the years 2000, 2005, 2010 and 2015 (Carvalho and others, 2000).

The expectation that low fertility will endure in Brazil, thus leading to long-run demographic decay, could be unwarranted according to a few demographers. They believe that we may merely be experiencing the trough of a long-term cyclical movement and population changes are moving into a largely unknown future. For some analysts, average fertility level tells only part of the story of low fertility. Following this hypothesis and closely related with the “demand side” interpretation of future fertility, a study based on the 1996 DHS notes the importance of the desired or ideal family size in different regions. For instance, the ideal number of children varies only between 2.4 in Rio de Janeiro and 2.8 in São Paulo and the Northeast and the proportion of women who declared an ideal of two children varies from 47 per cent in Rio to 37 per cent in the Northeast. Also, a substantial number of women declared their ideal number of children to be higher than two. In São Paulo, 29 per cent declared an ideal of three children and in the Northeast, 28 per cent of the women desired four children. The study also found that a high proportion of Northeastern women without children, 24 per cent, had no desire to have any children but among women with one living child, about 68 per cent wanted to have another (Camarano and others, 1999).

In discussing the prospects for future fertility in Brazil in this paper I conducted a survey of expert Brazilian demographers⁹ (EBDs) in January 2002. Five questions were asked, which I translate in footnotes throughout the text. The first two questions asked EBDs their opinion about trends in Brazilian fertility behavior, including whether fertility levels will reach below replacement levels.¹⁰

Most of the EBDs agreed that Brazil could follow the patterns experienced by the more developed countries, i.e. attaining below replacement fertility levels. Rios Neto suggested that Mediterranean countries (Italy, Portugal, Spain and Greece) are the closest models for Brazil because of common cultural roots and their type of “welfare state” although differences in the patterns of nuptiality and fertility need to be considered. Similarly, Sonia Correa also claims that the experience of the Mediterranean countries is similar to Brazil’s. She argues that they share the Catholic ethos and a general pattern of gender inequality in comparison with Northern Europe. Also, in Mediterranean countries, support from the State for women’s reproductive health and gender equity programs was weaker, including the illegality of abortion (except in Italy where abortion has been legal since the 1970s)¹¹.

Some EBDs were more emphatic than others regarding the tendency toward below replacement:

For sure Brazilian fertility rates will reach below replacement (KB)

There is no doubt that Brazilian fertility rates will reach below replacement as soon as the first decade of the XXI century (JAC)

Brazilian fertility rates will be below replacement but they will also fluctuate (FRA) .

Others, although agreeing with the tendency toward below replacement, stressed the particularities and difficulties of estimating Brazilian fertility:

Brazilian fertility rates will follow the experience of developed countries except with its peculiar dynamic of highly concentrated fertility at younger ages. Changes to a pattern of late fertility as in developed countries is possible in the medium term but this is not guaranteed (ERN).

At a certain point in time, there is no doubt that fertility rates below replacement will occur. Even being conservative, I would say that this is already happening for about 30-40 per cent of the Brazilian population. For the entire country, it is possible that below replacement will be reached in the next five years. Also, since Brazil still has sub-groups of population with relatively high mortality levels, a TFR above 2.1 for them may imply intrinsic rates of growth that are already below zero (LRW).

It is difficult to think about fertility below replacement because the regional heterogeneity is masking the average fertility trends for the country. While fertility rates in regions like São Paulo and Rio de Janeiro seems to be close to below replacement levels. I don't think the Northeast, a large region with the highest fertility rates, will reach below replacement (AAC).

If we take a regional example like Rio de Janeiro, it does not seem absurd to think of a strong trend towards "sub-replacement". Also we should consider the relative weight of the phenomena of "youth waves" in the Brazilian population structure and their potential contribution to future population projections" (SC).

PREDICTING TOTAL FERTILITY RATES: 2000-2050

In a question about Brazilian fertility behavior in the next 50 years, 6 of 8 EBDs responded that total fertility rates would continue declining to below replacement levels while one EBD believes that fertility would oscillate around replacement levels. Two in the group of 6 considered the possibility of a slight increase at the end of the fifty years although they do not expect them to recuperate to the replacement level.

When asked to specify the average total fertility rates for three periods during the next 50 years, six of the eight EBDs responded.¹² Their answers are as follows:

| Years | JAC | ERN | LRW | FRA | KB | AAC |
|---------|-----|-----|-----|-----|-----|-----|
| 2000-05 | 2,0 | 1.9 | 2.1 | 2.3 | 2.4 | 2.1 |
| 2005-25 | 1,8 | 1.3 | 1.8 | 2.1 | 1.9 | 1.7 |
| 2025-50 | 1,8 | 1.7 | 1.5 | 1.9 | 1.6 | --- |

These demographers also offered justifications for their predictions, as requested.¹³ They provided a combination of methodological and substantive reasoning. The assumption of the past tendency of decline is common as an explanation for the estimated rates for the period 2000-2005 (KB, AAC, ERN, JAC, FRA). Other justifications included the convergence of behavior among social groups and regions (JAC, FRA), increases in the female educational level, which is highly correlated with the

fertility rates (ERN), and a continuing precarious socioeconomic situation for larger segments of the population (LRW).

In the 2005-2025 period, when below replacement rates are estimated by the majority of EBDs, the estimated rates result “from a logistic regression model of projection” (AAC, KB), or the convergence of behaviors since “fertility rates among middle and high income groups were already 2.1 in 1970” (JAC). Other justifications are that it would be difficult to revert the tendency toward below replacement “without structural changes and in the absence of a strong public policy intervention directed through an increase of a contraceptive mix that could work in the direction of spacing instead of stopping fertility” (ERN, LRW). For the 2025-2050 period, fertility rates could increase, decrease or remain stable with respect to the previous period. Some believe that potential recuperation of the rates (not necessarily recovering to replacement levels) could be a result of long term public policies but especially due to the externalities associated with the social security system and the labor market (ERN); or the result of the globalization of mass media systems and the economy (LRW, KB).

BRAZILIAN POPULATION PROSPECTS: THE UNITED NATIONS POPULATION DIVISION SCENARIOS

In considering the “reasonableness and soundness” of the assumption of future fertility used by the United Nations Population Division (UNPD) to produce its projections for Brazil, my first conclusion is that their medium variant is overly cautious about the speed of fertility decline. The UNPD estimate for Brazil for the next 50 years, in the medium variant, is greater than that expected by EBDs and recent findings. If fertility is the key determinant of Brazilian population growth then it seems that the UNPD low variant better fits the Brazilian situation.

The UNPD medium variant for Brazil assumes Total Fertility Rates near the replacement level, varying from 2.15 to 2.10 over the course of the period 2000-2050. In this “variant”, infant mortality is expected to drop systematically, from 38 to 8 per thousand and life expectancy at birth would increase from 68 to 77 years for both sexes. Net migration is considered zero and then growth rates will decrease from 1.22 to 0.32 per cent per year between 2000-2050.

Thus, most EBDs would agree with the UNPD that the Brazilian TFR is near the replacement level in the 2000-2005 period. However, most also expect below replacement levels to be reached by 2025, contrary to the UNPD’s expectation of stabilization at replacement levels. These opinions are reinforced by findings in which fertility rates below replacement were in place in almost all metropolitan areas by the year 2000, which collectively represent 30-40 per cent of the country’s total population. Therefore, the main differences between the scenarios presented by the UNPD (Medium variant) and by Brazilian demographers stem from the distinct pace of fertility change and population growth in their respective projections. As I observed, the UNPD low variant for Brazil, with its below replacement fertility rate of 1.83 in the initial period of 2000-2005, followed by a TFR of 1.6 until 2050 would better fit the recent findings and opinions of the majority of EBDs.

The slowing rates of Brazilian population growth result primarily from declining fertility. Although the rise in life expectancy at birth, from 49.3 to 67.0 years between 1950-2000 has contributed to population growth, in which the effect of declining fertility has been greater than the effect of increasing life expectancy. Despite the decline in growth rates, population growth is expected to continue because of the high growth rates of the past. Thus, the population of Brazil will continue to increase even as fertility declines. The UNPD’s most recent revision of projections to 2050 estimated a total population, in the medium variant, of 247 million, or an increase of 45 per cent compared to 2000. Because the UNPD medium estimates of fertility were so different from the recent findings and opinions of Brazilian demographers, I decided to look at other recommended projections for Brazil. I compare the UNPD medium variant with the U.S. Census Bureau (USCB) projection for Brazil because the latter assumes

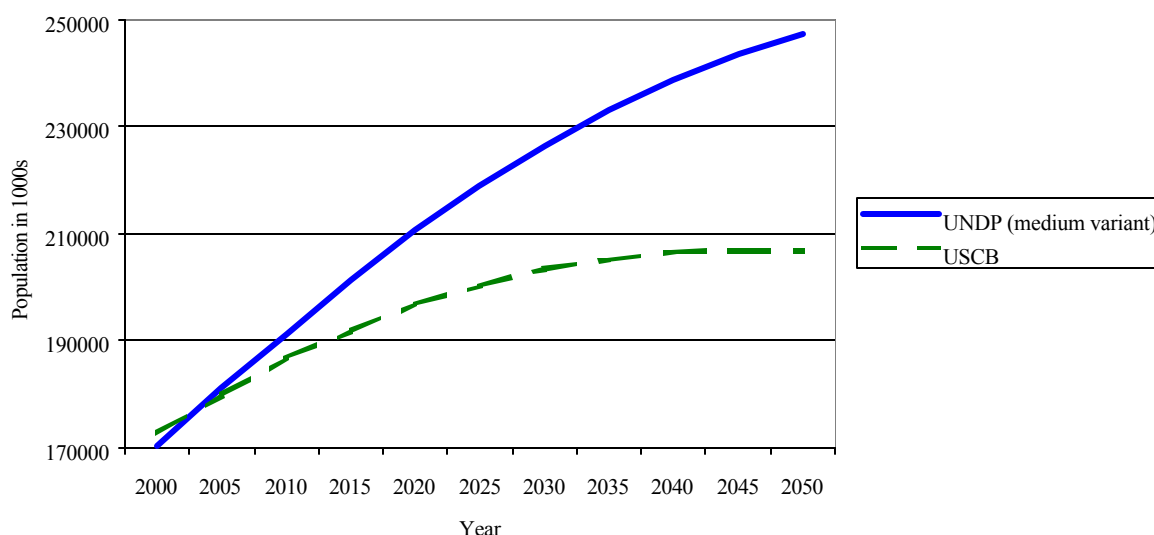
fertility to reach below replacement by 2005, which is closer to the recent findings and opinions of most EBDs. Also, the two organizations used similar sources of data and processes for estimating demographic variables.¹⁴

HOW THE UNPD PROJECTIONS FOR BRAZIL DIFFER FROM THOSE OF THE USCB

The contrast between the UNPD and USCB's recommended projections for the total population of Brazil is striking. By 2050 the difference in the estimated population for Brazil is 20 per cent or 40.5 million people more in the UNPD than in the USCB projection. Although the two projections assume similar jump-off values for total fertility (TFR =2.1), they make different assumptions about the pace and level of fertility decline over the course of the 50 years from 2000-2050. As table 2 shows, the USCB assumed that Brazil's TFR will be below replacement as early as 2005 and a TFR of 1.7 will endure over the course of the 2025 –2050 period. The UNPD assumes fertility will remain at replacement levels (TFR=2.1) throughout 2000-2050. Although subjective elements are always factors in model choice, for these first years the assumptions are relatively "objective" and the projections produce similar results. In contrast, for more distant years, all population forecasts involve judgment, making them especially subjective.

Also, the UNPD and the USCB project different age structures at different intervals. According to the UNPD projection, by 2025, 47.2 per cent of the Brazilian population will be in "dependent" ages (less than 20 and more than 65 years of age) compared to 34.7 per cent for the USCB. This difference of 12.5 per cent, or more than 20 million people, is mostly for young dependents (10 of the 12.5 per cent difference) and apparently results from the UNPDs higher projected fertility rate.

USCB and UNPD Population Projections for Brazil, 2000-2050



Although the fertility rate plays a crucial role in the projections, we should also note the differences in the assumptions about mortality between the two organizations. Assumptions for mortality were set in terms of increases in life expectancy at birth per decade and the differences appear to reflect different outlooks about future developments affecting mortality and their timing. It seems that the USCB considers that contrary to earlier beliefs, there now is a considerable degree of uncertainty about

the future of mortality. In developing countries like Brazil, this stems from the uncertain future of the AIDS epidemic and other infectious diseases and the development of health services. In industrialized countries, uncertainty is more associated with the scientific dispute about whether we are already close to a biologically determined limit to life expectancy. As a consequence, the USCB estimates a lower life expectancy for 2000 and 2025 (62.9 and 70.5) compared to the UNPD (68.3 and 73.0). However, after 2025, the USCB expects gains to life expectancy to surpass the UNPD's, so that life expectancy assumptions by 2050 are 79.9 for the USCB and 76.9 for the UNPD.

TABLE 2. DEMOGRAPHIC INDICATORS FOR BRAZIL AS PROJECTED BY THE UNITED NATIONS POPULATION DIVISION AND BY THE US CENSUS BUREAU FOR 2000, 2025 AND 2050

| <i>Indicators</i> | <i>United Nations Population Division</i> | | | <i>US Census Bureau</i> | | |
|---------------------------|-------------------------------------------|-------------|-------------|-------------------------|-------------|-------------|
| | <i>2000</i> | <i>2025</i> | <i>2050</i> | <i>2000</i> | <i>2025</i> | <i>2050</i> |
| Total Fertility Rate | 2.15 | 2.10 | 2.10 | 2.13 | 1.71 | 1.70 |
| Infant Mortality | 38 | 22 | 8 | 38.0 | 17.4 | 7.5 |
| Life Expectancy at Birth | 68.3 | 73.0 | 76.9 | 62.9 | 70.5 | 79.9 |
| Per cent Less than Age 20 | 38.9 | 37.0 | 26.5 | 39.2 | 27.0 | 21.7 |
| Per cent More than Age 65 | 5.1 | 10.2 | 17.9 | 5.3 | 7.7 | 21.1 |

Therefore, the jump-off value of life expectancy at birth for both sexes is 5.4 more years in the UNPD projections and by 2025 the UNPD continues to predict an advantage of 2.5 years over the USCB. The USCB's assumption of setbacks in mortality in Brazil for the period 2000-2025 contributes to lowering the total population compared to the UNPD estimates and deserves a special discussion, which is impossible to do here. I should say that while many mortality studies in Brazil support the UNPD projections, recent findings support the USCB. As shown in table 1, the Brazilian government, through the IBGE estimates, recognizes the impact of increasing young men's mortality on life expectancy. They project a life expectancy that is almost the same as USCB for 2025 but fully six years less than the USCB in 2050. Beltrão and Camarano (2001) similarly project lower life expectancies at birth than the USCB and the IBGE. For instance, they expect a life expectancy of 62 years for males and 68 years for females in 2025 although they leave open the possibility of improved life expectancy in the following decades.

The effects of the different projections are especially apparent on the age structure. The proportion of elderly dependents increases nearly threefold from 7.7 to 21.1 for the USCB between 2025 and 2050, while it increases barely 3.1 percentage points for the UNPD, apparently reflecting the effects of the USCB's sustained regime of below replacement fertility. Carvalho sustains that although mortality will not play a major role in the future of Brazilian fertility, the gains in mortality in the next decades will be mostly among people in advanced ages, which could mean an even faster growth in the proportion of the aged in the Brazilian population (JAC).

The most recent projections for Brazil seem to reinforce previous evaluations, that the UNPD projections are quite good at highly aggregated levels but less accurate at the country level. I understand that Brazilian projections are a small subset of global population projections and, as such, it is difficult for the UNPD Population Division to take into account expert opinions and specificities about demographic rates for each country. However, I would hope that expert opinion of the Brazilian demographic community might serve the UNPD in building more effective assumptions in their projections. I also would like to acknowledge the importance of the debate about probabilistic projections and the importance of granting more attention to uncertainty in the projections. Certainly, error assessments do not directly improve the accuracy of forecasts but to recognize the uncertainty correctly increases the possibility of producing interval forecasts that more appropriately reflect "reasonable future paths" of fertility (Alho, 1997; Lutz and others, 1998).

FORCES THAT WILL SHAPE BRAZILIAN FERTILITY

Most of the Brazilian demographic literature and opinions of the EBDs agree that Brazil's demographic legacy and current reproductive behavior is most likely to determine Brazilian fertility in the next decades.¹⁵ Moreover, there is a consensus that the future laws and policies related to sterilization, gender equity and public support will also potentially shape the future of Brazilian fertility.

1. Demographic legacy and current reproductive behavior

In 2000, 39 per cent of the Brazilian population was under age 20, which is partly the result of a "youth wave" that was born to the large number of mothers born during the high fertility period.¹⁶ These youth, who mostly reached 15-24 in the early 90s, have reduced their fertility contributing to the current near replacement levels (TFR=2.3). Fertility underwent a "rejuvenating process" from 1970-1988, in which 15-24 year olds accounted for 30 per cent of births at the beginning of the period and 45 per cent at the end. From 1988-2000, this proportion remained constant. At the same time, as noted before, sterilization increased among young (20-24) married women from 4 to 11 per cent between 1986 and 1996. Brazilian women's reproductive intentions, like their reproductive practices, also are striking. About 80 per cent of married Brazilian women in 1996 in reproductive ages cannot have or don't want to have more children¹⁷ and 44 per cent of women not using any contraceptive method would consider sterilization as a method to control their fertility. Collectively, these demographic indicators suggest a fertility trap in which below replacement levels are a certain destiny.

Brazilian demographers believe that among the forces capable of changing the timing in the levels and age pattern of fertility in Brazil are changes in the prevalence of the "mix" of contraceptive methods, out-of-wedlock births or any other variable that could decrease the exposure time to the risks of conception, such as median age of marriage and cohabitation (LRW, JAC, ERN, KB). Relatedly, it is important to note that although fertility is higher among women in cohabitation than among the legally married, there an increase in the limiting index of cohabitating couples (extent of fertility control after ten years of marriage) during the period 1976-1984, leading to a convergence of fertility rates between married and cohabitating couples (Lazo, 1994).

Growing rates of marital instability illustrate the changing expectations about the permanence of marriage in Brazil. Cohabitation increased from 18 to 28 per cent between the 1991 and 2000 censuses and the percentage of women in reproductive ages with more than one union changed from about 10 to 13 per cent in the period between 1986 and 1996. Separation and divorce rates more than doubled in the last two decades and recent reforms in divorce and custody laws reinforced changing attitudes and behaviors. Married couples are having fewer children and an increasing number of women are bearing children out-of-wedlock. In the early 1990s, over 15 per cent of all births in Brazil were to unmarried mothers.

The potential impact of increasing teenage fertility and marital instability on the total Brazilian fertility rate suggests that fertility decline in Brazil would have been steeper in the absence of the increase in teenage pregnancy and union instability¹⁸ (Leone and Caetano, 2002). The findings show that between 1986 and 1996, the total Brazilian fertility rate appears to have increased by 2.4 per cent due to teenage fertility, maintaining constant the pattern of unions and the sterilization levels; and if fertility rates of women with only one-union would apply for every woman, the total fertility rate would be 3.2 per cent higher in 1996, keeping constant teenage fertility rate and sterilization at the 1996 levels. At the same time, the measure of the magnitude of the effect of sterilization upon fertility in Brazil shows that in the mid-1980s, the Brazilian total fertility rate was 17 per cent lower than it would otherwise have been and by the mid-1990s, the fertility-reducing effect of sterilization had increased to 26 per cent. Leone and

Caetano thus conclude that the diffusion of female sterilization exceeded the positive effects of the other two variables, contributing to lowering the TFR in Brazil.

Finally, lower fertility enables women to participate more widely in activities outside the home, and in most cases women are generally finding the day-to-day “on-call” work of parenting less attractive (Presser, 1995). Then, the positive effect of fertility decline on women’s lives and the feasibility of a return to a traditional breadwinner-homemaker type of family become central questions to thinking about the future of fertility. Given quantitative and qualitative research reporting a permanency in the labor market participation among Brazilian women of different social groups, their improvements in education and active participation in other public spheres points to the unlikelihood of a return to a traditional breadwinner-homemaker model of family, as a stimulus to reversing fertility decline in Brazil. Although conscious of the physical and emotional costs of the double shift Brazilian women are not willing to give up employment despite its often modest rewards since it has allowed them greater independence and negotiating power in their households (Sarti and others, 1990). Even when they desire to have children, they may end up deciding to have less or no children at all. This is especially true for young women because they have more education than previous generations, more information about sexuality and contraception, more opportunities in the labor market and more chances of obtaining economic independence.

2. Sterilization law¹⁹ and public policies

Despite the efforts of the women’s movement and the frustrated initiatives of public family planning services in offering broad options of contraceptive methods, Brazilian women in the mid 1990s continue to face a dramatic choice: “to practice clandestine abortion, get sterilized or continue with an undesired pregnancy” (Berquó, 1999, p. 125). High rates of maternal mortality (114 deaths per 100,000 live births in 1991) and the growing rates of sterilization, both directly related to the abusive use of Cesareans, are indicators of the difficulties of implementing women’s health programs. However, it is important to note that in the second half of the 1990’s, there was some progress with respect to pre-natal care, obstetric assistance and access to abortion in the case of rape and risk of life (Corrêa and others, 1998).

The constitutional definition of family planning as a right and a Brazilian Government responsibility was established in 1988. But the ordinary law that regulates this constitutional definition was not approved until nine years later. In 1997 a law establishing clear norms for sterilization procedures was adopted although it is likely not be implemented for another five years as a previous experience indicates.). Correa (2001) notes that “the distortions in contraceptive prevalence (and high percentage of C-sections associated with sterilization) crystallized by ten years of policy delay are not so easily undone”. In fact, a recent study confirms that the implementation of the sterilization law is far from desirable and leads Berquó and Cavenaghi (2002) to conclude that “the law has changed little the usual practice of sterilization and yet not satisfying individual reproductive rights”.

The influence of the Brazilian state on fertility behavior has been widely debated (Goldani, 2001). Some of the EBDs agree that the role of the state and public policies will be critical for any possibility of reversing the trend towards sub replacement fertility. Without a serious investment of the Brazilian state in altering structural conditions for low fertility and developing a set of “women-friendly policies”, it will be very difficult to revert current trends (ERN, SC). The uncertainty of the effects of public policies includes uncertainty about the time of implementation, resources and public acceptability, as in the case of the legalization of abortion.

The effects of the sterilization law (1997) in terms of maintaining a “potential fertility” among young women will only be successful if consistently accompanied by an effective policy of increasing access to reversible contraceptive methods, which is just beginning. Also it is important to recognize that the levels of sterilization in Brazil would not be the same if abortion were not illegal and risky. Then, in a context marked by a “culture of sterilization” the increasing supply of reversible methods should be associated with an enlarged access to abortion in order to guarantee a back-up when reversible methods fail. The “policy timing” then becomes a crucial factor because the Brazilian experience has been of long delays in properly implementing laws and required health programs. Consider that the 1997 sterilization law that is not yet fully in effect. Thus, even in a more favorable social and policy environment, which seems to be the case in Brazil, the impacts or influences of good reproductive health policies will not be visible before five years. [Relatedly] the possibility of legalizing abortion and obtaining universal public support for women to cope with the burden of social reproduction is still remote. It is also critical to note that none of these measures will work without a strong effort to bring about gender equity (SC).

Therefore, the needs and guarantees of the reproductive rights of millions of Brazilian women are not being met and Brazil faces about a 15 per cent increase in the size of the reproductive-age population in the coming two decades. There is a growing concern that supplies of reproductive-health commodities for family planning, safe motherhood, and prevention and treatment of sexually transmitted diseases will become even scarcer due to the economics and inequalities of Brazil and the reductions in international aid. Or as Correa (2001) well put it, “the major problem we face globally is not scarcity of resources per se but rather the challenge of a skewed distribution of resources—between men and women, between North and South, and between the private and public sectors”. Then, efforts to mobilize public and private resources, and to build partnerships in looking to address these concerns are crucial. The Brazilian government also must improve its accountability in addressing social policy priorities to avoid the previously mentioned setbacks in health conditions and mortality.

3. Gender relations and public systems of support

The extraordinary persistence of the family and the gender hierarchy and its effect on fertility decline is an intriguing and critical question that has gone almost unexamined in the various explanations of the Brazilian fertility decline (Goldani, 2001). In a study of the Northeast using 1991 DHS data, I discuss the effects of egalitarianism in husband-wife relations on the total fertility rate. I find that the levels of egalitarianism regarding reproductive choices were very low -only 52 per cent of the couples had at least some egalitarianism- and that for each increment of one point on the egalitarianism scale where the highest was three points, there was a reduction of over half a child (-0.570) among couples with the same union duration and ideal number of children (Goldani, 1999-2000). Findings based on the 1996 DHS suggest that although, on average, the fertility goals of men are not too different from those of their spouses²⁰, the negotiation process between spouses for resolving differences may result in outcomes that are systematically higher or lower than those based on the perceptions of either spouse. Also, the author of that study concluded that no evidence was found that men’s preferences tend to prevail over those of their spouses in defining the final fertility outcome in Brazil as well as in other Latin American countries (Hakkert, 2001).

Looking at reproduction from a male point of view, a study of two generations of middle-class Brazilian men show that their contraceptive practices can best be understood as part of the dynamics between the genders. The importance of the condom and the rhythm methods among the middle classes of Brazil’s largest metropolis (São Paulo) is noted as a surprising finding but this is consistent with the arguments of survey respondents, particularly among younger cohorts, who believe the pill is harmful to women’s health. Although younger cohorts show signs of change, the authors emphasize the need for

gender-sensitive educational programs for men that help them to better negotiate the use of contraception (Oliveira and others, 2001).

Brazilian women, who head one-quarter of all households and represent almost half of the paid labor force today, have made important gains in the public sphere but these have had little effect on the individual and family decisions that affect their lives. Negotiation of gender relations continues to be difficult even for women in paid work. In 1996, for every 100 married women who worked and had children under the age of five, 23 of them looked after their own children, while husbands helped in only 4 cases. In 46 per cent of the cases, other relatives were primarily responsible for helping the women²¹ while the remainder relied on other arrangements, especially paid daycare. The increase of dual-earner families, who comprised fully 52 per cent of families in 1995, and employed single parent families, has raised concerns about the quality of employment protections such as maternity leave, wage-equity policies, and childcare services. As working mothers become the norm, the balance between work and family has become more difficult because traditional gender roles have persisted. A 1997 survey of the Southeastern and Northeastern regions, which represent about two-thirds of the country's total population, found that out of the total working population, fully 79 per cent of the women and only 29 per cent of the men spent time on housework. Among those men and women working in both "productive labor" and housework, women spent 61 hours on both activities each week while men spent only 46 hours (Goldani, 1999-2000).

Therefore, the reorganization of family life in Brazil has become increasingly costly for women over time and at the same time the costs of childrearing have increased. Raising children should be more and more a collective responsibility and the state should provide policies for reconciliation between family life and work. Public policies are crucial for transforming gender responsibilities and thus contraception and child rearing as the experiences of some industrialized countries have shown (Correa, 2002; Goldani, 2001).

Gender equality--the most important "enabling condition" that is at the core of current approaches to population policies-- is also key to avoiding below-replacement fertility. Women in industrialized countries typically want two children. If society's organization of the "care economy" did not put an enormous burden on the shoulders of those who want to combine children with a career, we could well see some increase in fertility (Barroso, 2001).

FINAL REMARKS

By way of conclusion I would say that in Brazil, as in most other countries, there is no single pre-condition or determinant of individual and social choices regarding future fertility behavior. However, the failure to identify "the key factors" should not hold back efforts to incorporate some of the mentioned elements in the projections. Then, among the indicators to consider are: (a) structural changes that alter the rewards and costs of both raising and educating children (b) declines in infant and young-adult mortality; (c) increases in women's education and labor market participation, (d) social empowerment of women and greater concern with gender equality; (e) changing social norms in the context of a high value of children; (f) family planning as public policy, (g) the sterilization law (h) the mix of contraceptive methods and (h) desired or preferred family size.

Population projections serve to make us aware of possible future trends and help to expand the horizon of policymakers beyond short-term priorities. It is important to note that UNDP releases not one but three so-called variants, all officially designated to be equally plausible. Differences between the low and medium variant for Brazil are about 51 million persons in 2050, compared to a difference of 40

million between the United Nations medium variant and the U.S. Census Bureau. Keeping in mind these differences, we recognize that the projections are useful to address the challenges of the changes in sex and age structures. Rather than denying or ignoring these prospects, we have to discuss them in order to advance discussions of the policy issues for addressing the implications of Brazilian population trends such as: (a) the growing number of older persons and the consequences for gender and intergenerational relationships, (b) education demands, (c) pension systems, (d) work-family relations, and (e) gender equity. Finally, we should remember that projections change as reality changes, responding to different circumstances, which I believe only reinforces the importance of combining subjective and data-based probabilistic assessments of error to give users a more realistic assessment of the uncertainty of demographic forecasts in this new century.

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REFERENCES

- Alho, Juha M. (1997). Scenarios, Uncertainty and Conditional Forecasts of the World Population. *Journal of the Royal Statistical Society*, vol. 160, No. 1, pp. 71-85.
- Barroso, Carmen (2001). Forum. Is There a Population Implosion? *ECSP Report*, Issue 7, April 2001. Environmental Change and Security Project (ECSP), Woodrow Wilson Center.
- Beltrão, Kaizo, and Ana Amélia Camarano (2001). Projeções de População para o Brasil: Estimativas de Mortalidade. ENCE/ IPEA. Mimeograph.
- BEMFAM, Sociedade Civil Bem-Estar Familiar no Brasil (1997). Pesquisa Nacional Sobre Demografia e Saúde 1996. BEMFAM./DHS/IBGE/UNICEF/FUNAP/AID/INAN. Rio de Janeiro.
- Bercovich, Alicia, and Felicia Madeira (1999/2000). Demographic Discontinuities in Brazil and in the State of São Paulo. *Journal of Population Studies*, V.2:5-26. Brazilian Association of Population Studies, ABEP. Campinas, SP. Brazil.
- Berquó, Elza (1999). Ainda a Questão da Esterilização Feminina no Brasil. In Giffin, Karen and Sarah H. Costa, Org. *Questões da Saúde Reprodutiva*. Editora FIOCRUZ. Rio de Janeiro.
- Berquó, Elza (1999a). Sterilization and Race in São Paulo. In Reichmann Rebecca, Edit. *Race in Contemporary Brazil: From Indifference to Equality*. The Pennsylvania State University Press. University Park, Pennsylvania.
- Berquó, Elza, and Suzana M. Cavenaghi (2002). The Impacts of the Voluntary Sterilization law on Reproductive Rights of Men and Women. Paper presented at the Annual Meeting of the Population Association of America, 9-11 May, Atlanta, Georgia.

- Caetano, André Junqueira (2001). Fertility Transition and the Diffusion of Female Sterilization in Northeastern Brazil. The Roles of Medicine and Politics. In the CD-ROM of the XXIV General Population Conference of International Union for Scientific Studies of Population, IUSSP. Salvador, 18-4 August, 2001. Bahia.
- Camarano, Ana Amelia, Herton E. Araujo and Isabella G. Carneiro (1999). Tendências da Fecundidade Brasileira no Século XX: Uma Visão Regional. In Giffin, Karen and Sarah H. Costa, Org. Questões da Saúde Reprodutiva. Editora FIOCRUZ. Rio de Janeiro.
- Camarano, Ana Amélia (1996). Fertility transition in Brazil in the Twentieth Century: a comparative study of three areas. London School of Economics and Political Science-University of London Doctoral thesis.
- Carvalho, José Alberto Magno de (1997/98). Demographic Dynamics in Brazil Recent Trends and Perspectives. Brazilian Journal of Population Studies, v.1:5-24. Brazilian Association of Population Studies, ABEP and Instituto Brasileiro de Geografia e Estatística/IBGE. Rio de Janeiro.
- Carvalho, José A.M. de Carvalho, Claudia J.G. Horta and Simone Wajnman (2000). “Construindo uma medida do tempo médio despendido pelas cortes de mulheres com os cuidados de filhos pequenos”. In XI Encontro Nacional de Estudos Populacionais da ABEP. Caxambu, Minas Gerais.
- Corrêa, Sônia (2001). Is There a Population Implosion? *ECSP Report*, Issue 7, April, 2001. Environmental Change and Security Project (ECSP), Woodrow Wilson Center.
- Corrêa, Sônia, Sérgio Piola and Margareth Arilha (1998). Cairo em Ação: Estudo de Caso Brasil. Parte I: Perfil, Antecedentes, Cenário Nacional. Unpublished manuscript.
- Faria, Vilmar Evangelista (1997/98). Government Policy and Fertility Regulations: Unintended Consequences and Perverse Effects. Brazilian Journal of Population Studies, v.1 1997/1998. Brazilian Association of Population Studies, ABEP/ Instituto Brasileiro de Geografia e Estatística/IBGE. Rio de Janeiro.
- Formiga Filho, José Ferreira (1999). Políticas de Saúde Reprodutiva no Brasil: uma análise do PAISM. In, Saúde Sexual e Reprodutiva no Brasil: Dilemas e Desafios. Orgs. Loren Galvão e Juan Díaz. Capítulo 4, pp: 151-162. Editora Hucitec, Population Council. São Paulo.
- Goldani, Ana Maria (1999/2000). Gender Relations and Fertility in Northeastern Brazil. *Brazilian Journal of Population Studies*, Vol. 2, pp. 69-96. Brazilian Association of Population Studies, ABEP. Campinas, SP. Brazil.
- Goldani, Ana Maria (2001). Rethinking Brazilian Fertility Decline. In the CD-ROM of Brazilian Demography Sessions, ABEP/IUSSP. XXIV General Population Conference of International Union for Scientific Studies of Population (IUSSP), Salvador-, Brazil, 18-24 August 2001.
- Hakkert, Ralph (2001). Levels and Determinants of Wanted and Unwanted Fertility in Latin America. In the CD-ROM of XXIV General Population Conference of International Union for Scientific Studies of Population (IUSSP), Salvador-, Brazil, 18-24 August 2001.

- Horta, Claudia J. Guimarães, José Alberto M. de Carvalho and Luís Armando de M. Frias (2000). Recomposição da Fecundidade por Geração para Brasil e Regiões: Atualização e Revisão. In XII Encontro Nacional de Estudos Populacionais da ABEP. Caxambu, Minas Gerais.
- Instituto Brasileiro de Geografia e Estatística Tábua de Vida (2002). From www.ibge.gov.br/ibge.../tabuadevida/evolucao_da_mortalidade.shtm. Accessed February 2002.
- Instituto Brasileiro de Geografia e Estatística Projeção de População do Brasil por Sexo e Idade para o Período 1980-2050 (Revisão 2000). Projeto UNFPA/Brasil (Bra98/P08). Sistema Integrado de Projeções e Estimativas Populacionais e Indicadores Sócio Demográfico (DEPIS/IBGE) Departamento de População e Indicadores Sociais.
- Lam, David, and S. Duryea (1999). Effects of Schooling on Fertility, Labor Supply and Investments in Children, with Evidence from Brazil. *Journal of Human Resources*, vol. 34, pp. 443-454.
- Lazo, Aída Verdugo (1994). Marital fertility in Brazil: Differentials by Type of Union and its Importance in the Fertility Transition, 1976-1991. DHS Working Paper No.15. Calverton, Maryland.
- Leone, Tiziana, and André Caetano (2002). Can the level of Brazilian Fertility Be Even Lower? Paper presented at Annual Meeting of the Population Association of America, May 9-11, Atlanta, Georgia.
- Lutz, Wolfgang, Warren Sanderson Sergei Scherbov (1998). Expert Based Probabilistic Projections. In *Frontiers of Population Forecasting*, Wolfgang Lutz, J. Vaupel and D. Ahlburg, eds., Supplement to *Population and Development Review*, vol. 24, pp. 139-155.
- Martine, George (1996). Brazil's Fertility Decline, 1965-95: A Fresh Look at Key Factors. *Population Development Review*, vol. 22, No. 1, pp. 47-75.
- Ministério da Saúde (1997). Site of Brazilian Government. <http://www.saude.gov.br>. Acess;2002.
- Oliveira, Maria Coleta, Elizabeth D. Bilac and Malvina Muszkat (2001). Men and Contraception: A Study on Middle-Class Brazilian Men. In the CD-ROM of XXIV General Population Conference of International Union for Scientific Studies of Population (IUSSP), Salvador-, Brazil, 18-24 August 2001.
- Pastore, José and Nelson do Valle Silva (2000). Mobilidade Social no Brasil. MAKRON Books do Brasil Editora Ltda. São Paulo.
- Potter, Joseph E, Carl Schmertmann, and Suzana M. Cavenaghi (2002). Fertility and Development: Evidence from Brazil. Unpublished manuscript.
- Potter, Joseph E. (1999). The Persistence of Outmoded Contraceptive Regimes. The Cases of Mexico and Brazil. *Population Development Review*, vol. 25, No. 4, pp. 703-739.
- Presser, Harriet.B. (1995). Are the Interests of Women Inherently at Odds with the Interests of Children or the Family? A View Point. In *Gender and Family Change in Industrialized Countries*, K. Mason And A. Jensen, eds. Oxford University Press, pp. 279-319.

- Rios Neto, Eduardo G. (2000). *Passado, Presente e Futuro da Fecundidade Brasileira*. Presidential Adress. XIV Encontro Nacional de Estudos Populacionais. Brazilian Population Association (ABEP). Caxambu, MG.
- Sarti, Cynthia Andersen, C. Simonette and Cristina Bruschini (1990). *Gênero em Geração de Renda*. Programa UNICEF/FENAPE. São Paulo.
- U.S. Bureau of the Census Bureau (1999). *World Population Profile: 1998 Report WP/98*. Washington DC: US Government Printing Office.
- _____ (2000). *National Population Projections*.
<http://www.census.gov/population/www/projections/natproj.html>. Accessed January 2002.
- United Nations (2001). *World Population Prospects. The 2000 Revision, Volume I, Comprehensive Tables* (United Nations publication, Sales No. E.01.XIII.8).
- _____ (2001). *World Population Prospects. The 2000 Revision, Volume II, The Sex and Age Distribution of the World Population* (United Nations publications, Sales No. E.01.XIII.9).
- Wong, Laura Rodriguez (2001). *Below Replacement Fertility Levels in the Brazilian Metropolitan Cities-1991-2010*. Poster presented at Annual Meeting of the Population Association of America (PAA), Washington.

NOTES

¹ As an unexpected consequence of these policies there was a growing demand for fertility regulation among women, which was met mostly by the market and less so by non-governmental family planning agencies. The number of oral pills purchased annually increased from 1.7 million cycles in 1960 to 61.2 million in 1980. The absence of free governmental family planning services and the high cost, high failure rate and collateral effects of pills led to a general disrepute of reversible contraceptive methods. Along with the risks from illegal abortion, this opened the way for sterilization to become the preferred method of contraception in Brazil (Corrêa, et al, 1998).

² In 1998, a Human Development Index of 0.74 for Brazil reflects a series of indicators such as: a poverty rate of 28 per cent, an average per capita income of about 250 US dollars per month and income inequality that is the highest in the world among major countries.

³ Studies concerned with differences by social strata and the rapid proletarianization effects on Brazilian fertility behavior are mostly from early 1980s.

⁴ In the 1980s Brazilian feminists already noted the growing demand for fertility regulation among poor women, the precarious services of family planning and health services as well as the role of illegal abortion and the inequality of gender. At the same time feminists also called attention to demographers about the need to consider the experiences and motivations of women in the analysis of the demographic transition in Brazil (Correa, Piola and Arilha, 1998).

⁵ Estimates of abortion for Brazil in 1996 vary between 800 thousand and 1.1 million. About 262,000 of these women received medical attention in public hospitals (SUS) due to post-abortion complications, which represented the fifth cause of obstetric hospitalization. It is important to note that abortion complications represent 9 per cent of maternal mortality (Formiga, 1999:160).

⁶ In the late 1970s in response to the rapid increase in the rate of cesarean deliveries, the government schedule for reimbursing deliveries was adjusted so as to reduce and eventually eliminate the premium paid for

Cesarean as compared to vaginal deliveries. However, until 1999, hospitals affiliated with the public system received about 2.4 times more for C-section procedures compared to vaginal deliveries (Caetano, 2001).

⁷ The Northeast region is one of the five macro-regions of Brazil and represents 43 per cent of the Brazilian population in 1996, with 36 per cent living in rural areas. This region is considered as being the poorest in the country with the highest inequality. Fertility decline in this region lagged behind, at least a decade, compared to the other four macro-regions of Brazil. While the Northeast total fertility rates declined from 6.1 to 3.1 in the period 1980-1996, the rates declined from 3.6 to 2.3 and from 3.2 to 2.1 respectively in the South and Southeast, considered the wealthiest regions. In the Center-West region, the total fertility rate declined from 4.5 to 2.3 and in the North region the total fertility declined from 6.4 to 2.7 (Carvalho, 1997-1998).

⁸ Here it is important to mention that although some fertility studies note that fertility declined since the beginning of the twentieth century, most studies continue to emphasize the 60s as the onset of Brazilian fertility. See for example Leone and Caetano, 2002, (p:3).

⁹ Identified EBDs as Brazilian demographers that had a track record of study in fertility and/or population projections. I consulted ten persons that I considered EBDs (Expert Brazilian Demographers), of which eight responded. All respondents suggested general tendencies in Brazilian fertility and six provided specific estimations of total fertility rates. Those that responded are Ana Amelia Camarano (**AAC**) of the Instituto de Pesquisas de Economia Aplicada (IPEA), Eduardo G. Rios-Neto (**ERN**) of the Centro de Desenvolvimento e Planejamento Regional (CEDEPLAR), Elza S. Berquó (**EB**) of the Nucleo de Estudos de População (NEPO), Fernando R.P de Albuquerque (**FRA**) of the Instituto Brasileiro de Geografia e Estatística (IBGE), José Alberto M. de Carvalho (**JAC**) of CEDEPLAR, Kaizô Beltrão (**KB**) of the Escola Nacional de Estatística (ENCE), Laura R. Wong (**LRW**) of CEDEPLAR, and Sônia Correa (**SC**) of the Instituto Brasileiro de Análises Sociais e Econômicas (IBASE).

¹⁰ The questions were: #1. "Will Brazilian fertility rates follow the trends of so-called developed countries, i.e. reach below replacement levels? Or will Brazilian fertility rates stabilize at a level about replacement levels?" and question #2. "What is your opinion of Brazilian fertility behavior in the next 50 years?"

¹¹ In fact by the end of 2001 six women were condemned per crime of abortion in Portugal.

¹² Question # 3 was "What is your estimate of the average fertility rate in the following periods: 2000-2005, 2005-2025, 2025-2050?"

¹³ The survey question #4 was "Why do you think these will be the average expected fertility behaviors in each of the periods?"

¹⁴ The UN and the USCB rely on the same data sources and generally use similar techniques to estimate demographic parameters. The United Nations makes its new estimates and projections every other year and the Bureau of census revises its projections once a year and updates the International Data Base (IDB) at least twice a year. There are differences in the software used in the projections. However the USCB notes how their projections differ from the UN projections: "significant differences in projections of population 20 or 30 years into the future are unlikely to be attributable to differences in compute software. Anything other than minor differences in projections are much more likely to be due to: 1.differences in availability of country data to the two organization, 2.differences in the assessment of data quality and differences in estimates based on country data made by United Nations and USCB analyst teams, 3.differences in institution-specific protocols in terms of the way projections are made of fertility, mortality and international migration" (U.S. Census Bureau, 1999, B-16-17).

¹⁵ The question #5 was "In your opinion what will be the factors or lead indicators that might be especially relevant and useful for formulating plausible assumptions on future fertility in Brazil?"

¹⁶ The "youth boom" is a result of a 66 per cent increase in the cohorts born between 1965 and 1980 compared to previous cohorts (Bercovich and Madeira, 1999/2000).

¹⁷ This proportion is roughly constituted of 43 per cent of sterilized women, 4 per cent of infertile women, 12 per cent of women without children that don't want to have them and 21 per cent of women with children that don't want any more.

¹⁸ Data for this study come from the 1986 and 1996 DHS. They show: 1) an increase in the fertility rate for adolescents (15-19), from 74.2 to 86.3; 2) a decrease of the mean age at first birth from 20.9 to 19.8 and 3) an increase of ever-married women (15-49) with more than one union, from 9.6 to 13.3 per cent (Leone and Caetano, 2002).

¹⁹ The sterilization law was passed in August 1997 and establishes: 1. Sterilization as a right for men and women older than 25 years, 2. People seeking sterilization through the public system should wait 60 days following the request, a period during which they will be counseled about options of contraceptive methods and potential side effects of sterilization, 3. Post-partum sterilizations (within 48 hours of the delivery) will be authorized only if there is a medical indication such as a history of multiple cesareans. The Ministry of Health implemented the regulatory legislation to provide sterilization services in public hospitals, by incorporating the surgical procedure in its list of reimbursable medical procedures and by giving states and municipalities the responsibility of licensing public system facilities to provide tubal ligations and enforcing the law. Therefore, the licensed hospitals are the only units allowed to receive payment for the sterilization procedures (Ministério da Saúde, 1997).

²⁰ The mean ideal family size among Brazilian couples, where at least one declared a definite number, was about 2.6 for the wife and 2.9 for the husband in the DHS96. However, if disagreements between the spouses are systematically resolved by assuming the bigger number as the joint ideal size of family of the couple, this would yield an average of 3.4 children, but if they choose the smaller number, the average family size will be 2.0 (Hakkert, 2001, p. 20).

²¹ Data from the same survey also show, that although only a few husbands look after the children while the women work, a lot of them decide what to do with their wife's salaries. For a total of Brazilian women in union who work and have an income, 63 per cent decide themselves about the use of their salaries, 30 per cent say they decide together with their husbands and 7 per cent say that their husbands decide on the use of their salaries (Goldani, 1999-2000).