

**A REVIEW OF LITERATURE ON
ECONOMIC AND NON-ECONOMIC
CONSIDERATIONS ON CHILDREN**

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CONTENTS

	<u>Page</u>
ACKNOWLEDGEMENTS.....	(1)
 <u>Chapter</u>	
I INTRODUCTION.....	1
II THE RELATIONSHIP BETWEEN POPULATION GROWTH AND DEVELOPMENT.....	6
III THE FACTORS AFFECTING BEHAVIOUR IN FAMILY FORMATION.....	25
IV CONCLUSION.....	53
BIBLIOGRAPHY.....	57

CHAPTER I

INTRODUCTION

"Children are more than the object of their parents attention and love; they are also a biological and social necessity. The human species perpetuates itself through children; cultural, religious, and national groups transmit their values and traditions through children; and individuals pass on their genetic and social heritage through children. The ultimate value of children is the continuity of humanity." [F. Arnold et al. (1975), Vol. I, p. 1.]

Children are of value not just to their parents, but to society as a whole as well. Yet, family building habits differ not only between different socio-economic groups within a society, but also from society to society. This has repercussions on population growth rates and quality of population, and via that on the economic development of these countries.

Intra- and inter-societal differences in fertility behaviour can be explained by several factors. In agrarian societies, religion and tradition predominantly dictate societal norms. In industrial and urbanized societies, these norms have undergone rapid change over the past few decades. Attitudes toward child-bearing in particular, have been affected. Contraception has been well received, and women have begun to take up careers. As a result, in the course of

demographic transition, fertility levels in advanced countries have fallen substantially.

Recently, social scientists have become interested in motivations underlying the family formation process at the micro-level, and, on the link between the consequent population growth and economic development at the macro-level. The forthcoming literature is concerned with explaining the secular fall in fertility rates resulting from a long-term rise in per capita income.

This review attempts to assess the extent to which the macro and micro-body of literature in this area can satisfactorily explain family building behaviour.

Chapter II will be concerned with work done on a macro-level, which centres around the cost-benefit analysis of population growth. Three approaches have been adopted for this purpose.

1. The Malthusian approach
2. Investment models
3. Macro-economic growth models.

The Malthusian approach is basically an offshoot of Malthus' population theory. Its exponents hold a grim view of the future. Due to an ever-increasing population pressure, in the long run, all economies will stagnate at a 'low level equilibrium'.

Investment models view a fall in fertility today, as

generating a stream of future benefits for the economy measured in quantifiable economic magnitudes such as increased consumption and savings. This present value can then be compared with the present costs of causing fertility to decline, and a measure of the net benefits of fertility reduction can thus be obtained. Enke, Meier and Zaidan have made major contributions to this area of study.

Macro-economic growth models have been used to show the interaction of fertility trends with consumption, saving, employment and per capita income in some projected future year. Alternative time paths of per capita income with and without fertility are compared to demonstrate the 'payoff' to the economy from fertility reduction. The income differential between these alternative time paths is a measure of the benefits of fertility reduction. Coale and Hoover and later Demeny have followed this approach.

An attempt to reconcile the two latter approaches has been made by offers of more complex neo-classical models which include more parameters and interrelations. Enke and Phelps have pioneered in developing and elaborating dynamic models of the economy, depicting it in the long run.

In Chapter III, attention shifts from the effects of fertility reduction on the economy as a whole, to the causes and effects of fertility reduction on the individual household unit. In particular, the focus is on the family building behaviour of the couple. The underlying theme in micro-

theories of fertility is that the consumer maximizes total satisfaction given a set of goods with their prices, from which he chooses according to his tastes and income. Children are introduced as a special kind of 'consumer durables' generating both, consumer satisfaction directly as well as having some characteristics of investment goods. There are costs associated with acquiring and maintaining children which can be balanced off against the satisfactions and returns they provide. The model is applicable to couples who do plan their families.

The fact that couples in both developed and developing countries have less children than they are biologically capable of having implies that they do plan. The existence of planning suggests that a rational balancing of children against other sources of satisfaction is done by parents, that is, there are other goals competing with parenthood. The apparent lack of planning which seems evident in the large family sizes achieved in developing countries, may represent inefficient planning rather than a total absence of planning. Given that planning is uncertain, costs and satisfactions are subtle, it still seems reasonable to think of couples as making a 'maximisation' decision and choosing a family size in the same way as they make other household economic decisions. Leibenstein, Becker and Easterlin have been the principal proponents of the theory of fertility.

A significant amount of empirical work has been done

to verify or refute the body of theoretical literature. This has been discussed and its shortcomings and strong points highlighted.

Concluding remarks (Chapter IV) draw attention to major gaps and insufficiencies in the literature which prevent it from correctly interpreting past experience. Further refinements and research is warranted to overcome this difficulty.

CHAPTER II

THE RELATIONSHIP BETWEEN POPULATION GROWTH AND DEVELOPMENT

"There is an easily visible link between economic conditions and trends and demographic characteristics and trends in different areas. The recent demographic history, the current demographic circumstances and the prospective demographic changes among the higher income populations of the world form a pattern quite different from the history, present circumstances and future trends characterizing the lower income populations." [A.J. Coale (1976), p. xi.]

It has been recognized, especially for under-developed countries, that a high rate of population growth not only has an adverse effect on improvements in food supplies, but also intensifies the constraints on the development of savings, foreign exchange, and human resources. However, it is only recently that this variable was given its due recognition. In the neo-classical period, most models of economic growth have treated demographic variables as exogeneous, that is, variables which affect the process of economic growth, but are not influenced by it. Recently, a number of studies have been undertaken by economists to gauge the value of children to society as a whole. This was achieved by assessing the effects of population growth on various economic indicators reflecting living standards attained within an economy. Predominantly, three approaches can be identified into which the studies may be classified:

- (1) The Malthusian approach
- (2) Investment models
- (3) Macro-economic Models.

The Malthusian Approach

One of the earliest efforts at formulating a model which explains the relationship between population increase and living standards was made by T.R. Malthus.¹ Assuming fertility to be constant at a high level and mortality to be variable, his hypothesis was that on the one hand an increase in living standards results in a larger population due to a fall in mortality; on the other hand, productive land can only be augmented linearly whereas population expands exponentially, so that per capita food production will eventually fall and Malthusian checks would come into operation. The interaction of these two opposing forces would keep the population at a 'low level equilibrium'.²

H. Leibenstein (1957) has propounded the concept of a 'low level equilibrium trap' which resembles the Malthusian low level equilibrium. He has postulated curves plotting population growth rate as per capita income is varied. Due to the supposed behaviour of these curves around the subsistence level (of per capita income), an economy at this level will

1 Malthus has dealt with this in his "Essay on Population".

2 A low level equilibrium signifies a situation in which incomes and hence living standards are very low.

find it difficult to break away from subsistence without a 'prolonged stimulation'.³

These two models differ in that whereas Malthus is concerned with a stationary population, Leibenstein's interest lies in predicting a growing population trapped at a low standard of living, for less developed countries. The principal criticism levied against the latter model is that since the demographic and economic assumptions governing the shapes of these curves are not discussed, the model is discretionary.

Another model originating out of Malthus' population theory is the M.I.T. Model set out in "The Limits to Growth" [D.H. Meadows et al (1972)]. It has been aptly described by Ohlin in the following way:

"Except for the apparent complexity, the crude numerical character, and the addition of a few trendy variables such as pollution and the quality of life, the M.I.T. model is basically a gigantic elaboration on the famous dictum on geometric and arithmetic growth." [G. Ohlin (1976), p. 7.]

While the model has been able to gain considerable support from the layman, it has not been well received by economists. Several attempts have been made to explain why its threat of imminent disaster need not be taken seriously. But they focus more on the sensitivity of the model to changes in assumptions on technology, resource discovery, and lack of a built-in economic adjustment mechanism, rather than population growth.

3 See Leibenstein (1957), pp. 170-171.

Investment Models

Investment models centre around a cost-benefit analysis of population growth. They are based on the assumption that consumption today is preferred to consumption in the future; in order to compare future magnitudes with present ones, the former must be discounted at a rate which represents the superiority of present consumption over that in the future. The present value of the stream of benefits expected to be generated from a project is then compared with the present value of concomitant costs.⁴ If the benefits exceed the costs incurred, the project is undertaken.

P. Enke (1957) has pioneered in applying the cost-benefit investment planning model to population. He has pointed out that in developing countries it would not be possible to maintain a constant capital-labour ratio at prevailing rates of population growth and capital formation. He then compared two alternative investment policies to overcome this problem:

⁴ The present value of benefits and costs are algebraically defined as follows:

Let c_j be the expected cost in the year j
 b_j be the expected benefit in the year j
 s be the scrap value of the project
and i be the rate of discount.

$$\text{Then, Present Value of benefits} = \frac{b_1}{1+i} + \frac{b_2}{(1+i)^2} + \dots + \frac{b_n+s}{(1+i)^n}$$

$$\text{and Present value of costs} = \frac{c_1}{(1+i)} + \frac{c_2}{(1+i)^2} + \dots + \frac{c_n}{(1+i)^n}$$

- (a) urbanization and industrialization with reduced birth rates as a by-product,
- (b) land reclamation with no accompanying reduction in birth rates.

Using a model of an underdeveloped country, he found that consumption per head was initially higher under the latter policy, but became higher under the former as fertility fell. On the basis of this demonstration he argued for investment in birth control, and developed estimates of costs and benefits to society of birth prevention.

He estimated the lifetime production and consumption of a marginal birth; in the case of India, total consumption exceeded production by Rs. 6000. Then a 10 per cent rate of discount was introduced and estimates were adjusted for the fact that no production would occur for the first fifteen years; the excess of consumption over production fell to Rs. 690. Births would be in excess⁵ if the discount rate that equated the present value of production with that of

⁵ A negative present value of births would indicate an excess of births. In a particular year, there could be four causes for a negative present value of infants [Robinson and Horlacher (1971), p. 4]:

- (a) Children not surviving to working ages.
- (b) The marginal product of an additional worker may fall short of the average product.
- (c) Consumption is based on the average and not the marginal product.
- (d) Production is more heavily discounted than consumption as it begins at a later stage in the life cycle of an infant.

consumption fell short of the prevailing rate of return on capital. This was the case in many less developed countries. So he recommended a bonus-incentive plan under which couples could be paid for not having children. As these payments would be mere transfers, they would not impose a cost on society.

In a later paper, Enke (1966) introduced a new concept - the superior effectiveness ratio⁶ - and used it to compare the effects of investing an identical amount in capital goods or on birth control. Investment in the latter will be more desirable if it reduces population growth by a greater proportion than a corresponding investment in capital goods.

R.L. Meier⁷ made a different application of the investment model. He took two hypothetical populations A and B; A exhibited characteristics associated with a per capita income of \$100 per annum, and B displayed the features of a country with an annual per capita income of \$250. For country A, cost of a birth was negligible and children were assumed to begin producing at the age of five. He computed the cost of a programme of family limitation by reversing the method used for calculating benefits of a public health programme designed

6 Superior Effective Ratio = $\frac{P}{\Delta P} + \frac{Y}{\Delta Y} = \frac{P \Delta Y}{Y \Delta P}$

where P is population size, Y the output in the economy and ΔP and ΔY stand for changes in population size and output respectively [ibid., p. 4].

7 See ibid., p. 4.

to reduce infant mortality by discounting the loss to society back to the time at which the health programme was put under operation. He found that it would cost \$20 annually for population A. For population B, a programme to reduce births by 20 per cent would benefit the society by \$600. His conclusions were as follows:

- (a) The net value of a birth prevented varies directly with per capita income.
- (b) The value of the medical innovation that reduced infant mortality would be negative in developing countries.
- (c) The value of an effective family limitation programme is much greater for developed countries.

Meier's estimate of the value of a prevented birth is lower than that of Enke's because firstly, Meier assumes that production begins at an earlier age of 5. Secondly, Meier uses average rather than marginal product to measure output unlike Enke.

The investment model approach has been criticized on three accounts [J.L. Simon (1969), W.C. Robinson and D.C. Horlacher (1971)]. It has been pointed out that an appropriate enumeration of costs and benefits is not an easy task. Valuation becomes even more challenging particularly when costs and benefits do not have prices attached. A number of questions arise on the choice of a discount rate, viz. what rate to use, what time horizon to consider and also whether

discounting is at all essential. The discounting procedure has an inherent bias. Production, by beginning further in the future, is more heavily discounted than consumption. So that, a high income country will gain more from preventing a birth than a low income country. Also, this procedure favours present generations over future ones because births today, which yield an output only two decades or so away in the future will be eliminated from consideration by the discounting procedure. However, if no discount rate is used, there will be no basis on which to favour one project over others.

Apart from these more general criticisms, some shortcomings of the Enke and Meier models in specific have been brought to our notice. According to Demeny (1961), Enke has grossly understated real costs of his bonus-incentive scheme by ignoring opportunity costs of these payments and the welfare implications of the transfer involved in making bonus payments. Administration costs, which are significant evidently, have also been neglected. Enke has taken too optimistic a view of the expected decline in fertility resulting from implementation of the programme, because he takes it for granted that all programme participants are new contraceptors.

In investment models, benefits of a prevented birth become the costs averted by society. Additional children may provide direct consumption satisfactions to parents in exchange

for which they are willing to incur additional costs in full concordance with their welfare. In Enke's scheme, they are bribed to shift away from the optimum - in this process it is not clear if any additional benefits have been created as he contends. Enke has defended himself by dismissing the occurrence of any implicit welfare maximisation. He adds that extra births do exert a cost on society in the form of externalities. However, by introducing externalities he can no longer defend his original estimates of social costs.

Robinson and Horlacher (1971) point out that treating families and births as homogeneous tends to obscure the fact that there are low and high fertility groups in a society, each incurring a different set of private costs and imposing different externalities on society. Accordingly, some groups should probably be bribed to produce more children while others be bribed to produce none.

G. Zaiden⁸ has refined and extended Enke's model by working out the upper and lower limits of the benefits from birth prevention, and has tried to include additional effects that are capable of being quantified. He has traced four paths by which birth prevention affects per capita income:

(1) The Initial Effect: Also the most dominant, refers to the resulting increase in per capita income from birth prevention. To the extent that per capita income is raised,

⁸ See *ibid.*, p. 8.

subsequently there must be an increase in per capita consumption or savings per worker or both. All of these are a basis for further increases in per capita income.

(2) **The Wage Productivity Effect:** Refers to the increased labour productivity due to improved diet. This effect indicates that per capita consumption is below minimum calorie requirements, and the marginal product of labour is non-zero.

(3) **The Savings Effect:** Refers to an increase in total savings. It can be dichotomized into the:

- (a) Private Savings Effect
- (b) Government Savings Effect.

The increase in savings per worker is assumed to be translated into an increase in capital per worker, while the government can save more by economizing on public health, education and other expenditures, which will be required at lower levels due a fall in fertility.

This model is an improvement on Enke's model as it includes both internalized benefits (the primary increase in per capita income) and external benefits (wage productivity increase, private savings and public welfare gains). He assumed: (a) children are investment goods providing no consumption satisfaction to parents, (b) births are permanently prevented rather than delayed, and (c) returns from birth prevention are considered solely from the point of view of the country vis-a-vis the family.

Zaiden recognized the presence of a built-in bias in his criterion which ensured that benefits would always exceed costs both for developed and developing countries. Another point to be appreciated is that consumption in developed countries has had a dual role - as a stimulant as well as a depressant - which cannot be easily segregated. It is not appropriate to treat foregone consumption exclusively as a cost when it operates as a depressant as well.

He applied his benefit criterion to the United Arab Republic and highlighted a number of issues which may have a bearing on the value of benefits from birth preventions. His findings were that internalized benefits from preventing a birth amounted to four times the current per capita income; external benefits amounted to twice the current per capita income, using a 10 per cent rate of discount. Notwithstanding the shortcomings of the investment model approach itself, Zaiden's version has proven to be both useful and purposeful.

Macro-economic Growth Models

Macro-economic growth models can be best described as "a set of relationships among the key economic magnitudes of a national economy stated so that the effects of changes in any one such variable on all other interrelated variables can be traced out. The model is typically expressed as a set of equations with known or assumed coefficients of interrelationship and timing, the whole susceptible to empirical application and testing." [Robinson and Morlacher (1971), p. 9.]

The principal concern of macro-economic models pertaining to fertility is to estimate and illustrate implications of different trends of fertility. The underlying theme in these models is that savings and hence investment and capital formation are depressed by high fertility and large family sizes; at the same time, these factors pre-empt welfare investments so that resources are diverted away from capital formation and act toward reducing output.

A.J. Coale and E.M. Hoover (1958) in a seminal study of Indian economic and demographic trends, attempted to measure quantitatively the significance of a reduction in fertility, and to test the sensitivity of their model to various alternative assumptions about non-demographic variables. In order to do this, they constructed an econometric model of the Indian economy with both population size and growth rate introduced explicitly. Their assumptions were: (1) the size and quality of the labour force was constant regardless of fertility and the level of per capita consumption, (2) only monetised investment was considered due to inadequate data on non-monetary investment.

Their model contrasts the outcomes of alternative population projections for five year periods between 1956 and 1986. They found that per capita income grew slowly (38 per cent) under a high population growth rate, whereas for a low rate of growth of population, per capita income grew by 95 per cent. The reason for the apparent negative relationship between per

capita income and population was that with a lower population growth rate, a larger proportion of income was saved and invested to a greater extent in high productivity capital goods. They also found that although 'welfare' investment was lower in the low fertility case, per capita public welfare was higher. Thus there were positive gains to be had from a reduction in fertility.

Demeny tried to investigate what price would be worth paying for an effective birth control programme with a given cost, and how the price would depend on structural parameters of the economy. His model was a variant of the Coale and Hoover model - he made savings (and hence investment) a function of income and population growth.

He began with a base population of one million, a gross reproductive rate of 3, life expectancy at birth of 35 years and a masculinity ratio of 1.06. From this he generated a stable age and sex distribution for the base population. Then an exogeneous increase in life expectancy at the rate of 2.5 years every five years was introduced. He defined two population projections:

- (1) the gross reproductive rate remained constant for 25 years and then fell linearly to 1.5 and was constant thereafter,
- (2) the gross reproduction rate fell linearly to 1.5 and remained constant thereafter.

He found that even with identical fertility rates, the absolute

growth in population would be higher in case (1). Yet, the workforce in (1) will only be 4 per cent larger since all of the population loss under case (2) is in the 0-15 year age group. His conclusions differed from those of Coale and Hoover who held that a decline in the younger age-groups was accompanied by an increase in total income in the first 25 years because size of the labour force did not decline appreciably, and it had more capital goods to work with; if a reduction in the fertility rate is itself costly in resources, then results may not be so optimistic. For example, if demographic investment⁹ replaced investment in capital goods, then total output might decline along with population growth rate. Any pattern of demographic investment which during the first 25 years would keep income per equivalent adult consumer at the same level as it would be in the absence of such investments, is the maximum level of demographic investment economically permissible, provided it causes fertility to fall as under (2).

One can argue that an increase in per capita income would not increase savings as gains would be imperceptible. Demeny says that gains will be large for the families directly affected. However, if gains are clustered, the use of economy-wide propensity to save is objectionable as Robinson and Horlacher point out.

⁹ By demographic investment is meant investment in birth control.

G. Myrdal (1968) has raised some interesting points about the Coale and Hoover type macro-economic models. He rightly feels that their results relating income to fertility are not significant, some of the reasons he offers are:

- (1) They omit several important variables.
- (2) More meaningful results would be obtained by varying the assumed parameters in combinations rather than one at a time as they do.
- (3) The assumptions of a constant capital-output ratio with certain institutionalized arrangements are crucial to the working of the model.
- (4) The savings function excludes non-monetary variables which are crucial particularly for India.

Later more complex and refined models have used Cobb-Douglas production functions and increasingly complex assumptions about savings and investment. But the results obtained from them do not differ significantly.

Enke¹⁰ has formulated such a model. His results have been modified to the extent that whereas the models considered so far posit a positive relationship between benefits from fertility control and per capita income, Enke arrives at the conclusion that although benefits may be negative in most developing countries, as per capita income (and hence savings and capital formation) increases, the marginal productivity

¹⁰ For details see Robinson and Morlacher (1971), pp. 14-15.

of labour may rise so that the present discounted value of infants is positive.

E.S. Phelps (1966) has pioneered in developing and elaborating structural interrelationships of an economy in a long run dynamic situation. He shows that a policy of keeping the economy on a consumption-maximizing 'golden-age path',¹¹ by continuously equating tangible investment to the competitive earnings of capital, is the golden rule of accumulation. In the long run, the impact of a sustained population growth on per capita consumption and income is negative even under the best conditions. An interesting by-product of this analysis is the result that as capital per worker falls, the marginal product of capital increases while that of labour falls, so the ratio of wages to rate of interest falls. Therefore, for parents with large asset holdings and few children, the relative increase in interest rate will offset the loss from wage reductions. This may induce parents with small families and large asset holdings to have children. The Phelps model suggests that there is a trade-off between the 'golden rule' consumption per capita and birth rate. A higher birth rate is associated with a lower per capita income.

11 A golden age path is a "growth path on which literally every variable changes (if at all) at a constant proportionate rate." [Phelps (1966), p. 3, footnote 2.] It originates from the idea that each generation saves that part of income which it would have past generations save for it, given all past and future generations implement this. [See Robinson and Morlacher (1971), p. 15.]

Most of the macro-economic models discussed so far, have not dealt explicitly with the agricultural sector. E. Mueller (1976) has drawn our attention to the fact that the analysis carried out in them is not disaggregated by age and sex in such a way that the economic role of children, women and the aged cannot be studied in isolation. Therefore, it is "uncertain whether and how the conventional wisdom of peasant families and conclusions of economists can be reconciled". [Mueller (1976), pp. 98-99.] In an attempt to fill in this gap, Mueller undertook a VOS¹² study on peasant agriculture. The study demonstrated that the pure demographic effect of a decline in the birth rate is to raise the savings rate. It is not clear in what direction induced behavioral and productivity changes work, however a priori it seems unlikely that they will offset the demographic effect. Thus her findings reinforce the hypothesis that there is a negative relationship between birth rates and investment rates (and hence economic development) for the agricultural sector as well.

Macro-economic models do have some weaknesses that have been discussed above, which make them lack conviction. Two additional faults have been pointed out by Ohlin (1976) which deserve a mention.

The first is that the conclusions seem to follow easily

12 Value of Children.

from the assumptions made, and these are not always justifiable. The models unanimously favour smaller populations. Two diverging considerations have been overlooked; on the one hand, the process of economic growth is not as simple as depicted in them; there remains the possibility that the population may stimulate growth by 'non-traditional'¹³ means. According to Ohlin, there is evidence to show that these factors play a greater role than mere capital accumulation in the growth process.

Secondly, per capita income as it is conventionally measured, is not an appropriate criterion of welfare on which population policies should be based. People like having children in spite of the net costs they impose. Non-economic considerations are totally ignored if this criterion is used, although they may have a significant bearing on fertility. This objection also applies to Enke's attempts to assess the value of a prevented birth.

It is clear that no satisfactory model, elucidating the economic effects of demographic variables, has yet been offered. Ohlin has summed up well, the progress made in this direction:

"In spite of the abundant literature on the relationships between population movements and social and economic

¹³ Non-traditional factors are factors like economies of scale, induced innovations and technical change, or speeding up replacement of the existing labour force with labour of a superior quality. [Ohlin (1976), p. 9.]

change it cannot be said that there is either a solid theoretical basis or hard empirical evidence for any grand interpretation of past experience or an assessment of the consequences of current rapid growth." [Ohlin (1976), p. 3.]

CHAPTER III

THE FACTORS AFFECTING BEHAVIOUR IN FAMILY FORMATION

"A society without children is a society headed for extinction. Beyond that simple biological fact if one imagines such a society it is usually seen as embodying cultural disorientation, deterioration and despair ... children contribute something of immense, perhaps incalculable value to a society. ... When one turns from children in general to specific children, or to children of a particular age or sex or intelligence or skin color, or when one talks with single persons and newly weds and grandparents, with housewives and farmers and accountants, one comes up against a bewildering variety of arguments, calculations, cliches, generalizations and exceptions regarding what children are worth." [F. Arnold et al (1975) Volume 2, p. 1.]

Children are a source of psychic satisfaction to parents and also provide economic happiness. The psychic or non-economic satisfaction accrues to parents from the capacity of children to provide family solidarity and security, love and affection, social status, maintain family lineage and so on. Economic happiness stems from the ability and willingness of children to make financial contributions toward the running of the household either directly or indirectly by helping in housekeeping and babysitting so both parents can work and earn.

At the same time, during the process of childbearing and rearing, children impose certain costs on the parents.

These can be broken down into economic and non-economic costs. Economic costs refer to the relative prices of the commodity inputs into children's consumption as well as the opportunity cost of the mothers' time devoted to childbearing and rearing, i.e. her future and present earnings forgone. Non-economic costs comprise mainly of the frustrations and worries associated with children, during and after their growing and maturing period.

Micro-level studies in this area apply welfare economics concepts to fertility behaviour. A broader definition of welfare is applied, encompassing more than what is measured by say, per capita income or wealth. The non-economic part of welfare is also recognised. These theories are primarily concerned with seeking an explanation for the family building habits of couples. Their object is to see to what extent costs and benefits of children, as perceived by the parents, influence decision-making in the family formation process.

Theoretical Literature

The micro-model of economic influence on fertility which has come to be known as "the economic theory of fertility", had its foundations in H. Leibenstein's book titled "Economic Backwardness and Economic Growth".

Leibenstein has stated three types of utilities that a birth might entail: (1) utility as a consumption good, (2) utility as a production good, and (3) utility as a potential

source of security. Conventional costs of child maintenance increase with per capita income, according to him, because the standard at which a child is maintained depends on the parents status and income.

G.S. Becker (1960) has later developed these notions into an economic theory of fertility. His framework is a generalization and development of Malthus' framework.¹ He recognizes the fact that better means, acceptance and adoption of contraception has widened the scope of decision-making where fertility is concerned. With this, environmental factors have taken an added importance in determining fertility behaviour. To simplify analysis of these factors, he assumes that each family has perfect control over the number and spacing of its birth. Children, as a source of psychic joy can be viewed as consumption goods. By providing income for the family, they can also be considered to be production goods. The outlay on them as well as the income they yield vary with the child's age, making them durable consumption and production goods. In terms of net costs,² positive net costs

1 The basic hypothesis Malthus put forth in his "Essay on Population" was that an increase in incomes would immediately bring about an increase in the family size of the labouring class. He, of course, deliberately avoided looking the effect of contraception on this relationship since he considered it to be a vice.

2 The net cost of children = (Present value of expected outlays) + (Imputed value of parents' services) - (Present value of expected money return) - (Imputed value of child's services). See Becker (1960), p. 213.

imply that children are consumer durables while negative net costs mean that children are producer durables yielding pecuniary income.

He explains fertility response to income changes in terms of two variables - the quantity and quality of children (reflected in the expenditure per child). The main thesis is that an increase in income should increase both the quantity of children as well as the quality of children. However, the income elasticity with respect to quantity should be smaller than the income elasticity with respect to quality in a developed country. To the extent that the desired quantity of children does not respond to income, quality is substituted for quantity. He quotes some empirical data in support of his theory. Evidence showing a negative correlation between secular changes in fertility and income is dismissed by him as inconsequential to his hypothesis because it does not hold contraceptive knowledge constant. A positive relation does emerge on holding contraceptive knowledge constant, which is supported by the positive correspondence between cyclical movements in income and fertility.³

Becker's formulation has brought forth a lot of criticism. J.S. Duesenberry (1960) and J. Blake (1968) have cast

³ A secular decline in fertility is consistent with a positive relationship between income and fertility, because factors like a reduction in child mortality, and an increase in contraception and child costs could have easily offset the secular increase in income.

doubts on the nature of the empirical evidence he has used. Several shortcomings of the data have been highlighted:

(a) the evidence used to illustrate 'equalized' contraception results either from sample biases which he ignores, or from factors irrelevant to his analogy of children to consumer durables;

(b) the data on family size and income is either biased in favour of his hypothesis through sampling distortion, or is irrelevant as it pertains to a situation where children are producer durables whereas his theory concentrates on fertility behaviour with children viewed as consumer durables;

(c) there is evidence to show that a positive relation between desired family size and family income can only be found when non-economic influences such as religion operate. This gives rise to skepticism about the ability of the economic theory of demand alone to explain demographic behaviour.

Duesenberry has pointed out that there are limitations to the extent of substitutability between the quantity and quality variables. The quantity variable is limited by sociological factors (religion, tradition and so on), while child quality is linked to the parents living standards. B. Okun (1960) reinforces Duesenberry's objection and adds that both cost of children and quality of children can involve only limited choice-making as the former is market determined while the latter is dictated by the parents' own living standards.

Insofar as business cycles do reflect the posited (positive) relationship between income and fertility, Okun feels, the time period is too short for parents' views and standards regarding the quality of children to change significantly. The lag involved may account for the positive relation. In addition, business cycles affect the timing of arrival of children and not completed family size, this explains the posited relation between variations in incomes and birth rates over the cycle. In the long run one would expect the reverse - living standards and child quality standards adjust to a secular rise in income, precipitating in an increase in quality (reflected in a higher expenditure per child). However, quantity is reduced.

Blake (1968) has questioned the basic postulate of the economic theory of fertility, viz. the analogy of children with consumer durables. Her reason for this is that a major assumption of demand theory - that of the freedom to vary the item one consumes according to the equi-marginal principle⁴ is absurd to apply to children. Due to the irrevocability of the process of having children - a fact which is taken into consideration in the decision-making process concerning children - this process deviates substantially from one relating to consumer durables. Also, the acceptance of this

⁴ The equi-marginal principle states that the consumer will continue to consume a set of goods until the marginal utility per dollar spent on each good is equalized.

analogy will amount to ignoring non-economic considerations in having children.

Another criticism levied against the Becker framework is that the role of children as producers is not considered.⁵ Child costs are misapprehended, i.e., indirect or opportunity costs of parents time is not accounted for. In addition to this, Becker ignores factors which inflate direct costs for the rich. Poor parents lack in perspective and knowledge concerning what it takes to rear children effectively. This limitation is a consequence of poverty.

Finally Blake says that by overlooking the question of what generates utility in children, Becker is able to make the two assumptions necessary to his thesis, unjustifiably: (1) the non-existence of a family-size threshold below which even poor couples will not be willing to go, (2) the non-existence of any systematic social class differences in the relative utilities of children which limit family size desires of the rich.

Sociologists have stressed that social pressures imposed on the well-to-do inflate the expenditure per child faced by them, and consequently their price. Becker and other economists have disagreed. They claim that while some individuals or family units may relent to such pressure, average group behaviour will not be an outcome of it. Becker insists

5 See J. Blake (1968), p. 19.

the price of children for the rich are endogeneously determined in the family reflecting child quality, and in turn influencing the quantity of children desired.

In a later paper (G.S. Becker and H.G. Lewis 1973), Becker has changed his position and conceded that since the expenditure for each child is equal (determined by the standards set by the first child), if the rich choose an expensive first child, their subsequent children will also be equally expensive. Given this, internally determined prices (of children) are strongly related to, and influenced by the quantity of children. By allowing for this modification, the Becker argument resembles the argument advanced earlier by Leibenstein.

In spite of the objections raised about the Becker framework, Demeny (1965) maintains that the analytical power of this framework remains unshaken. This is true insofar as analysis of the demand curve for children is concerned. However, one cannot deny that it neglects biological, health and social considerations which affect the supply curve of children.

R.A. Easterlin (1975) has drawn attention to the fact that natural fertility and real world conditions may render demand analysis useless. He has therefore propounded a theory which tries to integrate both supply and demand considerations. This framework incorporates Becker's theory as well as the principal concepts of demographers and sociologists.

The chief dependent variable in his model is the total number of surviving children of a representative married couple.⁶ The variables which influence fertility are:

- (i) the demand for children, C_d , defined as the number of surviving children parents would want if fertility regulation were costless,
- (ii) the potential output of children, C_n , defined as the number of surviving children parents would have in the absence of fertility regulation,
- (iii) the costs of fertility regulation, including psychic and objective costs as well as the time and money required to learn about and use specific techniques of contraception.

Demand for children depends on the household balancing of subjective tastes for goods and children against externally determined constraints of price and income in such a way that satisfaction of the household is maximized. As tastes, prices and incomes vary, C_d varies. *Ceteris paribus*, the number of children will vary directly with household income and prices of other goods and indirectly with the strength of tastes for goods relative to children. The attitudinal forces stressed by sociologists operate through tastes or subjective preferences. Since parents are ultimately interested in the number of surviving children and not the number of births, fertility

⁶ By a representative married couple Easterlin (1975) means that both husband and wife live through the wife's reproductive span.

behaviour can be linked to demand for children through infant and child survival rates.

Potential output for children is the principal concept on the supply side. It depends on natural fertility and the probability of surviving to adulthood. Given natural fertility, an increase in the probability of survival to adulthood, will increase C_n . On similar lines, given the probability of surviving to adulthood, an increase in natural fertility will increase C_n . Natural fertility and hence C_n are likely to be below their maximum possible levels due to physiological and tradition-imposed constraints.⁷

Fertility regulation imposes two costs on the household:

- (a) psychic costs due to the displeasure from the use of contraceptives,
- (b) market costs in terms of the time and money spent in learning about and using contraceptives.

These depend on attitudes to fertility control, the techniques available, and the degree of access to them.

C_d and C_n together determine the extent of fertility regulation. When $C_d - C_n < 0$ there is an excess supply of

⁷ Natural fertility is determined by frequency of intercourse as affected by sexual desire and involuntary abstinence due to impotence or illness; fecundity as affected by involuntary causes; foetal mortality from involuntary causes - which are biological factors; and by social factors such as intercourse taboo while the mother nurses; physical separation due to seasonal migration for employment purposes, etc.

children, compared to the number desired. Under these circumstances, the couple will be strongly motivated to control fertility; whether they actually regulate it will depend on how they compare costs of regulating fertility against the motivation to do so. However, when $C_d - C_n > 0$, an excess demand for children will develop. So there will be no efforts on the part of the couple to regulate fertility, instead, they will be induced to increase their production of children or adopt children.

Easterlin does not support his theory directly with empirical data, but applies his framework to several events such as a secular decline in fertility resulting from a demographic transition. His framework is able to provide a more satisfactory interpretation of these events than Becker's.

The economic theory of fertility has been criticized on two grounds. Firstly it is claimed that, the fact that parents prefer fewer children than they can have or afford, and the existence of such excess fertility, implies that an economic interpretation is not relevant. Demeny (1965) has defended the economic interpretation of fertility by pointing out that the definition of 'preference for children' in the critics' terminology is ambiguous. Correctly defined, preference for any variable between alternatives should be with reference to specific values of other variables with which it is connected. For instance, preference for children over goods can be with reference to an income constraint and a

given set of relative prices of goods.

Secondly, the rationality assumption underlying the economic framework of fertility has been criticized on the grounds that observed behaviour is often impulsive or spontaneous, having regrettable consequences.⁸ This emanates from a misunderstanding of the word 'rationality'. Rationality does not imply that individuals act on the basis of full knowledge, certainty, deep foresight and carefully made decisions, but rather that full information, foresight and thoughtfulness is not a prerequisite for optimal behaviour. What economists mean by rational behaviour is just that individuals do not act against their best interests given uncertainty and restricted information at a cost. Choices can be influenced by changing incomes and relative prices, and furthermore, the direction of these changes can also be predicted. There is evidence to confirm that human fertility behaviour meets these criteria. In particular, Easterlin's theory suggests a number of 'inter-generational echo effects', by which is meant the relationship between events or experiences determined by one generation and their influence on the behaviour of the succeeding generation. This effect is especially significant with respect to the determination of taste differences over time.⁹

8 See Ben-Porath (1974), pp. 303ff.

9 See Leibenstein (1969), p. 54. In terms of inter-generational effects, children born in poor times will want more children if they enter childbearing ages in more opulent times, and vice versa.

Leibenstein (1969, p. 54ff) has proposed two further considerations that need to be taken into account. The first is the relative compression effect according to which, income ratios of broad occupational categories that reflect socio-economic status have a tendency to fall as development takes place. For example, an engineer in a developing country may earn twenty times as much as a labourer whereas in a developed country the difference falls to three or four times. This leads on to the second influence - that of status commitment goods - which may induce the group belonging to the higher status to incur higher expenditure on 'status goods' in order to maintain its position in the status hierarchy. This will tend to dampen the operation of the income effect.

The models discussed so far basically question whether the cost of children is large enough to outweigh the income effect as household incomes rise. However, they are limited in scope, to explaining fertility behaviour in developed countries. In the less developed countries, certain factors come into prominence which prevent these models from giving an insight into the family formation process prevalent there as they stand.

Fertility in the developing countries is found to be greater than that in the developed countries. What can be the possible cause for this? V.I. Koslov (1965, p. 156) says that biological factors alone do not sufficiently explain the higher fertility. The answer lies in socio-economic and

psychological factors - factors which affect the average age of entering conjugal relations, religion and social institutions, traditions and customs and so on.¹⁰ Two other factors influencing fertility in the less developed countries are the degree of urbanisation and that of education - both of which are purported to have a deflationary effect on fertility.¹¹

In rural societies, one major barrier to family size limitation has been found to be a positive economic value of children: "The thesis that a large family is an asset to peasants has been advanced rather forcefully." (E. Mueller 1976, p. 98.) However, the work done on this is not a systematic examination of the data and assumptions which have a bearing on the value of children in peasant agriculture.

Mueller has propounded the 'life cycle model' to study the economic value of children to peasant families. The model attempts to estimate production and consumption over the life span of a peasant couple as the couple would be likely to view its own future production and consumption streams. This is done in terms of the production and consumption profiles. The

10 Koslov (1965), p. 157ff, feels that these are an outcome of material factors, such as high mortality rates, which existed earlier. The current tradition of large families continues due to an inertia, even though mortality rates have fallen.

11 D.B. Holsinger and J.D. Kasarda (1976), p. 178, found that "sufficient evidence does exist to suggest that greater exposure to schooling will in the main ultimately result in declining fertility".

unit of account is the amount of consumption by an adult male per unit of time, called one consumption unit. A number of interesting results arose out of her analysis:

- (1) Given the economic role of women, as reflected in the available data, it is not irrational for parents to prefer sons to daughters, since economically sons are much more rewarding than daughters.
- (2) If the couple saves the surpluses generated in the early stages of the life cycle, parents would not require old age support either from children or from other sources.

Her conclusion on the question of value of children to peasant couples was that children have a negative economic value in peasant agriculture. Until they become parents themselves children consume more than they produce. Empirical data from developing countries seems to support this conclusion. The conclusion depends crucially on two assumptions:

- (a) The economic planning horizon of parents extends into their seventies.
- (b) Parents do not necessarily show a preference for current income or expenditure over that in the future.

W.C. Robinson and D.E. Horlacher (1971) have drawn attention to the fact that in less developed countries, costs per child are low, while benefits of large sized families, high. Furthermore, costs of information search for ways to prevent a further birth are also high. Therefore, even with

a large family size, net benefits of preventing a birth may be too small to justify much effort on the part of the couple to prevent a high parity birth. In a high income family, contrariwise, costs of children are high and rise with parity.¹² So benefits fall with parity, giving an equilibrium family size which is much lower than one permitted by biological possibilities. In the light of these observations, they try to provide an explanation of how a consumer reaches equilibrium, and how this equilibrium affects other phases.

This is done in terms of indifference curves and the production possibility frontier¹³ between consumption (or satisfaction) of children and of material goods. As income

12 See Robinson and Horlacher (1971), p. 26.

13 An indifference curve shows all combinations of children and material consumption which are just as good as all others. The underlying assumption is that one's total well-being arises from material goods and children, and that it is possible to compensate for the loss of welfare from one source by increasing the welfare flowing from the other. The production possibility frontier shows the different combinations of children and material goods it is possible to produce. Concavity of this curve reflects increasing costs of additional children. OD is the minimum amount of material consumption required to maintain the large family. Tangency of the indifference curve with the production

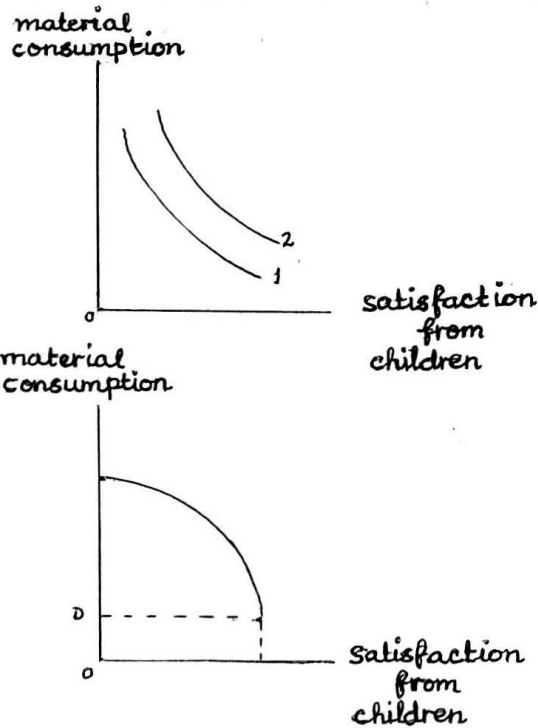
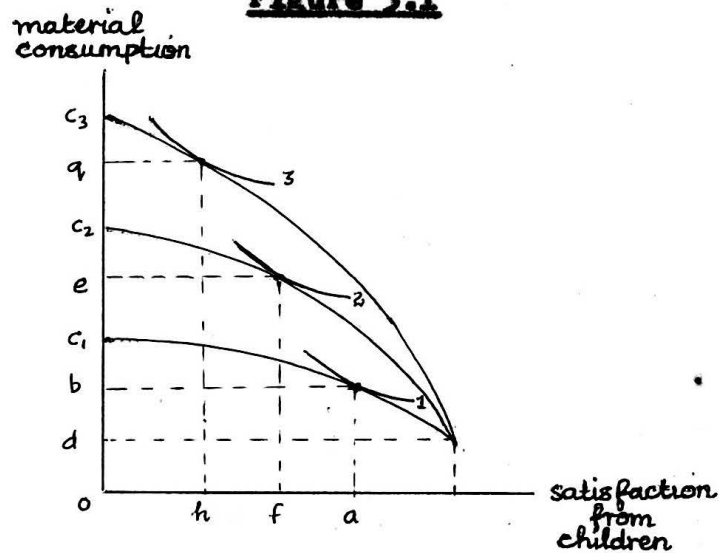
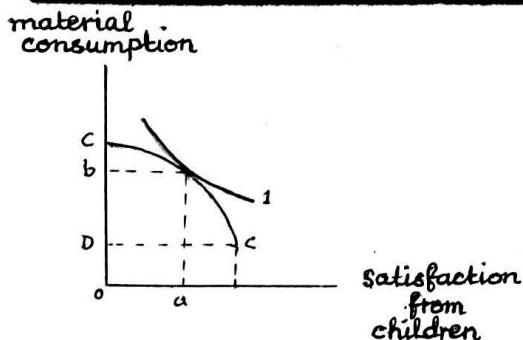


Figure 3.1

changes, the vertical intercept shifts up showing that larger amounts of material goods consumption are now possible for all family sizes. However the minimum required to maintain a large family size remains fixed. Given a set of indifference curves 1, 2 and 3, the optimal point will be progressively driven up and to the left, implying that the couple will opt for more material goods and fewer children (reflected in a reduction in satisfaction from children).

One can object to this analysis on the grounds that the assumptions which dictate the shape of the curves need not be justified. If, for instance, births upto a certain parity



possibility curve (see the figure below) shows the optimal combination of family size and the level of material consumption. For further details refer to Robinson and Horlacher (1971), pp. 25ff.

provide material benefits, then the production possibility curves will take on a humped shape. The shape of indifference curves will also vary as tastes change.

These models, like the other models discussed so far, have borrowed from economic theory the concept of utility cast in terms of consumer choice. In less developed countries the variety of consumer goods and services are very limited, and to a large extent, so is the capacity to purchase them. Therefore, the question of consumer preference does not arise. With a large section of the population living under conditions of stark poverty, it does not seem appropriate to view the family formation process in terms of consumer choice. Children are produced more out of necessity than choice, non-economic considerations of children become salient to the parents. Under these circumstances, one may well ask if it is appropriate to apply economic theory to fertility behaviour in the less developed countries.

Empirical Literature

After having surveyed some of the major theoretical contributions made toward increasing our understanding of the fertility behaviour of couples, we now turn to the empirical studies conducted in this area.

Empirical verification in this field has lagged behind theoretical formulations. It still remains in its infancy. Empirical work has been constrained on two fronts. Firstly,

it is subject to serious data limitations and unresolved econometric complexities. Secondly, the theory is bound by static economic assumptions and as Ben-Porath (1974, p. 310ff) states, "it is futile to ask for clean tests when everything else is held constant".

The ultimate goal of micro-economic theories of fertility is to explain variance in completed family size amongst couples. It has been traditionally done by analysing the impact of factors such as religion, race, income, education, and place of residence, on completed family size. However, later studies have shown that the explanatory power of these variables has fallen substantially to be replaced by factors that affect individual decisions directly, viz. preference for children versus other activities, time orientation of husband and wife, standards of childbearing behaviour, perceptions of resources available in terms of time and money available, perceived opportunity costs of children, perceived psychic and economic costs and benefits of contraception and so on.¹⁴ Studies undertaken by Henderson, Freedman, Coombs, Blake and May and Heer fall under the former category, while Mueller, Bulatao and Arnold, Nag et al and Arnold et al, have contributed to the latter.

In an early study, A. Henderson (1949) asks the questions:

¹⁴ See Turchi (1975), pp. 117ff.

- (1) What are the differences in expenditure distribution amongst families of different sizes?
- (2) What is the cost of an additional child to families belonging to different income levels?
- (3) What are the effects of changes between 1938 and 1948 on the position of families with children?

He examined expenditure on rent, clothing, education and medical care. He found that with an additional child, parents spent less on themselves in order to be able to spend more on their children. However, his data was inadequate and could not provide an accurate explanation to either point. In spite of this, the fact that he recognized the serious need to investigate the actual burden of maintenance of a family either to produce a population policy or to avoid poverty among families with children, is creditable.

D.S. Freedman (1963) looked at the relation of fertility to husband's income, wife's income and wife's labour-force participation. His sample comprised of fecund couples favourably disposed toward family planning, from U.S.A. The group was classified on the basis of length of marriage prior to the interview. Two measures of income were employed - the absolute dollar income and relative income (defined as the ratio of actual income and the income customary in the relevant socio-economic reference group). Relative income was used on

the assumption that child-rearing is related to one's socio-economic status. His findings showed that the relative strength of the income variables for the group married over ten years was greater and coincided more with expectations than was the case for couples married five to nine years. The implication was that permanent rather than current income was a more appropriate explanatory variable for fertility analysis.

R. Freedman and L. Coombs (1966) have taken 'expected' future income as a measure of permanent income to test the same hypothesis, viz. permanent income would be more closely related to current fertility than current income. Their contention was that at any time, a positive correlation between income and expected family size would be obscured by low-income couples behaving as if they had a higher (expected future) income. They concluded that while income alone may facilitate having more children as it increases, other variables associated with 'quality' also increase concurrently and act toward raising the price of children. A higher price has a negative effect on fertility.

In a study using American data, J. Blake (1967) attempted to see how small family size would get for the low-income couples on a voluntary basis. She found little variability in family size ideals amongst different socio-economic groups. Non-economic variables made family-size preferences unresponsive to income differences. The data did not support

either the Becker hypothesis or the hypothesis that the rich desire small families because direct and alternative costs of children are greater for the more prosperous. Data on ideal family size by religious affiliation and occupational status in relation to income suggested that a positive relation between income and family size could not be found unless some powerful 'pronatalist' non-economic influence was offsetting a class-oriented inflation of the cost of children. So she concluded that no major population group preferred a small family-size and any population policy would have to concern itself not merely with birth control instrumentalities, but with reproductive motivations as well.

D.A. May and D. M. Heer (1968) were concerned with factors affecting family size in India, in particular, the impact of the desire for son survivorship (for various religious, economic and socio-cultural reasons) on family size. They designed a computer simulation which determined for a range of theoretical model populations how many births an average family needed to assure son survivorship to a given level of confidence. Their findings were as follows:

(1) With the mortality levels that prevail in less developed countries, large families are required to ensure son survivorship.

(2) As death rates fall, son survivorship exerts a curvilinear influence on the intrinsic rate of population

increase. At high levels of death rates when life expectancy is less than thirty years, reductions in death rates raises the intrinsic rate of increase because most couples bear all the children possible to assure son survivorship; at low death rates with a life expectancy greater than fifty years, reductions in death rates decrease the intrinsic rate of population increase; at intermediate death rates, reductions in death rates have little effect.

This relationship has important implications for Indian population policy: (a) if every couple practises contraception efficaciously when son survivorship has been assured, the maximum reduction in the model intrinsic rate of increase is 24 per cent; (b) son-survivorship is only assured when the mother is 32.6 years. Given this, wives below 30 years cannot be persuaded to use contraception.

E. Mueller (1972c) examined data on Taiwan, which is undergoing demographic transition. She found that economic factors did not contribute significantly to a reduction in birth rate. The traditional view manifests itself in a low cost-sensitivity associated with a high perceived utility, and hence attaches a high value to children. High cost-sensitivity and a low perceived utility of children, accordingly, is a manifestation of the modern view which attaches a low value to children. She concluded that economic considerations do have a significant bearing on fertility decisions; as development proceeds, parents' views on fertility are

affected by rising educational levels and to smaller extent by rising income, exposure to mass media and availability of new consumer goods.

An attempt to study family formation under differing economic and demographic conditions was made by F. Lorimer (1965). He constructed models to simulate:

- (1) traditional agriculture, high fertility and high mortality
- (2) the same except moderate mortality
- (3) early industrialisation, high fertility, moderate mortality
- (4) the same except moderate fertility.

The variables with which he was concerned were the level and pattern of fertility, mortality, consumption needs, production potentials, the relation of nuclear family to other social structures and productive resources. His results showed that in a traditional agrarian society, the economic stress imposed on parents before children have achieved significant productivity is not very intense. But children are a worthwhile investment as providers of insurance against hazards of old age. A decline in mortality intensifies stress in family formation and insurance is increased unnecessarily at a greater premium. Early industrialisation increases economic strains in family formation because of the removal of production from home, decreased opportunity for juvenile production and increased schooling needs.

Intensified strains in the family economy, caused by reduced mortality and a transition to an industrialized society may lead to (1) greater chronic dependence on kinship obligations - studies have supported this, (2) public provision of health, education and social security - developing countries cannot afford these, (3) a reduction in economic strain by delaying age of marriage or using contraception. This analysis assumes that the marginal productivity does not diminish with additional children, given scarce material resources.

M. Nag (1972) has questioned the validity of this assumption. On the basis of which Lorimer's estimates of the economic value of children are dubious. Nag suggests an alternative methodology for making quantitative estimates of children's economic value to the household in absolute or relative terms. According to this, a time-schedule of children's activities is used as a measure of their economic value. Data thus assimilated can be converted into energy units to widen its applicability and usefulness.

R.A. Bulatao and F. Arnold (1972) investigated the values and disvalues of children of different parities in South Korea, Philippines and U.S.A. Their purpose was to ascertain if these values and disvalues affect family-size preference and, which specific values have an effect. They used cross-section data and found that children were rarely mentioned as beneficial for helping on the family farm or business, or even as a source of economic security for the

family. The first child provides very different types of satisfactions (companionship, fun, happiness, emotional security in old age and so on) than subsequent children. Cost of children at all parities had an effect on family-size preferences and behavioral intentions. The values included companionship for siblings, particularly at low parities, and, the desire to increase family size with a child of the appropriate sex stood out at higher parities.

In a study on Egyptian women, H. Badran (1975) investigated to verify if the decision to have a big family depended on the conscious evaluation of costs and benefits of children as perceived by parents. He found that in rural areas economic benefits were stressed whereas urban women emphasized 'joy'. Other benefits such as status symbol and large families being an indication of fertility and virility were common to both urban and rural women. Financial costs were perceived only by urban mothers. Non-economic costs were also perceived as a 'cost' only by middle-class urban mothers. Both urban and rural women saw high risks in contraception. On the basis of these observations he concluded that benefits of large families were greater for low-income, rural women whereas costs, both economic and non-economic were greater for urban women, this might explain the tendency of low income families to have large family sizes.

In addition to the studies mentioned so far, there have been other attempts to estimate the value of children

to parents, notably, a study undertaken in Java and Nepal by M. Nag et al (1977), and another cross-national study covering Hawaii (U.S.A.), Japan, Taiwan, South Korea. In the former study, they found that aside from the old-age security provided by them, children do have a net positive value to parents, contrary to what earlier evidence¹⁵ indicated.

In studies concerned with estimating values of children and their impact on fertility decision-making by parents, a number of problems of measurement arise,¹⁶ which are worth mentioning. These arise partly out of the nature of fertility decisions. Parenthood is a long term commitment. Parents need to make qualitative and quantitative forecasts on the impact of children long before the impact occurs. There are bound to be flaws in perceptions since it is the subjective assessment of parents which determines fertility behaviour, hence certain problems arise, notably:

(1) In the comparison of preference for children versus other activities, consumer preferences are assumed to be homogeneous. Such an assumption is unjustified in fertility analysis.

(2) Child-rearing involves expectation of a stream of future resource commitments and of future psychic rewards. Temporal proximity of each of these to the point of decision

15 See Mueller (1972c).

16 See Turchi (1975), pp. 118-120.

may play an important part in the decision. Even if couples are identical in other respects, their fertility decisions may vary due to differences in perceived discounted rewards and expenditures associated with child rearing.

(3) A good measure of income is crucial to study its effect on spacing and timing decisions made as well as decisions on completed family size.

(4) There is a need to measure costs appropriately. Perceived costs, which are relevant to fertility decisions, need not equal actual costs, as some studies take them to be. The reproduction process is a dynamic one. As children are born, preferences for them against other goods or activities change. Thus perceptions of opportunity costs are modified through the family building process. This calls for longitudinal studies. These surveys involve high costs and are subject to the risk that the interview procedure itself may modify behaviour of respondents. To overcome this problem, large samples must be selected. Finally, dynamic models, which provide a better explanation of fertility behaviour will require application of specialised techniques (such as logit analysis and simultaneous equations) which are new to fertility analysis.

CHAPTER IV

CONCLUSION

Macro-level studies on fertility have explored the relationship between population growth rate and the rate of growth of per capita as well as total income. They posit a negative relationship between these two sets of variables. This finding has important policy implications, in particular, for the less developed countries; they recommend population policies directed toward reducing fertility and hence the rate of growth of population.

The policies proposed are in the form of bonus-incentive schemes [Enke, 1960a and 1960b], or family planning programmes. The former provide pecuniary incentives to couples who abstain from having children; the latter disseminate information on the use of contraceptives, and supply the same to the masses at negligible costs, thereby attempting to reduce fertility.

Past economic and demographic trends evidently cannot be reconciled to the conclusions drawn from these studies. Historically, rapid population growth has not been associated with an attrition in the rate of growth of per capita income; the causal relationship seems to be in the reverse direction and problems linked with rapid population growth have

originated from 'institutional rigidities' [Ohlin (1976)] of various kinds such as marriage and religion. It has been suggested that economic growth is a process connected not so much with the rate of growth of population, as with technological process. Population trends reflected in demographic transition, are a response to the wider opportunities and requirements concomitant with the growth process [Ohlin (1976)]. In developed countries, the two have proceeded hand in hand. In developing countries, on the other hand, while death rates have fallen, institutional changes underlying the shift to small-family fertility patterns have not kept pace. Reasons for this are largely political.

What then, are the factors governing small family-size norms? It is clear that government policies alone are not enough to lower fertility. Fertility behaviour rests ultimately on the micro-decision making unit viz. the couple. The object of the micro-level research has been to study precisely this. The micro-approach has postulated and confirmed by empirical testing that fertility is responsive to changes in the socio-economic environment.

Several policy recommendations have emerged from these studies. They comprise of measures to provide alternatives to marriage and childbearing say, by improving the status of women, making access to divorce easier and so on, or by offers of social security, limiting maternal benefits, limiting housing and hospital benefits for large families. These

measures have not always succeeded. There are two points to be noted. Firstly, these measures can be afforded only by the high-income countries where the problem is not acute. In the developing countries such schemes are financially not feasible. Secondly, even if the finance can be managed, religious and traditional attitudes towards childbearing prevalent there, and the social norms to which men and women in these countries must conform, hinder these schemes from being implemented successfully. An additional question arises in the context of low-income countries. Poverty-stricken masses living there are just able to eke out a bare existence. For these masses, economic considerations, especially economic costs play a negligible role, while psychic satisfaction take precedence in their family building habits. Keeping these considerations in mind, an alternative set of policies have been recommended. They involve a direct manipulation of individual motivations by using persuasive propaganda to change attitudes on family-size norms.

Major weaknesses of both the macro- and micro-level studies have been highlighted in earlier chapters. Subject to these weaknesses and others dwelt on above, the conclusions drawn in these studies lack conviction.

Regarding the macro-formulations, there is little reason to believe that estimates of the true costs of fertility reduction, or costs of a birth prevention are accurate. On these grounds it is not appropriate to design population

policies based on these estimates. The predictive abilities of these models leave a lot to be desired. They are no doubt, commendable first attempts at linking population growth with economic growth, but in order to be more useful future models should include more variables and interrelations, and make fewer restrictive assumptions; in short, they should be more complex in order to be more realistic.

Micro-formulations reflected an ingenuous attempt to conform individual or family fertility behaviour to a micro-economic framework. Yet the theoretical and empirical work as it stands is far from satisfactory. Theoretical work has largely ignored the impact of social and psychological variables on the fertility behaviour of couples. Although recently some efforts have been made to include them [for example, Easterlein (1975)], further work is warranted in this direction. Another area which deserves attention is that of data consolidation. Due to a lack of adequate data, empirical testing has been unable to keep pace with theory. So, there is an urgent need to generate data in order to overcome this problem.

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