PATHWAYS TO POPULATION STABILIZATION

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In spite of the decadal population growth rate having slowed down between 2001 and 2011 to 17.6 per cent from more than 21 per cent in the previous decade of 1991-2001, the popular view among many is that India's population is growing at an unacceptably fast rate and its size has reached more than a billion because people continue to have several children. Also, several of India's social and economic problems are attributed to its size and the growth rate. The possibility that by 2026, India's population would be around 1.4 billion, and by 2051 between 1.6 and 1.7 billion, sends panic signals among planners, policy makers and programme managers. The overwhelming response is that sooner India attains population stabilization, better off it would be as a nation. Among some, there is also an admiration for China because it has managed to slow down its population growth significantly in a very short period of time and a fear that India will overtake China in population size in near future.[1]

It is, therefore, important to understand, how population grows and what is meant by population stabilization.

When the number of births equals the number of deaths, there is no growth or no net increase in population and if this continues for some years, the size of population becomes more or less constant. When a population reaches that stage, and assuming that the effects of migration are minimal, it is said to be stabilized. One can think of several ways to attain population stabilization. Zero population growth can be achieved when both birth and death rates are high as was the case in India a century ago, when famines and epidemics kept mortality level high and the prevailing social and economic institutional factors favoured high fertility and kept it fairly high (See: Davis and Blake, 1956; Dyson, 1989). In a regime of low death rate, population stabilization can be achieved if birth rate falls to the level of death rate. Population stabilization can also be achieved if death rate increases to reach the level of birth rate as is happening in many developed Nordic countries including in Italy and Germany

and Japan due to the decline in fertility and ageing of their population pushing the death rate up.

Factors Responsible for Population Growth

It is, therefore, important that we understand what causes growth in population. India's recent history of relatively high fertility, and welcome steady decline in mortality since the 1920s, has resulted in young age structure. Recent decline in fertility has lowered the proportion of population in the age group 0-14 from about 41 per cent in 1971 to 35 per cent in 2001 and is less than 31 according to the age data recently released from the 2011 Census. Compared to China, with only 19 per cent of total population in 0-14 age group, the Indian age distribution is still quite young with a broad base. A high proportion of India's population born in the decades of 1970s and 1980s, when their parents had on an average more than five children, is now in the marriage and reproduction phase of life. Even if all of them decide not to have more than two children, the number of births would still rise for several years and population will continue to grow for several decades. Population grows because older cohorts differ in absolute size (are smaller) than those currently bearing children.

In demographic parlance, this is termed as population momentum. All population projections carried out suggest that there is no escape from India's population stabilizing at around 1.7 billion by 2051. Beyond 2051, the net additions to our population would be fewer if the regime of replacement level or somewhat below replacement level fertility sets in and continues.

Besides the built-in growth momentum, there are two other important factors which contribute to growth of population. (Reduction in mortality has very limited impact on population growth or rate of growth.) They are high desired fertility and unwanted fertility. There are some couples who, for a variety of reasons, desire more children than needed to replace themselves. At individual level, fertility is often linked to infant and child mortality. As articulated in a World Bank report, death of a child evokes a replacement response and an insurance response. Parents would attempt to replace a child who died young to attain the desired number of children. They may even use additional children as a hedge against (insurance response) future loss in a regime where infant and child mortality is relatively high (World Bank, 2010). In the absence of social security net, couples also desire several

children to survive to adulthood in order to take care of the parents in old age and also need more hands or more male children to work and contribute to family income. The various socio-economic and cultural factors operate on and influence the high desired fertility.

As is evident from the prevailing levels of total fertility rate (TFR) in India, which according to the 2010 Sample Registration System was 2.5 children per woman, high desired fertility over a large track of our country is a phenomenon of past. In spite of the heterogeneity of the country and the fact that fertility did not start declining at the same time or at the same pace, it is important to note that all the states of India have experienced fertility decline in recent years. Today not even the core north Indian states report TFR above 3.7. In fact, the small family norm has permeated throughout the country and one must acknowledge it. The pertinent questions which are not the central theme of this paper, nonetheless are: how large is the difference in the ideal number of children desired and the actual number of children couples have, why there is a difference and how can it be minimized.[2]

According to the National Family Health Survey – 3 (NFHS-3), conducted during 2005-06, although on an average, women in India considered 2.5 children as the ideal number, the younger women in the age group 15 to 29 reported the ideal number of children to be 2.1. There are, no doubt, besides age of women, variations by level of education, wealth index, caste or place of residence. But no group of women — rural, illiterate, poor, scheduled tribe — reported the ideal number of children they would like to have as more than 2.7 (IIPS and Macro International, 2007).

Another way of understanding fertility desired by Indian women is by calculating unwanted fertility or unmet need for family planning. A birth is considered as unwanted if the number of living children at the time of conception is greater than or equal to the current ideal number of children reported by the respondent at the time of survey. By subtracting unwanted fertility from the total fertility, an estimate of wanted fertility is derived, or women having that number of children that they want. For the major states of India, values of these variables are estimated based on the NFHS-3 data for 2005-06 as shown in Table 1. The estimates suggest that Indian women want on an average only 1.9 children, which is below replacement level fertility of 2.1 and is nearly 25 per cent lower than the estimated total fertility rate of 2.5 in 2010.[3] If the unwanted births could be eliminated, TFR would indeed fall below

replacement level. Wanted fertility was less than 2.2 in all the states of India except in Bihar, where it was reported at 2.4, and Uttar Pradesh and Rajasthan, where it was reported as 2.3 and 2.2, respectively. In these states, unwanted fertility was greater than 30 per cent. Total wanted fertility was only 2.4 children even among illiterate women or those who were in the lowest wealth quintile.

Decomposition of Population Growth

The prospective population growth can be decomposed to estimate the contribution of high desired fertility, unwanted fertility and population momentum on future population size (See for the methodology for decomposition, Bongaarts and Potter, 1983). When an exercise to decompose the population growth for India and its major states was carried out by the present author, it was noted that India's population would increase from 1.03 billion to 1.62 billion or by about 590 million between 2001 and 2051 (Table 2) or by 57 per cent.[4] The overall projections put the population size for 2051 between 1.6 and 1.7 billion depending upon the assumptions about the pace of fertility decline. The figure of 1.62 billion is based on the assumption that fertility will decline in the coming decades at the pace it has declined in the past 10 years and once total reaches below replacement level of 1.8, it will stabilize at that level.

However, population growth would vary significantly among the states. It is important to note that given the diversity of Indian states in terms of the fertility and mortality levels, they will attain stabilization at different times and in the process their share in the total population of the country will be affected which in turn will have political, social and economic consequences.

While recognizing the fact that the future population growth is a function of the timing of the onset of fertility decline, it is important to note the implications of the diversity of India. The Indian states are at different stages of demographic transition as evident in Table 2. The major Indian states (with population above 5 million) can be divided into three groups on the basis of their total fertility rate according to the 2010 data from the Sample Registration System. All the four southern states (Karnataka, Andhra Pradesh, Tamil Nadu, and Kerala) along with Maharashtra, Punjab, Himachal Pradesh and West Bengal have attained total fertility rate (TFR) of or below replacement level. These states together constitute nearly 42 per cent of India's total population. In states of

Kerala, Tamil Nadu and Andhra Pradesh, where fertility reached replacement level some 10-15 years ago, population will increase between 10 and 20 per cent in the 50-year period. In the other states in this group, where the fertility decline is of much more recent origin, population will grow somewhat rapidly in the initial couple of decades of the half century before tapering off.

The middle group of states has TFR between 2.3 and 2.8 and includes Gujarat, Orissa, Haryana, Jammu and Kashmir, and Assam, and constitutes about 14 per cent of the country's total population. Assuming that fertility continues to decline in these states at the pace at which it has in the recent past, they will attain replacement level fertility by 2016. Their population in 2051 will be at least 50 per cent larger than enumerated in 2001.

The large north Indian states of undivided Madhya Pradesh, Bihar and Uttar Pradesh and Rajasthan with more than 41 per cent of India's population have TFR above 3. As shown in Table 2, population growth in these high fertility states will exceed 70 per cent; in fact, in Uttar Pradesh population would even almost double in 50 years. In these states, the unwanted fertility is between 35-40 per cent. If it is addressed successfully, TFR will come down close to replacement level in less than 20 years. The desired fertility is somewhat high compared to other states but only marginally so. But everywhere the built-in growth momentum along with meeting unmet need for contraception and health services needs to be addressed.

One of the implications of the differentials in growth rate is that the state-specific share of population would change over time. The population share in the country of the core north Indian states would increase from 41 to 48 per cent. This would have implications for the number of elected representatives in both the houses. However, the Delimitation of Assembly and Parliamentary Constituencies Act was amended recently. Now the amendment is that the total number of existing seats allocated to various states in both the upper and lower houses on the basis of 1971 Census shall remain unaltered till the first census to be taken after the year 2026. Nonetheless, the differential growth rates and resulting size of the population in different regions of India must be watched carefully for its implications for density of population, rural-urban distribution and urbanization process as well as inter-state migration of people. Whether large-scale inter-state migration would be able to redress some of the geographical imbalance or not will to a greater extent depend on the political scenario with regional political parties

tolerating it given the linguistic and cultural differences. However, these issues are not the focus of this paper.

Nationally about 33-35 million population of the growth of 590 million in 50 years from 2001 would be due to high desired fertility suggesting that elimination of high desired fertility would have only a marginal role in the expected population growth. About a quarter or 150 million population growth would be due to unwanted fertility. If unwanted fertility is addressed effectively with good quality services, population growth can be lowered by almost 25 percent. The remaining nearly 400 million additions to population, which is a major share in population growth, would be due to momentum (for state level decomposition results see: Visaria and Visaria, 2003). The states that have attained replacement fertility will grow mostly due to momentum but the share of unwanted fertility in growth would be quite high in high fertility states.

Accepting this as given, what are our concerns and what are our options? How do we move towards stabilization or how can stabilization be reached? Is there any particular or optimal size at which the population should level off, and when should that occur? What "costs" would be imposed by the various paths to stabilization, and what costs are worth paying? These are questions which will continue to haunt Indian policy makers; however, an understanding of the factors that lead to population growth and how they play out over time would help to avoid knee-jerk reactions, alarmist public statements or suggest and implement measures that stem from panic.

While the planners and those whose responsibility is to implement the plans, would understandably be concerned about the likely consequences of population growth, which is projected to be close to 1.7 billion by 2051. Concerns about food production needed for the population of that size in an environment of erratic rainfall, pattern of land holdings resulting from fragmentation or subdivision of land, level and structure of employment and the likely absorption of workers in the informal economy are indeed very valid. Concerns are also expressed about the impact of population growth on the use of natural resources, on air and water pollution, and on social unrest and dissatisfaction. In the coming decades these and a host of other issues such as distribution of population between rural and urban areas and associated needs to invest in infrastructure and civic amenities, increasing aged population and their health, social and psychological needs also will need to be addressed.

POLICY IMPLICATIONS

Family Planning

In view of this scenario, we need to focus on the policy initiatives related to meeting the reproductive needs including family planning needs of the people who would like to restrict their family size and meet the unmet need for family planning to take care of 25 per cent contribution to population growth.

While the technical quality of contraceptives has increased greatly in the past 10 years, improving the quality and reach of the family planning programme is needed in order for couples to realize their reproductive goals. This is much more so in the core north Indian states, where according to the NFHS estimates, between 30 and 40 per cent of fertility is unwanted. This region is plagued with several problems even in the delivery of family planning services. A close monitoring and supervision of all health programmes is needed. Callous and insensitive approach of the workers at all levels; often reported by field-based NGOs, needs to change. The quality of all services, including that of sterilization must be raised along with good follow-up care. The basket of non-terminal methods may include injectables in the programme after careful evaluation of its acceptance. Some groups are against including hormonal methods in the programme. However, more data need to be generated using principles of good science. More and more doctors need to be trained in providing non-scalpel vasectomy. Most importantly, discomfort and the fear of side effects of various contraceptive methods that the clients may have must be addressed by improving the communication between providers and clients. These are doable activities that do not require huge resources.

Intervals between births in India are fairly long; over 60 per cent of births occur more than 24 months after the previous live birth. However, a slightly under 40 per cent of births where the inter-birth interval is less than 24 months, which include mistimed births, can be reduced, if the health care providers sensitively advice non terminal methods of contraception. There are evidently a sizeable proportion of women who would like to space their children according to surveys. The findings do throw up a challenge to the programme which largely focuses on sterilization. The management issues such as assured supply of contraceptives, proper counselling, follow-up services, all are needed to strengthen the programme. Health needs of adolescents must be a part of service provision.

Equally importantly, follow-up care must become essential component of services.

Delaying Marriage of Girls

One of the most difficult issues confronting the programme implementers is promotion of reversible methods of contraception to delay the first pregnancy. Most sociological studies report that the pressure on newly married girls is quite high to produce a child within a reasonably short period of time. Even if the young women themselves do not desire to have a child, their ability to make decisions on their own is very limited. Also, there are negative health consequences of pregnancies and child births occurring to adolescents. Teenage mothers experience higher risks of premature birth and infant death, than those who become mothers at later age. Increasing the age of marriage of girls, which in some states is as low as 16-17 years, is a very important goal in itself. If marriage is postponed by a few years and if girls continue to remain in school, their ability to take decisions affecting their own lives may get enhanced due to exposure to education.

However, it is important also to note that a rise in the mean age at marriage would raise the mean length of each new generation and thereby lower the birth rate and slow the population growth momentum. Postponement and stretching-out of childbearing, accompanied by a gradual decline in the number of children that people have over a lifetime, can effectively reduce population growth.

Reducing Infant and Child Mortality

Another measure needed is a strong programme to lower infant and child mortality and to improve the health and nutritional status of children and mothers. A programme for universal immunisation of children against vaccine-preventable diseases, in spite of having launched in the 1970s, has yet to pick up momentum. It is often said that the focus on eradication of poliomyelitis has diverted resources away from providing the other important vaccinations to children. Uninterrupted supply of all vaccines, including that for measles, must be ensured. Also, in certain areas, where the programme appears to be tardy, recording system needs to be improved.

While improvement in survival of infants and children is a very desirable goal in itself, it will also help reduce wanted fertility in so far as couples do try to replace children that are lost to death to certain extent. In a situation where infant mortality continues to be still fairly high and where couples accept sterilization immediately after the birth of a second child in response to family planning programme with strong incentive base, a child loss is tragic and more importantly such a programme violates the tenet of basic rights. In a zealous pursuit of quick population stabilization, unrealistic goals cannot be imposed on people even covertly.

Eliminating Son Preference

Preference for sons over daughters in our country has its roots in the social mores and norms and contributes to both high wanted fertility and also unwanted fertility, and difficult to address through direct health and family planning programmes. Improving the status of women through education would help to weaken son preference in the long run. Value of women for family and society would have to be enhanced through alternative role models and avenues.

Conclusion

By 2025, India's population would almost certainly be equal to that of China's population and still growing in spite of achieving replacement level fertility which is required for long term stabilization. That is because of the built in momentum for growth that will play out itself for the next 25-30 years. Our planning and programmes cannot ignore this reality.

While the goal of population stabilization is paramount in the minds of our policy makers and programme implementers, its achievement and sustainability would, to a great extent, depend on creating conditions in which individuals, regardless of sex, age, caste, religion, can exercise genuine free choice. For eventual stabilization, an average of two children per couple is needed and in India a large proportion has accepted that as a desirable norm. The family-size preferences of young people now entering the childbearing ages are significantly lower than the preferences reported by their elders at the same stage in life. The rising levels of aspiration of young couples for their children and investing in their future is indeed helping them want fewer children. If good quality uninterrupted family planning and reproductive health services are

provided, there is no reason to believe that the preferences and aspirations will not be translated into actual practice.

Also, latitude in family size in real life must be accepted. Some may choose not to marry at all, some will want to have no child or one child only and some will have more than two children. The various combinations of these can help attain the two-child average. Finally, we must accept the fact that India's population will continue to grow in the coming few decades while the policy and programmatic measures focus on bringing about stabilization. Given this, we must help couples attain their reproductive goals, meet the unmet needs, and focus on quality of services while respecting their rights.

Table 1: Estimates of Total Fertility Rate, Wanted Fertility and Unwanted Fertility for Major States of India: 2005-06

Major States	Total Fertility Rate (TFR) in 2005-06	Wanted Fertility	Unwanted Fertility	Unwanted fertility as % of TFR
India	2.7	1.9	0.8	29.6
Kerala	1.9	1.8	0.1	05.0
Tamil Nadu	1.8	1.4	0.4	22.2
Andhra Pradesh	1.8	1.5	0.3	16.7
Karnataka	2.1	1.6	0.5	23.8
Maharashtra	2.1	1.7	0.4	13.0
Punjab	2.0	1.5	0.5	25.0
Himachal Pradesh	1.9	1.5	0.4	21.0
West Bengal	2.3	1.7	0.6	26.0
Gujarat	2.4	1.8	0.6	25.0
Orissa	2.4	1.8	0.6	25.0
Haryana	2.7	2.1	0.6	22.2
Jammu& Kashmir	2.4	1.6	0.8	33.3
Assam	2.4	1.8	0.6	25.0
Bihar	4.0	2.4	1.6	40.0
Jharkhand	3.3	2.1	1.2	36.4
Madhya Pradesh	3.1	2.1	1.0	32.2
Chattisgarh	2.6	2.1	0.5	19.2
Uttar Pradesh	3.8	2.3	1.5	39.5
Uttaranchal	2.5	1.8	0.7	28.0
Rajasthan	3.2	2.2	1.0	31.3

Source: IIPS and Macro, 2007.

Table 2: Population Projections for major states of India in 2051

State	Population in 2001	Population in 2051 according to standard projection	Absolute difference between 2001 to 2051	Percent increase between 2001 to 2051
India	1028.6	1619.5	590.9	57.4
Low Fertility States				
Kerala	31.8	36.0	4.2	13.2
Tamil Nadu	62.4	72.0	9.6	15.4
Andhra Pradesh	76.2	91.4	15.2	20.0
Karnataka	52.9	78.0	25.1	47.4
Maharashtra	96.9	147.4	50.5	52.1
Punjab	24.4	35.7	11.3	46.3
Himachal Pradesh	6.1	9.5	3.4	55.7
West Bengal	80.2	121.9	41.7	52.0
Subtotal of low fertility states	430.9	591.9	161.0	37.4
Their % share in total population	41.9	36.5		
Middle level fertility states				
Gujarat	50.7	73.0	22.3	44.0
Orissa	36.8	53.9	17.1	46.5
Haryana	21.1	41.1	20.0	95.2
Jammu& Kashmir	10.1	15.2	5.1	50.0
Assam	26.7	42.0	15.3	57.3
Subtotal of middle level fertility states	145.4	225.2	79.8	54.9
Their % share in total population	14.1	13.9		
High fertility states				
Undivided Bihar	109.9	188.0	78.1	71.1
Undivided Madhya Pradesh	81.1	148.0	66.9	82.5
Undivided Uttar Pradesh	174.7	337.0	162.3	92.3
Rajasthan	56.5	106.1	49.6	87.8
Subtotal of high fertility states	422.2	779.1	356.9	84.5
Their % share in total population	41.0	48.1		

NOTES

1. Interestingly, China has in recent years become aware of the implications of its one-child policy adopted since 1979 that has brought down population growth to a great extent and has become somewhat lax in its imposition. There is a realization of the unintended consequences of the policy such as males outnumbering females, sex-selective abortion, infanticide, and a future social safety net problem. Not accepting publicly, China has realized that such a policy in the long run would cause considerable disruption in family structure, kinship relations, society and economy.
2. According to the NFHS-3, conducted in 2005-06, the ideal number of children desired in the north Indian states ranged between 2.5 and 2.8, whereas in the southern states, the range was between 1.9 and 2.2.
3. In developing countries, ideal number of children and wanted number of children reported in response to survey questions differ as is the case in India because the older women in particular do respond to a question on ideal number of children by taking into account the actual number of children that they have already had and so it tends to be greater than the wanted fertility. The latter is derived by subtracting unwanted fertility estimates from current total fertility.
4. The overall projections put the population size for 2051 ranged between 1.6 and 1.7 billion depending upon the assumptions about the pace of fertility decline. The figure of 1.62 billion is based on the assumption that fertility will decline in the coming decades at the pace it has declined in the past 10 years and once total reaches below replacement level of 1.8, it will stabilize at that level.

WORKS CITED

Bongaarts, J. and R.G. Potter. (1983). *Fertility, Biology, and Behaviour*, New York, Academic Press.

Davis, Kingsley, and Judith Blake. (1956). "Social structure and fertility: An analytical framework", *Economic Development and Cultural Change*, 4(3), pp. 211-235.

Dyson, Tim. (1989). "Indian historical demography: Developments and prospects", in: T. Dyson (ed.), *India's Historical Demography*, London, Curzon Press, pp. 1-15.

International Institute for Population Sciences (IIPS) and Macro International, 2007. *National Family Health Survey (NFHS-3), 2005-06, India, Volume I*. Mumbai, IIPS.

Visaria, Leela and Pravin Visaria. (2003). "Long-Term Population Projections for Major States, 1991-2101" *Economic and Political Weekly*, 38 (45), pp. 4763-4775.

World Bank. (2010). Determinants and Consequences of High Fertility: A Synopsis of the Evidence, Washington D.C. June 2010. Accessed on November 10, 2013. worldbank.org/INTPRH/Resources/376374-1278599377733/Determinant62810 PRINT.pdf