Chapter - II
Fertility: Theories and
Literature Survey
Since very initial stages of development of human civilization and society, philosophers and thinkers have been expressing ideas about population and its growth. Confucius realized that population explosion could dislocate economic system of a nation. Both Plato and Aristotle believed that a state should have only as much population as was essential for economic self sufficiency and national defence\(^1\). They believed that population equilibriums were necessary for maintaining social equilibrium. They also believed that there was direct relationship between population and poverty. Many thinkers believed that growth of population could not be checked as births and deaths were predestined. There were also some thinkers who believed that if population growth gave strength to the nation then such a growth also created many problems for a country.

### 2.1 FERTILITY THEORIES\(^2\)

In the following pages some of the selected theories of population growth are briefly highlighted.
Thomas Robert Malthus (1766-1834), founder of the science of modern demography, investigated the causes that have impeded the progress of mankind towards happiness and concluded that greatest cause of human misery - is the tendency to multiply beyond the means of subsistence. He believed that the danger of population growth is not remote, and tried to prove that the “poor are themselves responsible for their poverty”. He believed that neither wages, nor society were to be blamed.

Malthus believed that the population has a tendency to multiply in geometric progression i.e. it will increase thus: 1:2:4:8:16:32:64:128 and so on. It will double every twenty-five years. As against this, the food supply has a tendency to increase in an arithmetic progression as 1:2:3:4:5 and so on.

In order to avoid the catastrophe, Malthus proposed that mankind should adopt preventive checks. By preventive checks, he meant moral restraint such as late marriage and strictly chaste conduct before marriage. He appealed to women to marry at the age of 27 or 28.

Sadler did not believe in Malthusian theory of geometric progression of population growth. His main hypothesis is that “the
fecundity of human being is in the inverse ratio of the condensation of their numbers” implying that the fecundity of human beings diminished as the density of population increased. He was an optimist unlike Malthus. His optimism lies in the fact that he believed in man's capacity to produce subsistence and that man's fecundity would diminish with this. According to this hypothesis as soon as the numbers begin to get adverse man ceases to reproduce as rapidly as he had been, because he loses the power to do so.

**Raymond Pearl and Lowell Reed** are credited for popularising the logistic curve theory of population growth (Pearl and Reed Hypothesis). Verhulst (1838) was the first to present this idea. They were of the view that the Malthusian proposition of geometric progression cannot be applied over long range. They constructed a mathematical representation of human population growth based on following assumptions:

1. Population growth occurs in a finite area,

2. There is an upper limit for population also, as it cannot expand infinitely within a limited area,
3. Point of maximum rate of growth is the point of inflexion of population growth curve. After that point is passed, the rate of growth becomes progressively slower, till finally the curve stretches along nearly horizontal. The curve takes ‘S’ shape.

The pattern is not same for all countries and for all times. The curve demonstrates the impossibility of Malthus geometric ratio.

Karl Marx (1818-1883) undoubtedly, was the greatest name in social thinkers in the 19th century. He was an economist, revolutionary, political thinker, sociologist, socialist, historian; all rolled into one. Marx does not give us a theory of differential fertility, why more children are born to some people and a few or none to others. His theory of population is a reaction to the theory of Malthus. Malthus is termed by Marx as a plagiarist. Marx pours ridicule over Malthus. Marxian thrust is on a point that there are specific laws of population growth for each social system. He believed there could be no population problem under socialist modes of production and ownership of resource. Population becomes a ‘problem’ and a part of it becomes ‘surplus’ only under capitalist modes of production.
excess of the food supply, is surplus in economic sense but this is
due to mal-distribution of resource, which condemns men to
penury in the midst of plenty.

He Writes

"It is working population which while affecting the
accumulation of capital, also provides the means whereby it is
itself rendered relatively superfluous, is turned into a relative
surplus population and it does so to an ever increasing extent.
This is law of population peculiar to the capitalistic method of
production."

Marxian Theory of surplus population is the by-product of
his economic theories. Marx propounded 'Theory of surplus value'
which was itself based on his 'Labour theory of value'. The views
can be summarized in the following catch-points:

1. Labour is the source of all use-values (utilities contained in
objects of wealth produced by it) creator of all values,
measure of all values and legitimate owner of all values.

2. In pre-capitalist societies commodities that were produced
were exchanged for money; money was used to get the
commodities that were ultimately needed (C-M-C system). Money was simply a medium of exchange.

3. Under capitalist system money started being used to corner commodities produced by others for the sole purpose of marking more money out of such stock-pile (M-C-M).

4. The 'Wily' capitalist does not pay the workers the full value of their products. He usurps a part of it. The worker works for a certain number of hours daily whose production value is retained by the employer.

5. The army of unemployed workers becomes the 'surplus population'. The law of population under industrial capitalism is the law of 'relative surplus of population'.

**Arsene Dumont** (1849-1902) was a professor in the University of Strasbourg. His theory of population is popularly called the "theory of social capillarity". He says, "What gravity is to the physical world, capillarity is to the social order". Dumont deprecates the contribution of political economists to population theory. He finds that they tend to elevate the purely contingent hypothesis to laws having universal validity. Economists, he asserts, continued to repeat what Malthus said.
Dumont says that the development of number in a nation, is in inverse ratio to the development of individual. After doing an extensive survey in France to understand the true fertility pattern, Dumont asserts that there are three principles of population rather than one. These three principles relate to three stages of social development, viz., the primitive stage of development, the intermediate stage of development and the civilized stage of development. In primitive societies men live like animals in savage stage. They subsist on what they find rather than on what they produce. Here the Malthesian principle of population holds.

At a more advanced stage, but of intermediate order only, the Quillard's principle that 'population proportions itself automatically, so that where bread is born, a child is also born' governs the society. Here Malthusian checks become unnecessary. The population principle governing civilized societies is social capillarity. Every man wants to rise to social prestige not necessarily for political or economic gains, wealth is not everything; pride and human dignity also count. Man cannot attain a position that can be regarded high in the society, laden with such 'luggage and encumbrances' as of children. Children serve as block in the march of a man upward or in social capillarity.
Dumont points out that the low fertility in France has always served as a cause of high intellectual and aesthetic development. It is not the poverty that is the cause of high fertility; it is rather, the remoteness from the urban centres, which promotes ignorance and poverty. Poverty is the condition, but not the cause of high fertility.

Similarly, wealth is not the cause of low fertility. In the urban centres the fertility is low because of the pronounced social capillarity. Dumont says that the proletariat, because of many obstacles of status and caste, finds it impossible to elevate his condition and, therefore, increases its numbers.

According to Dumont's view population growth will be low in urban areas because there is wealth, luxurious living, increased competition for social advancement, greater diffusion of knowledge, development of the middle class, increasing cost of living necessitating limited families, femininism and soaring of individual ambition. Urban life is thought to develop a more rational, self-seeking individual, who, less filtered by tradition, naturally pioneers in the practice of family limitation. In rural areas, avers Dumont, poverty, ignorance, and superstitions lack of an economic motive account for high birth rates.
2.2 LITERATURE SURVEY

During the last three decades of the 20th Century, a lot of work on human fertility has been carried out, by the population geographers all over the world. Before that, the neglect of fertility studies in geography was really spectacular (Clark, J.I., 1973). The neglect of work on analysis of fertility can be gauged from the fact that in 35 articles chosen by Demko, et al. (1970), there is only one article, in the collection of the published work on fertility. Since then there has come a spurt in research activity in the field of human fertility. In the following pages a review of some of the latest available literature on fertility behaviour and the related aspects is noted.

Deborah Balk (1994) in his article, "Individual and community Aspect of women's status and fertility in Rural Bangladesh", establishes that rates of mortality are high at all ages, especially for infants and children. In most age groups mortality of females is higher than that of males. Fertility rates are among the highest in Asia, despite increased urbanization some economic development, and massive governmental and quasi-governmental efforts to reduce level.
Barbara S. Okon (1994) in his paper on “Evaluating Methods for Delecting Fertility Control. Coale and Trussell’s Model and Cohort parity Analysis”, discusses the controversy concerning both the dramatic fertility decline in currently industrialized countries during the nineteenth and early twentieth centuries and the more recent fertility declines in less developed countries in the twentieth century.

David R. Weir (1994) in his paper on “New estimates of Nuptiality and marital Fertility in France, 1740–1911”, estimate that nuptiality provided a powerful instrument of fertility control in Western-European population France is a particularly interesting ease, because the fertility transition there occurred much earlier and more slowly than in other European countries. In this paper he proposed a new method for reconstructing a population by marital status that will create a continuous series from 1740 to 1911. The method relies on data and assumptions that seem appropriate for the whole of France but which in general cannot be applied to smaller regions or to some other countries.

Griffith Ffeney And Yuan Jianua (1994) in their article on “Below Replacement fertility in China? A close look at Recent Evidence” discuss that China’s state family planning commission
conducted a national fertility survey in late 1992 following earlier surveys in 1988 and 1982. In April 1992 the commission released statistics derived from the survey which emphasised that China's fertility had fallen below replacement level during the early 1990s. The authors examine how reliable are the statistics on which this extraordinary report is based?

Barbara A. Anderson and Brain B. Silver (1995) in their study on "Ethnic Difference in Fertility and Sex Ratios at Birth in China: Evidence from XinJiang," use micro data for nationalities to study difference in fertility behaviour in China. They use a sample of cases from the 1990 census in Xinjiang Vighor Autonomous Region, to consider the two issues that previously had been studied only at the all China level, and with scant attention to nationality differences.

Akinrinola Bankole (1995) in his research on "Desired Fertility and Fertility Behaviour among the Yorba of Nigeria", discusses that the dynamics of the reproductive process in sub-Saharan Africa cannot be properly understood as long as researchers continue to base their conclusions on data collected exclusively from women. In more recent surveys data have been collected from both sexes and studies based on such data, particularly those
collected from marital partners are beginning to show why many family planning programmes in sub-Saharan Africa have not been effective in influencing fertility behaviour.

Monica Das Gupta (1995)\(^\text{11}\) in his work on “Fertility decline in Punjab, India: Parallels with historical Europe”, explain that there seem almost to be two separate universes of discourse: one relating to the decline in historical Europe the other to the decline currently under way in the less developed world.

Robert D. Retherford, et al. (1996)\(^\text{12}\) in an article entitled “Values and Fertility change in Japan”, discuss that how value change and underlying economic and social changes have jointly affected fertility in Japan since 1950, when survey data on fertility related values started to become available. It is convenient to classify Japan’s fertility decline since 1950 into three periods (i) 1950-57, a period of rapid decline at the end of which total fertility reached the replacement level, of about two children per women (ii) 1957-73, during which fertility did not change much (iii) 1973-93 a period of resumed fertility decline when total fertility fell to 1.46. Their analysis relates mainly to the third period.
Zengyi (1996)\textsuperscript{13} in his research paper on "Is Fertility in China in 1991-92 Far Below Replacement Level", estimate that the State Family Planning Commission (SFPC) reported that total fertility in China was 1.65 in 1991, and 1.52 in 1992 well below the replacement level of 2.2 children per couple. These figures imply that Chinese fertility in 1992 was 27.6 percent lower than that in the U.S., 30 percent lower than the average in developed countries, and 65.5 percent lower than the average in less developed countries.

Barabaras Okun James Trussell and Barbara Yaughan (1996)\textsuperscript{14} in their study on "Using Fertility Surveys to Evaluate an Indirect Method for Detecting Fertility Control: A Study of Cohort Parity Analysis", evaluate the performance of two indirect methods Coals and Trussell's method and cohort parity analysis (CPA), used in the study, if fertility control in populations for which direct information on the use of birth control is lacking.

Basia Zaba and Patricia H. David (1996)\textsuperscript{15} in their research work on "Fertility and the Distribution of Child Mortality Risk among Women: An Illustrative Analysis", examine that risk of dying are never equally spread in populations. Differentials in biodemographic characteristic such as mother’s age, the spacing of
her births, her parity, the sex of the child, and differentials in socio-economic characteristics such as parental education show that both biological and social factors affect the distribution of risk among children & their families.

M. Khlat, M. Deeb and Y. Courbage (1997)\textsuperscript{16} in their research paper "Fertility Levels and Differential in Beirut during Wartime: An Indirect Estimation Based on Maternity Registers", estimate that Lebanon occupies what is in many respects a unique position in the Arab world. Age at marriage has been high for a considerable time, and more recently family planning has become accepted by the population. Fertility is, therefore, lower than in other Arab countries and is expected to fall to replacement level by the end of the century.

Warren C. Robinson (1997)\textsuperscript{17} in his research work on "The Economic Theory of Fertility over three Decades", discusses that the economic models has, for the last 15 to 20 years, been the dominant explanatory paradigm in fertility and family planning studies.

David K. Guilkey And Susan Jayne (1997)\textsuperscript{18} in their research paper on "Fertility Transition in Zimbabwe: Determinants of
Contraceptive use and method choice”, examine that the Zimbabwe has the highest rate of contraceptive use in continental sub-Saharan Africa except for South Africa. Some of the factors that may be associated with this achievement are high levels of education, relatively low levels of infant and child mortality and well-designed and well-managed family planning programme.

Jonathan Haughton (1997) in his paper on “Falling Fertility in Vietnam”, finds that the drop in total fertility does have a parallel in rising rates of contraceptive use and abortion. Between 1989 and 1993 total fertility in Vietnam appears to have fallen from 3.8 to 3.2. This is a very rapid drop, to a level which is remarkably low for a country as poor as Vietnam. Also surprising is the fact that the fall has taken place during a period when Vietnam was transforming itself from a centrally planned to a market-driven economy.

Anne Helfne Gauthier And Jan Hatzius (1997) in their work on “Family Benefits and Fertility: An Econometric Analysis”, discuss that in the current context of low fertility, and in response to the deep transformations undergone by the governments, most industrialized countries have renewed their commitment to supporting families.
This paper aims at filling this gap by addressing the question of whether higher governmental support for families has a positive effect on fertility by encouraging parents to have more children. The empirical analysis is based on differences and similitude's across countries in the level of governmental support for families in industrialized countries for the period 1970 to 1990.

Monica Das Gupta and P.N Mari Bhat (1997) in a research paper entitled "Fertility Decline and Increased Manifestation of Sex Bias in India", suggest that fertility decline in societies characterized by strong son preference may be accompanied by increased manifestation of sex bias as reflected in excess mortality of girls. Similar trends may be found in India, especially its northern Indian region.

In this paper they explore the relations between fertility decline and net manifestation of sex bias, as well as evidence that this bias has increased in India. They begin by considering two countervailing ways in which fertility decline could effect the excess mortality of girls. They use empirical examples to show the independent and combined effects of these factors on sex differences survival. They continue by estimating the additional number of girls who went 'missing' between 1981 and 1991 as a
result of increase in the excess mortality of girls and the extent to which this increase can be attributed to sex-selective abortion or unreported infanticide, as opposed to excess mortality after birth.

Anastasia J. Gage (1998) in his work on, “Premarital childbearing, unwanted fertility and maternity care in Kenya and Namibia,” Analysis of data from the 1993 Kenya and 1992 Namibia demographic and Health surveys”, shows that premarital childbearing is an important risk factor for the under utilization of maternity care. In both countries, women with premarital births are significantly less likely then those with marital status to seek prenatal care in the first trimester.

Ulla Larsen, Woojin Chung and Monica Das Gupta (1998) in their research paper on, “Fertility and son preference in Korea”, show that in Korea, total fertility declined from 6.0 in 1960 to 4.5 in 1990, in spite of a strong preference for male off spring. The paper addresses the notion that son preference hinders fertility decline, and examines the effects of patriarchal relations and modernization on fertility using the 1991 Korea National Fertility and Family Health Survey. It was found that women who have a son are less likely to have another child and that women with a son
who do progress to have another child, take longer to conceive the subsequent child.

**John Bongaarts** (1999)\(^{24}\) in his article on, “The fertility impact of changes in the timing of child bearing in the developing world”, examines the role of tempo effects in the fertility declines of less developed countries. These effects temporarily inflate the total fertility of a population during periods when the age at child bearing decline and deflate it, when child bearing is postponed.

**Chandola T., et al.** (1999)\(^{25}\) in their research work on, “Recent European fertility patterns: Fitting curves to distorted distributions”, show marked differences between countries. Recent United Kingdom and Irish fertility curves show ‘distraction’ in terms of a ‘bulge’ in early age fertility, distinct from the smoother curves of other European countries. These patterns may not be adequately described by mathematical functions used by previous studies to model fertility curves. A mixture model with two component distributions may be more appropriate.

**Susan Scott and C.J. Duncan** (2000)\(^{26}\) in their study on, “Interacting effect of nutrition and social class differentials on fertility and infant mortality in a pre-industrial population”,
discuss that inadequate nutrition of both the mother and her offspring at each step of its development before pregnancy, in the womb, in infancy and during early childhood, played an important role in the patterns of sub-fertility and infant mortality in a saturated marginal, preindustrial community.

Andrew Hinde and Akim J. Mtur (2000) in their research paper on, “Recent trends in Tanzanian Fertility”, provide an assessment of the nature and magnitude of Tanzania’s recent fertility decline, using robust method for the identification of fertility trends. A decline in Tanzanian fertility began some time in the late 1970s or early 1980s. The pattern of declining exhibits similarities to patterns identified some years ago in Zimbabwe and Kenya. The decline has been especially marked in urban areas.

Marwan Khawaja (2000) in his article on, “The recent rise in Palestinian Fertility: Permanent or Transient”, describes trends in fertility and fertility change in the west Bank and Gazastrip during the years 1968-1992, with a particular focus on the recent rise in fertility. The paper is based primarily on vital registration data. The findings show that the fertility transition has been well underway in the West Bank since 1985, with a lull during the intifada period. No indication of a fertility transition in the
Gazastrip was found. An examination of the age pattern of fertility reveals that Palestinian fertility has been increasingly shifting toward younger ages, with a particular concentration in the age group 15-24 during the Intifada period.

Hans Peter Kohler et al. (2001)\(^{29}\) in their paper, "The Density of Social Networks and Fertility Decision: Evidence from South Nyauza District, Kenya", argued that social interaction is an important mechanism for understanding fertility behaviour. Yet it is quite uncertain whether social leaning or social influence is the dominant mechanism through which social network affects individuals.

R. Kelly Raley (2001)\(^{30}\) in his work, "Increasing fertility in cohabiting union: evidence for the second demographic transition in United States", examines that as cohabitation becomes increasingly common and accepted, one might expect the meaning of this arrangement to change fertility. In some countries in Europe (e.g., Sweden) as cohabitation become more prevalent, it moved from defiant status to an acceptable alternative to marriage. He examines increase in the proportion of births occurring in cohabiting unions using data from 1987-88 NSFM and 1995 NSFM. The standardization and decomposition procedure show that most
of the growth in the proportion of births to cohabiters is the results of increase in the proportion of cohabiting women.

Victor Agad Janian et al. (2002) in their work on, “War, Peace and Fertility in Angola”, examine evidence of a wartime drop and a post war rebound in fertility, but these trends vary greatly, depending on the type and degree of exposure to war and on women’s socio-economic characteristics.

Ovstein Kravdal (2002) in his research “Education and fertility in sub-saharan Africa: individual and community effects”, show that the average educational level in a village or a community of a similar size has a significant depressing effect on a woman’s birth rate.
References:


2. Ibid., pp. 132-183.


