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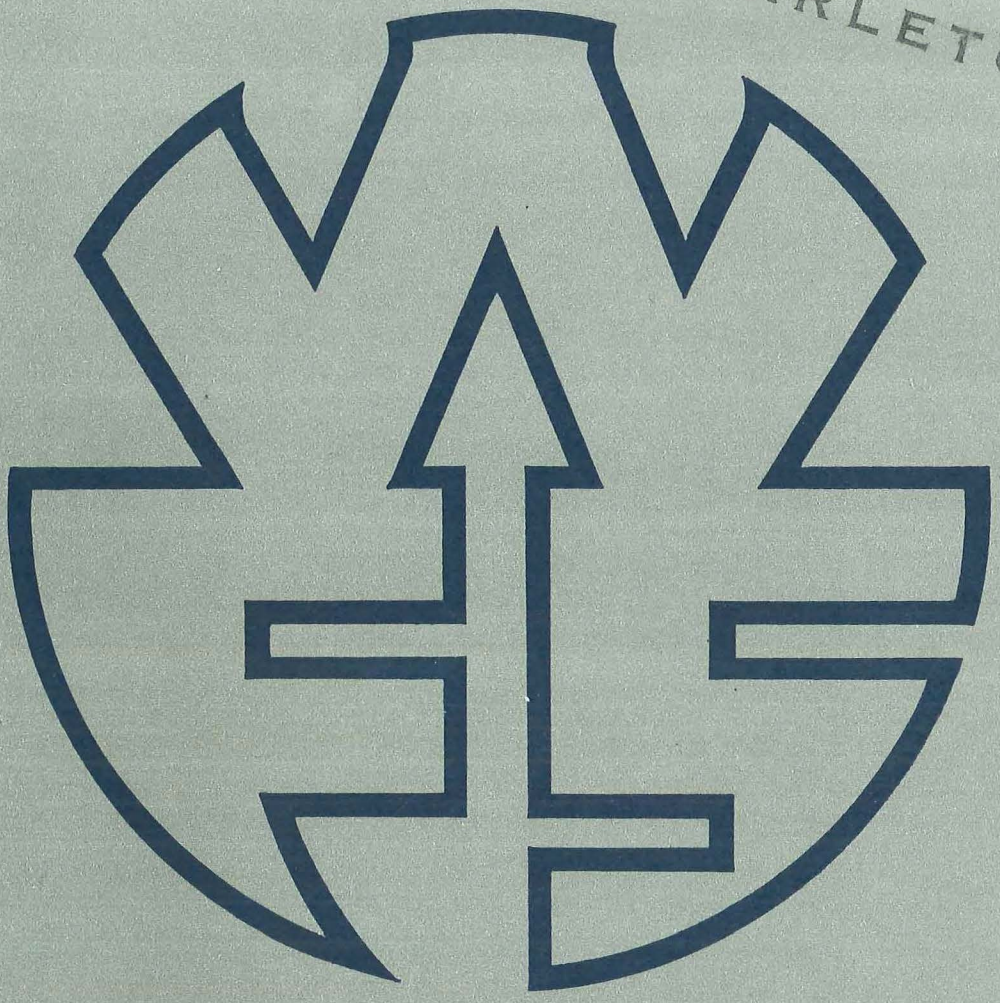

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Economic Data for Fertility Analysis

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The World Fertility Survey is an international research programme whose purpose is to assess the current state of human fertility throughout the world. This is being done principally through promoting and supporting nationally representative, internationally comparable, and scientifically designed and conducted sample surveys of fertility behaviour in as many countries as possible.

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PART I

INTRODUCTION

Fertility levels are a matter of considerable importance to governments, both in developed and less developed countries. The size and growth rate of the population are regarded by many policy makers as major determinants of the level of economic well-being. Most economists recognize the important effect which population growth rates have on the size of the labor force, the level of government welfare expenditures and the level of per capita income. Macro-models which are used for economic planning usually include population as an independent variable whose size is exogeneously determined. Mortality trends and international migration are believed to be relatively easy to project so the problematic population factor for economic policy is generally agreed to be the fertility component. However, the mechanism by which fertility affects economic growth and the magnitude of this effect are open questions, with little empirical data available. Some macro-models do incorporate assumptions about the effect of fertility differentials on economic behavior; for example, some studies specify that savings would be a negative function of family size. Such assumptions, though they may be logically defensible, are based on very little empirical data.

Not only do fertility rates have implications for economic growth, but conversely the process of economic development also has implications for fertility and population growth rates. There is considerable historical evidence that such linkages exist and, in fact, the customary explanation for the demographic transition assumes that economic growth was an important factor in lowering fertility. This issue is of contemporary importance in view of the current debate on whether a necessary precondition for a fall in fertility is the attainment of a certain level of economic development. Despite widespread recognition of this linkage, economic planning models have not incorporated the feedback which economic growth may have on fertility. Actually, it would be difficult to include these feedbacks in macro-models, since the nature of the linkages are not well defined and cannot be quantified with available data sources. Recent historical work based on necessarily limited data may identify some of the linkages between economic development and fertility declines for the period of the demographic transition in Europe, but little work is being done to collect data in a contemporary situation where the opportunities for detailed observations and measurements are available. Although aggregate economic models may incorporate alternative interrelations between

population and economic development, the decisions which determine these aggregates are made by individual couples, and any study of the linkages between economic development and fertility must consider the economic determinants and the consequences of the fertility behavior of these couples. Presumably their decisions about family size are influenced by economic considerations. Certainly their decisions about family size will affect their subsequent economic situation and hence will affect their economic behavior. There have been many micro-studies of the determinants of fertility behavior in less developed countries but most of them either make no attempt to consider economic variables or include only a few summary economic measures. If the importance of economic variables for fertility is to be studied, data must be collected which are designed to answer the relevant questions.

Sample surveys can be used to collect the needed micro-economic data. This monograph discusses both the needed economic variables and the methodological problems involved in their collection.

Micro-data which improves our understanding both of how economic considerations influence fertility behavior and the extent to which attained family size has economic repercussions on parents could serve many purposes.

(1) In the first place, economic planners would have a sounder empirical basis on which to incorporate population variables into development models, including some recognition of possible feedbacks. Many of the assumptions in macro-models are based on assumed behavioral relationships between fertility and economic variables at the micro-level, yet not enough data are available to test these assumptions.

(2) Micro-economic data should make an important contribution to our understanding of fertility. In view of the amount of effort being expended on studies of fertility, more than cursory attention should be given to economic determinants.

(3) A considerable effort is being made by many governments to influence the fertility behavior of their citizenry. Some of these efforts involve direct action programs, including in some cases economic incentives to encourage (or discourage) large families. In addition, other government programs such as tax policies, the development of educational facilities or the promotion of work opportunities for women, frequently have significant spillover effects on fertility behavior. Research on the relevance of economic variables to fertility might improve the efficiency of explicit population programs and would more clearly reveal the implications of other government programs for population growth.

(4) We know very little about the effects of fertility on a couple's economic behavior or even on their economic situation. Most economists would agree that in developed countries children are an economic burden rather than an asset to their parents, but there is less agreement about the situation in less developed countries. Certainly we know that many, but not all, parents in less developed countries regard their children as a source of economic benefits. The extent to which parents actually receive support

from their children and, even more important, how much the marginal child contributes to their welfare requires more data than are currently available. If studies in some developing countries were to show tangible evidence of economic benefits to individual families from reduced fertility, these findings might be used to publicize the advantages of small families. Conversely, if in other countries children were shown to confer on balance more benefits than costs, government policies could be designed to provide these benefits in alternative forms (such as public old age support).

MACRO-STUDIES OF THE RELATIONSHIP OF FERTILITY TO DEVELOPMENT

The major interest of economists has been in the effect which population growth rates would have on economic development at the macro-level, particularly with reference to less developed countries. It is true that there has been considerable interest in the past few years in the possible negative impact of both population and economic growth on the environment in industrialized countries, while as far back as the 30's, Hansen speculated on the possibility of economic stagnation if population ceased to grow. Still, for the most part, economists have been concerned with assessing the direction and magnitude of the effect of the current high rates of population increase in the less developed countries on their economic development.

As governments of less developed countries have accepted the need for economic planning to raise living standards, they have utilized econometric models to predict the outcome of alternative programmes. The rate of population growth has been incorporated in many such macro-models, because it was presumed to affect economic growth.

A classic study is that by Coale and Hoover[1] for India. Coale and Hoover constructed an econometric model of the Indian economy to measure the effect on the growth rate of the economy of different projected patterns of population growth, based on expected decreases in mortality and using alternative assumptions about the course of fertility. At any assumed mortality level, higher birth rates would result in a larger total population, higher rates of population growth and an age structure with a higher proportion of children. Although high birth rates might eventually increase the labor force, their main effect for about 15 years would be to increase the number of children with little change in the working force. The results of this model show higher fertility to be associated with considerably lower rates of economic growth. Since the Coale and Hoover work, other general macro-models involving demographic elements have been developed by Demeny,[2] Enke,[3] Lloyd[4] and others. Most such macro-models show that the current high rates of population growth in less developed countries are a deterrent to economic development, primarily for the following reasons:[5]

1. There is a direct effect on income per capita. As fertility declines, the size of the labour force is unchanged in the short run, but the dependency ratio becomes more favourable. Thus, the same total output could be distributed among fewer persons than in the absence of a fertility decline.

2. The resulting higher income per capita makes possible greater savings per family, allowing increased investment.
3. The slower the rate of population growth, the greater the potential increase in the capital-labour ratio, thus increasing labour productivity.
4. The slower rate of population growth requires less government expenditures on welfare to provide the same level of services, and may permit a shift to more directly productive investments by government. Alternatively, it permits greater welfare expenditure per capita, thus increasing the quality of the labour force.
5. Lower fertility permits greater labour force participation by women.
6. The gains in income per capita may increase labour productivity via better health, nutrition,[6] and education.[7] Also the lower child-mother ratio would result in better maternal care[8] and hence more productive children.
7. Employment problems may be eased by the greater accumulation of capital and later by the lesser growth rate of the labour force.

Though most economists agree that lower rates of population growth would have beneficial effects on development, there are some who disagree, or who feel that some of these effects, if present, would not be quantitatively important. For example, some economists believe that increases in population density may stimulate technological progress (Boserup).[9] Some claim that high dependency ratios stimulate individuals to greater work effort and claim a similar positive effect for government efforts (Hirschman,[10] Clark).[11] Some other see the benefits of economies of scale and increasing specialization as by-products of population growth. At the same time, many question whether greater saving and investment would be forthcoming on the part of individuals if dependency ratios were lowered.[12, 13] Demeny[14] counters some of these arguments, pointing out that population growth rates in the LDC in the foreseeable future invariably will be high, so dependency ratios will remain high enough to motivate workers, even if fertility is reduced to some degree.

Despite some dissenters among economists, government policy makers in most less developed countries regard their current high rates of population growth as detrimental to their economic goals and have instituted policies to lower population growth. Since opportunities for inter-country migration are limited and lower mortality is desired, such population policies have concentrated on programs to lower fertility. Inasmuch as these programs entail substantial costs, economists have attempted to measure whether the economic gains justify the costs. Two main approaches have been used to assess the economic worth of these programs. One approach has been to use macro-models to estimate the gains to the economy in the future from lower population growth under varying assumptions about the size of the relevant parameters, with the economic gains being considered an indication of the justifiable cost of a programme of fertility control. (Demeny,[15] Enke[16])

Another approach, cost benefit analysis, more directly estimates the net economic value of preventing a birth. This involves: estimating the life-time stream of consumption and pro-

duction attributable to a marginal birth, discounting both streams of returns to the present, and differencing the present value of the costs and benefits to get a net return. This net benefit can then be compared to the costs required to prevent the birth. Examples of such models are those used by Enke,[17] Demeny,[18] Zaiden,[19] and Simmons.[20]
Leibenstein[21] and others[22] have suggested several problems in using cost-benefit analysis to estimate the net gains of preventing a birth:

1. Cost benefit analysis assumes that any child who consumes more than he produces is a net loss to society. But, most of the assumed costs are borne by the family and not by society, and the decision to have the child may reflect a positive assessment of the child's contribution to family welfare. The analysis could be broadened to include social costs and benefits, but these are not easy to formulate or estimate.
2. Cost benefit analysis assumes a homogeneous population with given costs and benefits for each prevented birth. However, there could well be a distributional problem, with couples who practice contraception being concentrated among those whose children were most likely to be productive. One should know the joint distributions rather than the means of the costs and benefits of a family planning program to estimate the total costs and benefits.
3. The discounting procedure biases the results in that the contribution to production, being more distant than the consumption costs, is more heavily discounted. Although some discounting procedure is necessary to reflect opportunity costs, the appropriate discount rate is debatable.

NEED FOR MICRO-DATA

Macro-studies have focused on the aggregate economic benefits to be obtained through limited population growth. However, there are important questions about the interrelationship of demographic behavior and economic change which do not lend themselves to a macro-approach or which have not been addressed to a sufficient extent. Micro-level data are needed to tackle some of the following problems:
1 The inference from macro-models is that population growth would influence rates and patterns of economic growth, but such models, up to now, have been based on untested assumptions about individual behavior and to some extent on assumed parameters. For example, little empirical evidence is available on the crucial relationships of family size to saving, consumption or work effort. The collection and analysis of such micro-data should provide a sounder empirical basis for the assumptions which economic planners make when incorporating population variables into development models.
2 Micro-economic data could be used to good advantage by governments in guiding population programs. Most macro-models, in projecting the results of alternative assumptions about fertility, simply assume the feasibility of preventing births, if government programs are able to bear the costs. The experience of population programs suggests that their success

cannot be guaranteed by a high level of expenditure. How to spend the money and what are the pre-conditions for program success or failure are still open questions. In view of the importance of economic incentives for human behavior and the transformation of tastes which accompanies economic development, some attempt should be made to include research on the economic determinants of fertility. Certainly, in countries where consideration is being given to the use of economic incentives to induce couples to limit their fertility, it would seem necessary to first know the extent to which children are viewed as economic assets or burdens and what would be required to compensate parents for the economic gains or losses associated with children. Such data would also be useful in those developed countries where birth rates are considered undesirably low by government officials.

3 Most macro-studies conclude that lower rates of population growth would facilitate economic development because the aggregate social benefits from lowered fertility exceed the total social costs. But the net private cost of children to parents may be quite different from the net social cost. Actually, the parents' perceptions of the costs and benefits of children may be even more important than the actual magnitudes involved, since the actual costs and benefits can not be known in advance. To understand the determinants of fertility we need data on the actual and perceived economic costs and benefits associated with varying family size. Many diverse government policies may be influencing these costs and benefits. For example, tax burdens frequently vary in relation to family size. Government education programs, child labor laws, or social security programs will affect the economic usefulness of children to their parents. Rarely are the implications of such programs for population growth considered, in part because we lack data about the ways in which costs and benefits of children affect parents.

4 Macro-economic studies have looked at population as an input which affects economic development and rarely have dealt with the effect which economic development might have on fertility and so on population growth rates. Sociologists who have studied the causes of the demographic transition in Western Europe have considered the economic growth brought by the industrial revolution as one of the important determinants of the subsequent fertility decline, although recent research in historical demography finds significant exceptions to this simple relationship.[23] Unusual opportunities exist currently in countries beginning the process of economic modernization and growth for continuing studies of the role of specific economic changes in bringing about decreases in fertility. Such studies have more than academic interest since there is considerable debate as to whether programs designed to decrease fertility can succeed before a certain level of social and economic development has been achieved. Kingsley Davis[24] asserts that development is a basic pre-condition for a fall in fertility. This broad question is important but economic and social development has many facets, which may affect fertility in diverse ways. Micro-data are needed to obtain much more specific information about the many possible linkages between economic development and fertility.

THE DESIGN OF ECONOMIC-FERTILITY MICRO-STUDIES

The objective of this monograph is to provide guidance to researchers who want to collect data to study the relationship of fertility to economic behavior. Some countries participating in the WFS may wish to collect additional economic data, either by an addition to the basic questionnaire or through an additional survey. The variables needed for such a study will be specified, together with some theoretical discussion of how economists view their possible relation to fertility behavior. The methodological problems involved in collecting survey data for each economic variable will be discussed and illustrative sets of survey questions will be presented.

The same conceptual framework of how economic factors are related to fertility can serve for both developed and less developed countries. In both it can be assumed that the couples are economically rational and that their goal is to maximize the total satisfactions they receive from all goods and services, including children, within the constraints imposed by their level of income, prevailing prices, and existing tastes or preferences. The satisfactions they receive from children would include all the benefits, both psychological and other, which a couple receives or expects to receive from the child. The full price or cost of the children would include both the resources used for their support and the time which parents devote to child care. Within the constraint of family income, couples choose the bundle of goods, including children, which provides the maximum satisfaction (or benefits) in view of their relative costs. Assumed is a certain pattern of tastes, which underlies the relative satisfactions couples derive from the consumption of different "commodities".

Of course, there must be important differences in emphasis as between developed and less developed countries and there also are considerable differences in the complexity of the data which can be collected. The discussion of data collection problems will focus on less developed countries, where collecting economic data is likely to be difficult. The illustrative question sets are organized so as to present alternative sets which measure the variables at progressive levels of complexity. In each case an attempt will be made to design a simple module which could be used by a less developed country which is primarily rural and has a fairly low level of educational attainment.

PART II

ECONOMIC VARIABLES NEEDED FOR ANALYZING FERTILITY DECISIONS

Relatively little economic information has been collected in the large number of fertility surveys which have been done in either developed or developing countries. Even when these surveys involve fairly long interviews of the KAP variety (Knowledge, Attitudes and Practice of contraception, fertility histories in detail, etc.) so many questions are required to accurately measure the dependent variables that only limited data can be obtained on other background and behavioural correlates, especially the economic ones. In part this may reflect the difficulties of collecting economic information on a survey which designates the wife as the respondent. Although the wife is the best respondent for a fertility or contraceptive history, she usually can provide less accurate information than her husband about economic matters. Even when the husband is interviewed, it is difficult to collect accurate information about such variables as income, assets, or saving without a considerable body of questions. In view of all these problems and compelling pressures for other non-economic questions, it is not surprising that fertility surveys, which are usually done by non-economists, rarely include economic variables. To collect the comprehensive economic data needed for an in-depth analysis of the relationship of economic variables to fertility, a study specifically designed for that purpose would be needed. For such a study the husband probably would be the most suitable respondent.

There undoubtedly are problems in obtaining economic data in connection with the conventional KAP survey, both because of the number of additional questions required and because of some special problems in collecting economic data, particularly in LDC. However, similar doubts were expressed about the feasibility of KAP studies when they first were attempted. Actually, KAP studies often have included questions on occupation, labour force status, consumption of modern objects and even some summary questions on income. In addition, a few surveys have collected substantial bodies of economic data along with fertility data in both developed and less developed countries, e.g., the Economic Correlates of Fertility Study in Taiwan,[25] a recently completed survey in India,[26] two studies in the United States,[27, 28] and one such survey currently underway in Guatemala.[29] Such studies have been pilot efforts and more experience is needed both with surveys in differing situations and with alternative survey designs.

Although the core WFS questionnaire cannot be expanded to include much economic data, some economic questions already are included. In addition, some participating countries may

want to add additional economic questions to this basic survey. Other countries may want to utilize a separate questionnaire to obtain more extensive economic data in a separate interview with a subsample of the husbands, either at the same time as the wife is interviewed, or at a later time as part of a longitudinal study.

Before suggesting specific survey questions to obtain the desired economic data, the kinds of relationships that have been hypothesized between economic factors and reproductive behaviour will be discussed in order to specify which economic variables are needed. The chain of causation linking fertility and economic variables undoubtedly runs in both directions. Certainly, the number of children a couple has will have an impact on their economic welfare; that is, there are economic consequences associated with variations in fertility. We will concentrate, however, on looking at the ways in which economic factors may be determinants of fertility.

ECONOMIC FACTORS AS DETERMINANTS OF FERTILITY

Many economists have hypothesized that they would expect to find a positive relationship between income and family size. Becker[30] first suggested that economic demand theory might be utilized to explain the income-fertility relationship. Income serves as a constraint to families as they purchase the goods and services which maximize their total satisfaction. Children, he contends, could be considered as one particular kind of consumer durable which families purchase for the satisfactions they provide. If incomes rise, lessening the constraint on consumption, couples should increase their consumption of all kinds of goods, including having more children.

The fact that cross-section studies usually found a negative relationship between income level and family size was attributed to differential exposure to contraceptive knowledge by income level. The expectation was that the relationship would become positive when contraceptive information became more widely disseminated. In fact, recent cross-section studies in developed countries, where contraception is now widely practiced show no consistent relationship pattern between income and family size. At the same time, secular increases in national income have been associated with decreases in fertility, although recent decades have shown departures from this pattern in a number of countries.

The validity of Becker's classification of children as consumer goods has been challenged, since children certainly have properties which set them apart from most consumer goods (Blake).[31] It is conceptually reasonable, however, that if children provide utility, a lessening of the income constraint should encourage larger families. A more serious objection[32] concerned Becker's assumption that the cost of children was unrelated to family income since it was contended that increases in income would increase the cost (price) of children and so act as an offsetting negative influence on additional births. Thus the net relation of income to fertility might become positive when an adjustment is made for differences in the cost of children, even though the gross relationship is zero or even negative. Most economists now probably would distinguish between the demand for additional numbers of children and

higher quality (in terms of cost) of children. Easterlin[33] asserts that differences in total expenditures on children stem not from differences in the costs of children but from differences in the tastes of parents. The essential variables affecting the demand for children may be broadly defined as including income, costs, and tastes. Tastes for children are a relative matter, involving preferences as between children and other goods. An economic analysis of the demand for children would need measures of income, of the costs of children, of the satisfaction or benefits derived from children, and of tastes for competing goods.

VARIABLES FOR MEASURING INCOME

Some measure of income level is obviously necessary for an analysis of the relationship of economic factors and fertility. Aside from the practical difficulties in obtaining accurate income data, there are some conceptual difficulties as to which measure of income is most relevant for fertility decisions.

The income measure obtained usually is *current income* for the period immediately preceding the interview, usually a year. This may not be the most relevant income measure for past decisions about family size. The couple's income at the time the fertility decision was made might be more relevant. Whichever income period is chosen, the measure should not be unduly affected by temporary windfalls or losses. A more relevant income measure might be "*permanent income*" – the couple's expectations of income over their life-time, since the costs of children are spread over a considerable period. Obviously, a couple could not be sure of their future prospects, but their decisions are probably guided by their best judgments. Easterlin[34] and others[35] also would include an assessment of the wife's earning capacity as a part of permanent (or potential) income.

Some economists have suggested[36] that an even more relevant income measure might be "*relative income*" which compares the financial situation of a couple with other couples who fall in similar groups with respect to age, occupation and education. If, as suggested, standards for child care are determined by this reference group, then the adequacy of actual income for achieving these standards may determine the number of children a couple feels they can properly support.

The source of income, whether it is earned by the husband, the wife, or obtained from other sources, may influence its relation to fertility. If all child care is performed by the wife, then an increase in wife's wage rates could have two offsetting effects on fertility: (1) a positive income effect, since lessening the income constraint should increase fertility; and (2) a negative substitution effect, since it increases the opportunity cost of the time she devotes to children.[37]

An increase in the husband's income should be positively related to fertility, since he does not care for the children. Despite some recent trends in Western countries towards more participation by husbands in child care, the main burden of time spent with children is borne by the wife and this is certainly true in less developed countries. An assessment of wife's opportunity cost, together with the income and substitution effects of earnings on fertility,

requires data on wife's income separate from all other sources of income.
Data on selected asset holdings could be used as a proxy measure for income or could serve as a check on the validity of income reporting. It is easier to obtain information on some assets than on income, so in situations where it is considered impossible to obtain reasonable income data, a few questions about land holdings, ownership of farm equipment or consumer durables and the interviewer's assessment of the quality of housing could serve to rank the respondents by economic status. When income data are obtained, they may be incomplete, particularly in LDC, because some respondents will be unable to estimate their net income and others unwilling to disclose it. In these situations, asset data can be used to check on the reliability of income reporting.
The complete list of relevant income variables is too elaborate for many countries and a short module of income questions suitable for a less developed country is presented in Occasional Paper No. 12. Some experimentation with the full range of economic variables in countries with varying development levels would be useful since our experience in collecting and using economic data for analyzing fertility is too limited to judge either which variables will be most useful or how best to obtain them in surveys.

1. *Current Income*
   To collect these data, a considerable sequence of questions should be used to maximize the validity of the reporting.
2. *Husband's income, wife's income and income from sources other than current employment*
   Family income should be disaggregated so as to obtain separate figures for income from major sources.
3. *Permanent Income*
   Three aspects of permanent income are important:
   a) whether current family income is "normal" or atypical
   b) the direction of past changes in income (say, in the past five years)
   c) long run income expectations.
4. *Relative Income*
   One approach is to assess the extent to which the couple's income is above or below what might be expected given the husband's age, location, occupation, and education. Since this requires comparing individual incomes to expected incomes for a reference group, such parameters must be obtainable either from the sample or from external data. One possible alternative is to obtain a subjective measure, asking respondents if they feel their incomes are as high or lower than those enjoyed by families like themselves.
5. *The Importance of the Income Constraint*
   This is harder to measure and therefore has less priority, but some experimentation might be done with evaluating whether the income constraint is perceived by the respondent as affecting the couple's fertility decisions.
6. *Holdings of Selected Assets:* Such data might include ownership of modern consumer

durables, the size and quality of housing, land holdings, stocks of farm equipment, kinds of farm buildings, business assets and whether or not the respondent owned major kinds of financial assets.

7. A number of other income measures could be useful, for example income in the years when fertility decisions were made. However, retrospective data on previous family income tend to be very unreliable and probably require longitudinal surveys.

ECONOMIC BENEFITS AND COSTS OF CHILDREN

Couples have children for many reasons, but they can all be summarized in one economic concept – children provide utility (satisfactions or benefits) to their parents. At the same time, there are costs associated with having children. The costs imply foregoing the utilities of other desired goods, and these must be balanced against the positive utilities derived from children. Presumably, a couple's reproductive decisions are guided by the costs and benefits they associate with children as compared to those associated with other uses of their income, given a set of relative prices.

In developed countries children rarely are a net economic asset over the whole parental life cycle; the costs they entail usually exceed the economic benefits they bring their parents. In LDC the evidence is less conclusive[38] but the assumption usually made is that children can be a source of net benefit to their parents and that as development proceeds they become more expensive and less useful economically.

Benefits of Children: The benefits parents derive from children can be divided into two main categories – non-economic or psychological benefits and economic benefits, though these cannot always be separated. Support given elderly parents by their children is obviously an economic benefit but the associated sense of security it gives to the parents is a non-economic benefit. Although non-economic benefits are important, this paper will not discuss such measures but will restrict itself to economic benefits. (A current research programme, at the East West Center is experimenting with measures of the psychological benefits derived from children.)[39] There are various ways in which children could provide economic benefits to their parents, depending on the social and economic environment.

1. Children can be a source of unpaid labour in the house (doing housework, minding smaller children), on the farm (chores or work in the fields), or in a family business. Obviously, the amount of such help depends on the time available to the child (a function of schooling level), the child's age and sex, and whether his work represents an effective contribution.
2. Children, while growing up or later, also can help by working for wages and giving them to their parents. Whether this in fact happens depends both on the availability of employment for children and their willingness to contribute their earnings to the family.
3. Grown children may work on the family farm or business or may take it over for their

parents. This benefit may depend on the absorptive capacity of the family enterprise relative to the number of employable children.

4. Children can provide security for parents in their old age, both by taking them into their home or giving them financial assistance.
5. Older children may contribute toward the support or schooling of younger siblings.
6. In many countries, government benefits (family allowances, school aid, ADC) are available for families with children.

Obviously, the socio-economic conditions in a country will affect both the kinds of economic assistance parents receive from their children and their need for such assistance. Since many of these benefits are received by parents only at later stages of the family life cycle after the children are capable of productive work, a couple's fertility decisions may be based more on their expectations of future benefits than on achieved benefits. In addition, economic and social change may create uncertainties among parents as to whether children will be as willing in the future as in the past to help their parents.

Costs of Children: Children also involve costs, and though there are frequently non-economic or psychological costs in rearing children, this discussion is limited to economic costs. First, there are the obvious direct costs, the costs of bearing a child and the actual outlay of resources to provide for the child. There are many difficulties in estimating the level of the direct costs of children for a particular couple.[40] In the first place, since children are cared for in a family situation, it is difficult to separate out some of the additional costs attributable to children, for example, the extra fuel needed to cook a larger quantity of food. It is probably even more difficult to estimate the marginal cost of an additional child, since there are undoubtedly some economies of scale in providing for children. Some costs, such as those incurred through school attendance (for books, uniforms, and fees) are clearly identifiable, at least to parents who have experienced them, and should be obtained. Measuring the perceived burden facing parents who wish to provide higher levels of schooling is discussed later under educational aspirations. Secondly, the costs of children can not be estimated simply by pricing a given bundle of material inputs, since there is a large discretional element in what are considered essential child costs. The operational level of child costs for a couple includes all the resource inputs they deem necessary for proper child care and will vary widely, even between families in the same country. Finally, since the cost of children is spread over a considerable time period and becomes larger as the child gets older, a couple's fertility decision probably reflects their view of the future financial burden more than present levels of child costs. For many couples, the full costs of education which are likely to constitute a heavy burden, will only be known in the future. The parents' perception of the cost of children also may depend on whether they expect substantial government subsidies for some of these costs, such as education grants.

Caring for children is not limited to providing material goods. One important cost of rearing children is the tremendous input of time they entail, usually on the part of the mother. The

magnitude of the opportunity cost of child care depends on the employment opportunities and remuneration available to the wife, on the extent to which raising children can be combined with market work, and on the attractiveness of market work compared with other alternative time uses. In many LDC women may be able to work and still provide good care for young children. The prevalence of extended families may mean that the burden of child care can be borne by relatives or it may be customary for older siblings to perform this function. In many situations mothers who work, for example as agricultural laborers, may be able to take their children along with them while they work. In Western countries, on the other hand, mothers rarely can combine care of young children with market work, and alternative child care facilities are usually limited and expensive.

If market work can not be combined with child care, then one measure of the opportunity cost of children would be the mother's potential income loss, as determined by education, previous employment history and skill levels. This assumes that the opportunity cost of child care is measured only by earnings foregone, but there may be non-monetary satisfactions or costs associated with market work for mothers. Societal norms in many LDC may make it difficult for mothers to work outside the home. Conversely, in developed countries, wives may receive satisfaction from the social contacts and personal status which may result from paid employment.

The discussion here has centered on measuring the opportunity cost of market work. In this paper market work is defined as work for pay or profit. Another kind of work more typically performed by women in LDC involves working as an unpaid helper on the family farm or in the family business. A third category of women's work is care of the home and children. Market work has been emphasized rather than work in family enterprises because presumably it is more related to fertility behavior, being more modernizing and less compatible with child care. However, child care may also entail opportunity costs for women who work in family enterprises and the collection of data on unpaid family work will facilitate research on this relationship. Child care also competes with uses of time other than market work or work in a family enterprise. Alternative uses of the wife's time are leisure or performing household tasks other than child care, which yield satisfaction to herself and her husband. Neither trades in the market and thus they are difficult to value, but some economists are trying to incorporate work on household tasks into a model of family decision making in fertility matters.[41]

How important these costs will appear to a couple depends on the level of child costs they see as essential and on the strength of their preferences for competing goods – both the importance they place on goods which they must forego to support children and the wife's preferences for spending time in market or unpaid family work instead of in childrearing. We leave till later an evaluation of tastes for competing goods.

In theory, the costs of a marginal child could be estimated from consumer expenditure surveys by comparing consumption outlays by families in the same economic circumstances, but with varying numbers of children. Similarly, time budget studies could reveal time allo-

cations of women in similar circumstances except for the number of children they are raising. Aside from the fact that in most countries data suitable for such analyses are not available, one may question whether actual costs as revealed by complex statistical analysis correspond to costs as perceived by parents. And, of course, actual costs can only be measured currently; they may change considerably while the children are growing up and the economy develops. Still parents undoubtedly have some notions about whether the costs will be a small or great burden and in what respects they may count on help from their children. These general ideas could influence fertility and should be measured.[42]

Finally, one cost which should be considered in any economic analysis of reproductive behavior is that associated with preventing births – the costs of contraceptive use. One cannot effectively analyze the demand for children without recognizing that children are the by-product of the enjoyment of other utilities. As Easterlin writes, "without reference to sexual intercourse, one is hard put to explain why households would engage in the production of children once the number demanded is reached, and consequently why excess fertility would ever occur.[43] Willis's micro-model of the demand for children assumed "the couple to have perfect and costless control over their fertility",[44] though his more recent work attempts to integrate the cost of contraceptive use into the model.[45] Relevant economic costs include both the price of contraceptive devices and the cost of the time it takes to be informed and to obtain them. The latter might be particularly important in LDC which have imperfect distribution of contraceptive materials and services.

To measure the costs and benefits of children, variables like the following would be needed:

Benefits

a. Work children perform or are expected to perform in the family home or enterprise
b. Financial contributions to household before parents are old
c. Possibility of taking over the family business or farm
d. Support for old age
e. Parental certainty of such benefits

Costs

a. Direct costs: basic needs and other expenses
b. Perceived or expected costs of children
c. Opportunity costs of the mother's time (including availability of care by others; compatibility of child care and economic work)
d. Costs of contraceptive use

The complete list of variables may be too extensive for use in many fertility surveys. A short module on the costs and benefits of children designed specifically for use in LDC is presented in Occasional Paper No. 12.

PREFERENCES FOR ALTERNATIVE USES OF INCOME

Children are a net cost to their parents for many years after their birth, decreasing the income available for other purposes. Thus the strength of preferences for competing goods and services may influence family size. Some possible alternative uses of income would be: more consumption goods and services, greater savings for emergencies and old age, and investment in a business or farm.

Limiting family size should make possible greater per capita consumption. The additional consumption could take the form of increases in consumption goods already part of the standard of living, e.g., traditional food and clothing. Such marginal changes are almost impossible to measure in a one-time survey and seem less likely to influence family behavior than the desire for the new modern goods and services which emerges as these items become available. Some studies in LDC have found that couples who own or wish to own new modern objects are more likely than others to practice contraception.[46]

For LDC it is desirable to measure the relative strength of preferences for these new goods. One measure of preference strength is an objective one – the level of ownership of such new goods as compared to other families at the same income levels. Two relevant consumption measures, ownership of consumer durables and housing quality, are treated in the income section under asset holdings. A measure of consumption of modern recreational services, such as attending movies, may be relevant for many countries. Such tastes can be competitive with children, both with respect to time and money.

One other possible measure of preferences for consumption goods and services is stated desires for additional modern consumption goods, including plans for future purchases. Possible question sets for measuring aspirations will be presented.

As income levels rise with economic development, the aspirations of parents for their children's future also rise, and more education is seen as a promising avenue for advancement. For aspiring parents, having a few well-educated children may be an alternative to having a large number of less-educated children. In more developed countries, such child-related costs as summer camp and private lessons might be included. Studies in Taiwan[47] and the United States[48] have shown that fertility variables are related to desired expenditures for children. Some discussion of these variables is included in the section on the economic costs of children.

Another opportunity cost of children is a decrease in funds available for savings and investment. An objective measure might be used to see if couples at given income levels who save and/or accumulate investment goods have small families. Another possibility is a subjective measure, using statements of the respondents about the importance they attach to saving and investment goals.

To measure tastes for competing goods and services – the opportunity cost of additional children – variables like the following are needed:

1. Achieved consumption of modern durables and housing (See discussion of assets)

2. Consumption of modern recreational services
3. Aspirations for additional modern consumption
4. Educational aspirations for children (See discussion of costs of children)
5. Accumulation of assets (See discussion of asset holdings in income section)
6. Saving variables: regularity and amount of saving and expressed purposes for saving.

This discussion has centered on economic factors as possible determinants of fertility. A separate analysis could be made of the ways in which fertility and population growth can affect the economic situation of individual families and the growth rate of the economy. Although some of the variables, such as income, which would be needed are discussed here the specification of data needs for such an analysis will not be treated in this monograph.

PART III

OBTAINING SURVEY DATA ON INCOME AND ASSETS

Part II has specified in broad terms the variables economists need to treat some of the suggested relationships between reproductive behavior and economic factors. The main core WFS questionnaire contains very few economic questions. Some countries may add to this questionnaire small additional economic modules, such as one on income and on the economic costs or benefits of children. However, any country wanting comprehensive economic data would need an auxiliary interview presumably with the husbands of the women interviewed in the main WFS questionnaire.

This section will discuss for each group of variables some of the methodological problems in specifying the variables and in collecting the needed survey data. Suggested question sets will be presented for many of these variables, including in many cases, alternative modules of varying degrees of complexity.

No attempt will be made to draft a complete economic-fertility questionnaire, since any such document must be specific to a particular country and a particular survey situation. For example, a questionnaire designed to obtain information on the determinants of the labor force status of women in Western Europe would be inappropriate for most developing countries. Similarly, the procedure for obtaining the labor force status of household members in an economic survey will depend on whether its timing permits the utilization of data obtained in the WFS survey. Where question sets are presented, some specification will be made of the situation for which they are designed. Most of the discussion will be oriented towards developing countries where the collection of economic data is difficult. Unless otherwise stated, the assumption is made that any separate economic survey will be done in conjunction with a WFS survey and can utilize data contained therein. If an economic survey is conducted at a later time, it might be necessary to repeat some portions of the WFS questionnaire, such as updating the household listing and the fertility data.

In Part I income-related variables identified as important for economic analysis were: current family income, husband's and wife's income, permanent income, relative income, and the importance of the income constraint. Holdings of assets were also discussed as an alternative or supplementary measure of economic status.

I. PROBLEMS IN OBTAINING MEASURES OF CURRENT FAMILY INCOME

To obtain current income and use it as a measure of the family's economic well-being, the

following information must be ascertained: (A) the identification of the economic unit – how many persons in the household pool their resources and the total number dependent on this family income; and (B) an accounting of all the sources of income which accrue to this economic unit within a given period.

A. **Identification of the economic family unit:** This problem can be troublesome in LDC, because of the prevalence there of extended families. All persons who live and eat together are usually considered to be members of a common household and are listed in the household roster, but to be considered members of a common economic unit they also must pool a significant portion of their income for common expenses. One way of establishing this is to ascertain the labor force status of all household members, and then determine for each earner (other than husband and wife) whether or not he pools his income with the family. A possible series of questions to establish the economic unit might first ask for each person of working age (the specific age depending on the particular country):

> "Has _____ been working at any time during the past 12 months either for pay or in a family business or farm?"

Establishing the labor force status of each household member is desirable in itself as it diminishes the risk of the omission of additional earners by the respondent.
Before asking the income questions about each person who had worked during the past year, we must establish whether he is a "sharing member". One possible rule is that all workers who contribute at least 50 per cent of their earnings to family expenses be considered, together with their dependents, as part of the economic family unit. The respondent would be asked for each listed worker whether that person had shared at least 50 per cent of this income with the family. Income data need not be collected for "non-sharing" adults, nor should they or their dependents be included as members of the economic family.

B. **Obtaining a comprehensive accounting of income:** This depends on (1) including the earnings of all family members who work, and (2) including all other possible sources of income. If reasonably reliable income data are desired, separate sets of questions should be designed specifically to obtain earnings from farming, businesses, and wage and salary work, as well as specific questions about income from other sources.
Some method must be devised to identify for the interviewer the relevant set of earnings questions for each worker. A question could be added to the household listing to identify the employment status of each person of working age, as a wage and salary worker, a self-employed farmer, or a self-employed businessman. The interviewer can then check the household listing to see which set of income questions is relevant for each earner's primary occupation. It must be remembered, however, that in rural areas of LDC families may combine a small business or cultivation of a small plot of land with some other work. Indeed, the

poorer sections of the population often scratch together a living by doing a variety of jobs in the same year. Thus probes about "other work" or "other sources of income" are essential.

C. **Problems in obtaining information about wage and salary income:** Assuming a separate set of questions is used for wage and salary workers, what problems does it present? All reports on earnings have one problem in common; they are measuring a flow of income over time so the time reference period must be clearly understood by the respondent. In addition, the reported income should not be for a period unduly atypical because of seasonal or random variations. For both businessmen and farmers, a period of a year probably is both least subject to seasonal fluctuations and easiest to report. For wage and salary earnings, usually received at least monthly, a query about monthly income works best. It is advisable, after asking for wage or salary earnings during the last month, to ask for the total yearly earnings from wages and salaries, with the interviewer being instructed to reconcile any inconsistencies before going on to further questions. Wage and salary earnings may be under-reported in developed countries if the worker reports "take-home pay" instead of gross earnings, so the question should clearly specify what is wanted, usually gross income before taxes or deductions. In many LDC, workers are likely to receive some payment in kind, such as free housing, rice or oil, and they may fail to report these in their earnings, unless specifically reminded to do so. In some countries workers may receive all their earnings in kind and may not know the market value of these payments. In such situations the interviewer must obtain a report of the physical quantity of commodities received which can then be valued at local prices obtained through other sources. In some countries substantial year-end bonuses, cost-of-living allowances, or housing allowances are paid which must be included. Illustrative questions for obtaining wage and salary income in a less developed country are included in Appendix A.

D. **Problems in obtaining measures of farm income:** Obtaining accurate information about net income from farms and businesses in LDC is especially difficult. In the first place, small farmers or businessmen, particularly in less developed countries, frequently do not know their net income. It takes a fair degree of sophistication to distinguish between operating expenses and investments in the farm and business, and to recognize that any part of the produce consumed by the family should be considered as income. In developed countries, the preparation of income tax returns should make the owner fairly knowledgeable about his net returns, although marginal items like home produced food may still be omitted. Secondly, the owners of more substantial businesses and farms, though more likely than others to be financially sophisticated, are frequently less willing to disclose their income.

The proportion of farm income received as home produced food is likely to be substantial in LDC so it is important to obtain reasonable estimates. The difficulties in estimating income in kind in less developed countries will vary because such countries differ in the extent to which their economies are monetized. In some LDC, products such as rice and vegetables

which are home consumed are also marketed frequently enough so that the rural people know their market price; but in many LDC this is not true. In these countries, it is necessary for the interviewer to ascertain the actual consumption of home-produced food and then value this at prevailing market prices obtained from village traders or statistical sources. Even where the price of crops is known to the farmer, the respondent may find it difficult to calculate the quantity of produce they have used from their own farm during the year. One approach is to ask about total production of all crops, regardless of whether the products are sold on the market or consumed at home, so that net farm income automatically includes the value of home consumed food. An additional check question may be useful:

> "Thinking of all the food that you and other members of your household consume, what part of it did you buy in the market and what part of it did you grow on your farm?"

If some detail about farm operations is included in the farm income schedule, the accuracy of farm income reporting should be improved. In the pre-test for the Taiwan survey[49] only net farm income figures were requested in an effort to minimize interviewing time. However, it was found that the farmer could produce these only through a methodical compilation of expenses and revenues. The failure of the questionnaire form to structure these calculations only complicated the interview. Therefore, in the final questionnaire, specific detailed questions were asked to calculate farm revenues, starting with a listing of land holdings by type, the commodities raised, number of crops, etc., with a similar set of questions for farm expenses. A set of such illustrative farm income questions is included in Appendix A. The detailed procedure proved quite successful, yielding production and expense figures which local agricultural economists felt were reasonable. Obviously, the questions for any particular country must be relevant for farming operations in that country. Local arrangements with regard to land rentals, sharing arrangements, tenancy conditions, and animal husbandry must all be considered.

E. **Problems in obtaining measures of business income:** A standard questionnaire for business income is difficult to design, because the diversity of business operations makes it impossible to draft a common workable schedule to obtain total production and total expenses as a way of arriving at net income. Moreover, businessmen usually are reluctant to disclose details about their financial results. One possible approach is to get summary figures on gross receipts and net income after expenses. Since a large degree of error may be anticipated in these figures, additional questions may be asked as possible checks on the validity of the responses, such as:

(1) the number of employees
(2) the approximate value of the business
(3) if the total value of the business is above a certain size, the extent to which business income had been channeled into business investments, working capital balances or used for family expenses.

All businessmen should be asked whether the business income belongs solely to their family or has to be shared with other households. An illustrative set of questions is included in Appendix A.

F. **Problems in obtaining measures of other income:** Income from sources other than wages and salaries or the net income from a farm or business, is frequently under-reported in surveys. A series of short probes might remind the respondent of "other sources of income that we have not yet talked about", such as: extra jobs; interest or dividends; rent from a house or farm or share in a farm; receipts from renting out animals or farm equipment; a share in a business; a pension or annuity, etc. (See illustrative questions in Appendix A). Obviously the list of specified "other sources" must be relevant to the particular country. One method which might be used to get more accurate reports of income from extra jobs is to add a check question to the household listing for each person who is reported as working as to whether he holds an extra job. Then the interviewer would be instructed to check the household listing for extra jobs to ensure more complete reporting of such extra income. In countries where many families are near the subsistence level, it is worthwhile to ask about certain informal economic activities which supplement income such as hunting and fishing, gathering of wild food, or collecting wood. One way of finding out about these activities is through questions on how household members (including children) spent their time during a recent period.
In Africa and other places where remittances from migrants are an important source of income, it would be well to inquire specifically about transfer payments into and out of the household. An additional question about the relationship of the donor to the recipient would throw light on the amount of support children give to parents who are not living with them and vice versa.

G. **Obtaining separate earnings data for husbands and wives:** The procedures outlined above distinguish between husband's and wife's earnings where the wife works for pay, since an inquiry is made about the income of each worker. However, where women help in a family business or on a family farm, the contribution of each spouse (and possibly other household members) to the earnings of the enterprise are not distinguishable.

H. **Income editing:** If a detailed income schedule is used, the interviewer will obtain separate data on income from various sources and these must be added to obtain a total family income figure. In addition, quantities of income in kind may have to be multiplied by the appropriate prices. It may be advisable not to complete such calculations in the field but to have them done by "income editors" prior to coding. Income editors should also be trained to note incomplete data and to detect inconsistencies. If such problems are discovered early in the field work, it may be possible to decrease the number of such errors by further individual or group training for interviewers. A trained editor may be able to resolve some problems reasonably

satisfactorily by estimation, following checks for internal inconsistency. Edited data might well be coded as follows:

(1) Income data satisfactory as reported;
(3) Data satisfactory after some editing;
(3) Indome data too incomplete or contradictory to be used.

Such a code makes it possible, where desired, to restrict parts of the analysis to data meeting certain standards.

II. PERMANENT INCOME MEASURES

A comprehensive measure of "permanent" income does not seem possible within the limit of the economic modules. However, three questions are recommended which, in combination with estimates of current income, give some indication of longer term income trends. One question ascertains whether this particular year has been atypical as far as income is concerned:

"Did anything special happen during the past 12 months which made your family income unusually large or unusually small, or was this a normal year for you?"

Unusually large ( ) Normal ( ) Unusually small ( )

(IF UNUSUALLY LARGE OR SMALL): "What happened?" _____

Two other questions obtain the respondent's perceptions about whether his income has been improving over the years and whether he expects it to be better in the future. Since we are particularly interested in the effect children have on the family's perceived economic situation, respondents may also be asked how their children affect their situation.

"How do you think your family is doing financially compared with five years ago?"

Better ( ) Same ( ) Worse ( )

"Why?" _____

(IF CHILDREN NOT MENTIONED):
"How have your children affected your financial situation?"

_____

"How about five years from now, do you think your family's financial situation will be better, the same, or worse?"

Better ( ) Same ( ) Worse ( )

"Why?" _____

(IF CHILDREN NOT MENTIONED):
"How will your growing children affect your financial situation?"

III. IMPORTANCE OF THE INCOME CONSTRAINT

One central economic issue in relation to fertility is the extent to which income serves as a constraint. If couples had larger incomes, would they choose to have more children? Various experiments have been made to attempt to answer this question. One indirect approach is to ascertain if they feel their income is adequate for their needs. A possible question is:

"When you think of what your family needs to get along on now, is your family income high enough, a little low, or quite a bit low?"

High enough ( ) A little low ( ) Quite a bit low ( )

However, this provides only a rough indication of whether the couple presently feels constrained by their income, with no indication of why they feel constrained or how additional income would be used. Several investigators have attempted to ask respondents whether increases in their income would lead them to want more children. The results of such experiments are dubious for many reasons. To cite only a few: such hypothetical propositions may be regarded as unrealistic by respondents; people cannot be expected to give a meaningful reply to questions to which they have given little or no thought; there are differences between respondents in what constitutes a meaningful increment in income. If an increment is specified which is unrealistically large, it is difficult to evaluate the response. Some researchers have specified "as much income as needed," others have asked the effects of doubling present income. Some report such questions worked out very well; others are doubtful. Some of the questions used in these studies are included in Appendix A.

IV. RELATIVE INCOME MEASURES

Economists have suggested that consumption behavior may be influenced less by actual income than by "relative income," the extent to which income is above or below what might be expected, given such factors as the income recipient's age, occupation, location, education, etc. This norm is usually computed statistically. The questionnaire may provide the necessary data; otherwise, auxiliary sources of data must be used. Another possible approach is a subjective measure, asking the respondent whether he thinks his income is as adequate as those of others like himself. One such question might be:

"Compared with other families like your own, do you think that the economic status of your family is:"

Better than most ( ) Same as most ( ) Worse than most ( )

One obvious problem with such questions is that it is difficult both to know what group is relevant for measuring relative income for a particular person and to convey that idea to the respondent. Whether the expression "family like your own" used in the above question, or any other single term, will work out in a particular environment can only be determined by local pretests.

Two illustrative schedules for obtaining income data are provided. Occasional Paper No. 12 contains a short module designed for obtaining income data from wives in conjunction with the World Fertility Survey. Appendix A contains a longer income schedule which was used with husbands as respondents in the Taiwan survey. Both utilize a similar approach, i.e., inquiring about occupations and incomes from these occupations as well as non-labor sources of income, but the Taiwan schedule is more detailed. Still, the Taiwan schedule is fairly short for families with only one earner and one major source of income, though it is quite long if the family has several sources of income. Much detail has been omitted or roughly approximated because a fertility survey cannot aim to produce highly accurate income estimates. Which components of income require specific questions and which can be handled satisfactorily with probes about "anything else" will vary as between countries. Likewise the treatment and valuation of income in kind must receive attention commensurate with the importance of such income in a particular economy.

An approach similar to the one used in Taiwan has been used in the U.S., for example in the Surveys of Consumer Finances[50] conducted by the Survey Research Center of the University of Michigan. A sample questionnaire may be found in the 1970 Survey of Consumer Finances. A similar approach has been used in India by the National Council of Applied Economic Research.[51] In both of these cases the question sequence was longer than in Taiwan since the objectives of these surveys were purely economic.

A somewhat different approach was used recently in a survey designed for Botswana. All household members including children were questioned about how they used their time in a recent period. In this way income-earning activities were uncovered, and specific questions could be asked about the income generated by these activities. This approach may be preferable among very poor populations where many families put together a living by doing a variety of odd jobs on an irregular basis and by engaging in informal activities such as wood gathering, hunting, etc. In such situations a survey may easily miss a part of income. Also, time use, particularly by women and children, is of interest in its own right for fertility studies. However, approaching income sources by way of time use inquiries makes for a lengthy interview and therefore is not likely to be suitable for a survey where measuring income is a subordinate objective.

The same holds for a still different approach – measuring income via consumer expenditures.

Asking women in LDC one question about weekly or monthly consumer expenditures produces rather haphazard results. These expenditures vary with the seasons; a good part of consumption may consist of home-produced goods and people do not always distinguish clearly between expenditures made for the family vs. those made for animals and other farm activities or even a business. To obtain valid measures of consumer expenditures families must be questioned in great detail several times during the year (to minimize seasonal influences, telescoping and just plain forgetting). Besides, estimates of saving (extremely difficult to obtain) have to be added to expenditures to arrive at income. For a rather elaborate survey which used a combination of questions on consumer expenditures and sources of income see the Taiwan Survey of Family Income and Expenditures.[52]

V. ASSET HOLDINGS

Asset holdings, as mentioned earlier, can serve as a proxy for income or be used as a supplement to income data. Measures might be obtained for the following types of assets: (A) consumption goods, including modern durables and housing quality, (B) land holdings, (C) farm equipment and large animals, farm structures other than dwelling unit, (D) business structures and equipment and (E) some major financial assets, including rental property.

A. *Consumption goods*

Modern Durables: The basic WFS household questionnaire includes a question on ownership of modern objects. Respondents will be asked about a list of eight items:

"Do you have in the household any of the following items?"

Ideally, such a list of modern objects should include a common core of four items (watch, bicycle, radio, and sewing machine) to be used in all countries plus four additional items to be chosen for each country. Since the objective is to construct a list which meaningfully ranks all couples by degree of ownership, the list should include some items owned by a sizeable proportion of the population as well as items highly desired but owned by only a small minority. Where there are wide areal differentials in modernization or the availability of electricity, the use of a common list of objects may be difficult, but for analytical purposes some comparability is essential. The Asset Module in Occasional Paper No. 12 incorporates a filter for the availability of electricity in the modern objects question.

Several alternative measures of ownership might be used analytically, including the total number of items owned, the number of *different* items owned and the number of items owned weighted by the value of each item. If the measure is to be used as a proxy for income, a value weight might be appropriate, but this involves a somewhat questionable estimate of an average value for each listed item. Analysis plans should be kept in mind so that the data provide a suitable measure.

Housing quality: Housing quality is in most countries one of the best indicators of economic status and also one of the easiest to measure. Some information can be obtained from the

interviewer's observations and additional information can be obtained with fairly simple questions.

Items obtainable by interviewer observation:

(A check list should be constructed for the interviewer to insure uniform reporting)

(1) **Type of flooring in the structure:** The check list should include typical types of floors, ranging from the best to the poorest materials. One choice should be "other," in which case the interviewer should specify the type of flooring and it can be classified later.

(2) **Type of building materials used in structure:** List should include a range of materials, including "other" which should then be specified.

(3) **Type of roofing:** Check list as above.

(4) **Type of dwelling:** Possible choices might be
( ) Room or flat in a larger structure
( ) Detached house
( ) Place of residence and business place combined
( ) Other (Specify) _____

Items obtainable by simple questions:

(1) **Ownership status**
"Is this house owned by the family who lives here, or do you rent it from some one else?"
( ) Owns
( ) Rents
( ) House furnished by employer or government
( ) Other (Specify) _____

(2) **Type of cooking fuel used**
"What kind of fuel do you use most in your cooking?"
(Choices must be appropriate for the country)

(3) **Type of drinking and cooking water supply:**
"Where do you get your drinking water?"
( ) Running water piped into their own dwelling unit
( ) Water available in the yard for the family's exclusive use
( ) Water available in a common court or room of a group of apartments or housing units for all the occupants of that group of buildings
( ) Municipal or village source of water accessible to everyone
( ) River or stream
( ) Other (Specify) _____
(There are suggested choices which should be altered to be appropriate for the local situation)

(4) **Availability of electricity**

"Do you have electricity available in your home?"

( ) Yes ( ) No

(5) **Amount of living space:**

"How many rooms do you have in your compound (house, apartment) which are for the exclusive use of your family?"

Number of rooms for your family _____

"In addition to these how many other rooms are there which your family shares with other members of the household?"

Number of additional shared rooms_____

(6) **Sanitary facilities:**

"Does this dwelling have a private lavatory which is used only by the people in his household?"

( ) Yes ( ) No

In each country these questions will have to be adapted to be appropriate for local conditions. Data on housing probably will be most useful analytically if they are combined into an index of housing quality, so the plans for index construction should influence the choice and design of these questions.

B. *Land holdings*

In many LDC, land holdings may be the most meaningful measure of wealth so a question on land ownership should be included:

"Do you or anyone else in your family own any agricultural land?"

( ) Yes ( ) No

(IF YES) "How much land does that amount to?"

Amount _____

(in units appropriate to country)

For farmers it would be useful to know if they farmed rented land in addition to their own acreage, or whether they rented or shared out some land. In this way a more adequate measure of the magnitude of the farming operation would be obtained. If a separate farm schedule is used to derive farm income, this information may be collected there. (See Appendix A.) Whether it is worthwhile to obtain land holdings from non-farmers will depend on how prevalent such holdings are in a particular country. Qualitative differences in landholdings also may be important, for example, between irrigated and unirrigated land, hillside and valley land, pasture and cultivated land. An appropriate classification of land must be developed in each country in the light of local conditions.

C. *Other farm assets – farm structures and farm equipment*

Aside from land, the best indication of income levels for farmers is the investment they have been able to make in their farm, either by building farm structures or by acquiring equipment and large animals. No attempt should be made to estimate the value of the investment in the farm as this takes more time than is warranted for an economic fertility survey. A simple check list asking whether or not they own various types of farm structures, large animals or major pieces of equipment can provide a rough measure of asset holdings. For analytical purposes, a simple count of the number of such assets owned may be sufficient, but a check list for various types of assets should provide appreciably more reliable data with little additional effort. The list of structures, animals and equipment must be appropriate for the particular country.

(1) **Farm animals**

"How many large animals do you own, such as cows, water buffaloes, . . .?"

	Number Owned
Cows	_____
Water Buffalo	_____
etc.	_____

(2) **Separate farm structures**

"How many separate farm structures do you own on your farm, such as grain storage buildings, tool sheds, stables, etc., . . .?"

	Number Owned
Grain storage building	_____
Tool shed	_____
etc.	_____

(3) **Power equipment**

"Do you own any power equipment or vehicle (that is running on fuel or electricity) such as a tube well, tractor, truck for your farm, etc.?"

	Number Owned
Tube well	_____
Tractor	_____
Truck	_____
etc.	_____

(4) **Other equipment**

"Do you own any other large pieces of farm equipment such as a metal plow . . .?"

	Number Owned
Metal plow	_____
etc.	_____

D. *Business assets:*

Since businessmen often are reluctant to disclose their income (or to disclose it accurately), it

is a good idea to think of other ways of distinguishing between marginal, more substantial, and really large businesses. One indication is the number of paid employees, another is whether the business is conducted in a separate structure, as opposed to one's living quarters, the sidewalk, etc., and a third is the use of powered equipment. Such questions are fairly easy to ask and may often be truthfully answered.

(1) **Number of employees**
"In the last year, how many people did you employ in your business either full-time all year or on a part-time or part year basis?"
Full-time the year around _____
(No. of workers)
Part-time or part-year _____
(No. of workers)

(2) **Separate business structure**
"Do you or anyone else in your family own a separate place of business?"
( ) Yes ( ) No

(3) **Power equipment owned**
"Do you own any power tools, powered equipment or motorized vehicles for use in your business (that is running on fuel or electricity)?"

	Number Owned
Power tools	_____
Power equipment	_____
Motor vehicles	_____

E. *Financial Assets:*
In many countries the ownership of financial assets or rental property is a good indicator of relatively high economic status. Again, the types of assets to be asked about depends on local conditions. Obtaining precise estimates of such assets is beyond the scope of an economic fertility survey and should be avoided. The following questions suggest possibilities:

	Yes	*No*
"Do you or anyone else in your household have a savings or a checking account or a postal savings account?"	( )	( )
"Does anyone in your household have an insurance policy?"	( )	( )
"Do you or anyone in your household own any land or buildings from which you receive rent or a share in the earnings?"	( )	( )
"Does anyone in your household own shares in a cooperative?"	( )	( )
"Does anyone in your household own government bonds?" (if sold fairly widely in small denominations)	( )	( )
"Do you or anyone else in your household have a share in a business in which your are not working?"	( )	( )

PART IV

OBTAINING SURVEY DATA ON THE ECONOMIC COSTS AND BENEFITS OF CHILDREN

Couples want children because they derive satisfactions or benefits from them, both psychological and economic. Raising children also involves costs for parents. In developed countries, children rarely are a net economic asset since normally their cost far exceeds any contribution they might make to their parents. In LDC children can be an important economic asset to parents, as a source of labor, financial assistance and care in old age. Such economic considerations may influence a couple's decisions about family size. Parental expectations about future costs and benefits may be more important for fertility decisions than their past experience, since the major part of the costs and benefits of children will only be fully realized over the life span of the couple and certainly after child-bearing is completed. Parental perceptions of likely costs and benefits are influenced by currently prevailing costs and accepted social obligations of children but these perceptions may involve considerable uncertainty for parents, both as to how their children will turn out and as to the effect of changing times on attitudes towards familial responsibilities.

Asking direct questions of parents about the magnitude of the costs and benefits of children should not be the sole approach and may not even be the most effective way to obtain cost-benefit measures. In response to direct questions, parents may find it difficult to verbalize their hopes and concerns about the impact which children may have on the family's economic welfare. Even though parents usually are aware that children affect their economic situation, they may be unable to translate this awareness into precise statements about economic costs and benefits. This difficulty is increased by the fact that the subject is fraught with parental uncertainties about the future, especially in times of social change. One possible approach is to give the respondents opportunities in several different contexts to express their concerns about supporting children and their hopes as to what children may do for them.

Several different question sequences could be used to elicit parental perceptions of the benefits and burdens of children. The following set of questions which proved useful in Taiwan, rural India and in Thailand, asks repondents their views on the advantages and disadvantages of both large and small families.

"Most people feel that a couple with (5) or more children has a large family. In your view, what are the main advantages of such a large family?"

"Are there any disadvantages to having such a large family?"

_____

"Most people feel a couple with only (3) children or less has a small family. What are the main advantages of having such a small family?"

_____

"Are there any important disadvantages to such a small family?"

_____

These questions worked out very well in the field. The respondents found it easy to answer and their replies could be grouped into meaningful categories without much difficulty. Indicative of the usefulness of such questions is the fact that three-fourths of the husbands interviewed in one study spontaneously mentioned economic considerations as either an advantage of small families or a disadvantage of large families. Of course, the number of children designated as a large or small family must be determined for each country, possibly in the pre-test. Appendix B (Exhibit 1) contains a suggested code for these open-ended questions. A second set of general questions, used in LDC, asks views on the family's financial situation and the part played by children. (These questions might be incorporated in the income sequence.)

"How do you think your family is doing financially compared with five years ago?"
( ) Better ( ) Same ( ) Worse
(IF SAYS BETTER OR WORSE) "Why?" _____
(IF CHILDREN NOT MENTIONED): "Are your growing children part of the reason for this change?"
( ) Yes ( ) No

"How about five years from now, do you think your family's financial situation will be better, the same, or worse?"
( ) Better ( ) Same ( ) Worse
(IF BETTER OR WORSE) "Why?" _____
(IF CHILDREN NOT MENTIONED): "Are your growing children part of the reason for this expected change?"
( ) Yes ( ) No

In Taiwan the majority of husbands who mentioned some deterioration in their economic situation cited the growing costs of supporting children as a reason.
Another possible approach is one used in the Hawaii VOC study.

"Some couples feel that the more children they have, the better off they will be economically, looking at the effects over their entire lifetime. Others feel that having a lot of children will make their family less well-off. How do you personally feel about this?"

Questions which allow spontaneous references to the costs and benefits of children are not a substitute for more specific measures but can be useful, both as an introduction and as an adjunct to other measures. No great weight can be attached to any single comment made by parents, but the pattern of responses should be meaningful. The possibilities of melding such responses into a more general index measure of perceived costs and benefits will be discussed later.

We now turn to more structured question sequences about the costs and benefits of children which could follow the more general introductory questions.

I. BENEFITS OF CHILDREN

Raising children always entails costs for parents, but in developed countries relatively few children make a significant financial contribution to their parents; in less developed countries, by contrast, children sometimes are referred to as the poor man's capital. Although it is generally agreed that children in LDC assist their parents economically, the actual magnitude of this assistance is not documented empirically, and even less is known about the marginal utility of additional children as family size increases.

The economic benefits which children can provide for parents can be divided into two main categories. First, they are a source of financial security for parents since they can work and contribute their earnings to parents. This support becomes particularly important in old age when many parents are financially dependent on their children and may be living with them. Secondly, children can be a source of productive services for parents. They can help in the home when they are growing up and can work on the family farm or business, both before and after they reach maturity.

There are two different aspects of the benefits from children which should be distinguished. One is the actual contribution made by children to their parents, both financially and through productive work; the other is the parents' perceptions of the economic benefits they will receive from their children in the future. Whether questions on actual benefits, expected benefits, or both are appropriate for particular couples will depend on the age of the couple's children, so the questions should be adaptable to varying situations. Some questions, such as support in old age, will be concerned only with expected help.

Probably the best way to obtain accurate measurements of the current economic contribution of children is through detailed accounting several times during the year (to allow for seasonal differences) of what each child is contributing to the household, both in time and money. Some pilot studies currently are attempting to collect such data.[53] For perceived costs and

benefits, a longitudinal study might be particularly appropriate, to study how changes in parental perceptions of the economic usefulness of children are related to changes in their own economic situation and to the pace of economic and social development. However, such extensive inquiries are not feasible in conjunction with the basic single round WFS survey. A more modest sequence of questions is therefore suggested.

A. *Benefits received while children are growing up:*

Physical Help: The questions about physical help are limited to help from growing children. In LDC, older unmarried children living at home almost invariably provide physical help and the quantification of this help would require more questions than are feasible in a fertility survey. The ages specified (8–12) are only suggestive and must be adapted to the country. The amount of help growing children can give will depend on their age and on the amount of time spent in school. The children's ages are available from the main WFS questionnaire and a question on educational status could be added, where it is not obtained through the household schedule. The questions probably should be asked separately about sons and daughters, because of wide differences in the help they may give their parents.

Financial Help: The questions about financial help are restricted to help from unmarried children, since the objective is to cover financial remittances from children who are old enough to work for pay, but are still part of the parental family. Given the age of the respondents, any married children they might have who are not living in the parental household will only recently have established their separate families and are unlikely to be sending money home to their parents. In any case, obtaining meaningful data on all financial remittances from children requires detailed questions on the characteristics of each child, such as marital status, place of residence, sex, occupation, etc., which are beyond the scope of a fertility survey. Whether it is desirable to include questions about financial help from daughters will depend on the local situation. The questions about financial help should be worded so as to avoid asking parents whether *their* children would be willing to help them, since this might be embarrassing.

1. "Children often help on the farm, in the business, or around the house. Thinking of a family like your own, at what age would you say sons begin to make a useful contribution to the work that needs to be done?"

   _____ ( ) No help or contribution expected
   (age)

   1a. "And how about daughters, at what age would they begin to make a useful contribution?"

   _____ ( ) No help or contribution expected

2. (FOR FAMILIES WITH AT LEAST ONE CHILD IN THE AGES 8–12 YEARS)

"Do your children who are aged 8–12 years presently help (on the farm)/(in the business) or around the house?"

( ) Yes ( ) No

(IF YES)

2a. "What kind of help do they give you?" _____

2b. "How valuable is that help to you? Is it of great importance, less importance, or very little importance?"

(INTERVIEWER: Check only one response)

( ) Great importance
( ) Less importance
( ) Very little importance
( ) No value; more trouble than help
( ) Other (Specify) _____

2c. "If your children were *not* doing this work, would you or other adults in the family have time to do it without neglecting your present work, or would you have to hire someone to do it?"

( ) Work could be done by adults in family
( ) World could be done by adults – with qualifications
( ) Uncertain; depends
( ) Would have to hire help instead

(IF WOULD HAVE TO HIRE HELP)

2d. "About how much would that cost you during a year?"

_____
(amount in year)

These questions have not attempted a precise accounting by the age and sex of each child of the amount and kinds of work done by children which would be needed for a more exact measure of the benefits of children. One possible way of obtaining a somewhat fuller accounting of child time use is shown in Appendix B (Exhibit 2)

3. "Do you expect that your children, when they are grown and not yet married, are likely to help the family by working for pay and contributing to your household?"

( ) Yes ( ) No ( ) Uncertain

4. (FOR FAMILIES WITH UNMARRIED CHILDREN OVER 12)
"Do any of your unmarried children presently work for pay?"

( ) Yes ( ) No

4a. (IF YES): "Are they contributing any of their earnings to the household – regularly, occasionally, or not at all?"

( ) Regularly ( ) Occasionally ( ) Not at all

4b. (IF CHILDREN CONTRIBUTE): "How much do they contribute in the average month?"

_____

(amount in month)

4c. (IF NO – CHILDREN DO NOT WORK FOR PAY): "Do you think your children could find paying work around here while they are growing up?"

( ) Yes ( ) Maybe ( ) No

The availability of job opportunities for children, obtained in this last question could be important also for evaluating the opportunity cost of time children spend in school and the value of time spent in family work. Any study wanting a more precise measure of job opportunities would have to explore alternative measures of the availability of employment for young people, including the possibility of jobs in the surrounding area and those available through migration. This could be obtained through a community-level schedule. A possible sequence of questions about the availability of employment opportunities for other family members (excluding the husband) is suggested with reference to the wife. (See Opportunity Cost of Mothers Time, part V.)

An interesting approach to measuring costs and benefits of children was utilized in a study in Ibadan done by John C. Caldwell.[54] The respondent was asked separately for children of each sex, of various ages and school experience, whether in each case the child with those characteristics was a net economic benefit or liability to the parents. The first results show perceptions of the net benefits of children to be meaningfully related to the child's age, sex, and schooling.

B. *Benefits received in old age:*

Expectations regarding benefits to be received in old age have two important dimensions – the kind of help expected and the degree of certainty which attaches to these expectations.

1. "What means of financial support do you think you might have when your husband can no longer work?"

(INTERVIEWER: Check as many as are mentioned)

( ) Help from children
( ) Income from farm
( ) Income from business
( ) Savings; income from other property
( ) Pension or social security
( ) Other (Specify) _____
( ) None

1a. "Do you expect to rely for financial support on your children a great deal, only a little, or not at all?"

(INTERVIEWER: Check only one response)

( ) Rely a good deal
( ) Rely only a little
( ) Not rely at all
( ) Depends (Specify on what it depends) _____

2. "When your children have grown up and are married, do you expect to live together?" (Read only choices a–d)

(INTERVIEWER: Check only one response)

a. ( ) Only for a few years after your son's (daughter's) marriage
b. ( ) All the rest of your life
c. ( ) Only when you are old
d. ( ) Never
( ) Other, including combination of above (Specify) _____
( ) Uncertain, depends – "Depends on what?" _____

(The following two additional questions are only for respondents who have a FARM or BUSINESS).

3. "Do you think that at least one of your sons will want to take over your farm (your business) when you are old?"

( ) Yes, will take over
( ) Probably yes
( ) Uncertain, too early to tell
( ) Probably not
( ) No, will not take over

3a. (IF SAY ANYTHING EXCEPT "NO, WILL NOT TAKE OVER," ADD

THE FOLLOWING QUESTION) When your sons are grown up and married, how many sons could make a living on this farm (in this business?)"

( ) None (sons don't want to take it over; father wants son(s) to do other work)
( ) Only one
( ) Two
( ) Three or more

The following set of questions attempts to assess feelings of uncertainty about the willingness of children to help. These questions may be particularly appropriate for countries still at fairly low income levels but which already have experienced some degree of social change.

1. "In your father's time, growing children often helped on a family farm or in a family business, or they earned money early. Do you think children are less useful economically to their parents nowadays, or more useful, or do you see no changes?"

   ( ) Less useful now ( ) More useful now
   ( ) Uncertain ( ) No change

   1a. (IF LESS, MORE OR UNCERTAIN)

   "Why do you say that? What kind of changes do you see?"_____

   _____

2. Parents often want some help from their sons. Thinking of people you know – are they sure they will get financial help from their sons, a little uncertain, or very uncertain of help?"

   ( ) Certain of help
   ( ) A little uncertain
   ( ) Very uncertain of help

3. "Thinking of the older couples you know around here, do children living and working elsewhere send home financial assistance in most families, only in some families, or hardly at all?"

   ( ) In most families
   ( ) Only in some families
   ( ) Hardly at all
   ( ) Don't know

4. "Thinking again of the older couples around here, do children living and working

elsewhere return to help out when the parents need them – in most cases, in some cases, or only in a few cases?"

( ) In most cases
( ) In some cases
( ) In only a few cases
( ) Don't know

5. "Thinking of the changes that have taken place, do you think children nowadays are just as willing, somewhat less willing, or much less willing to do each of the following?"

5a. "To live with their parents after they are married."

( ) Just as willing ( ) Somewhat less willing ( ) Much less willing

(IF LESS WILLING) "Do you like to see this kind of change taking place?"

( ) Yes ( ) No ( ) Doesn't matter

5b. "To give part of their wages to their parents when they start earning."
(Repeat replies as above)

5c. "To support their parents in old age."
(Repeat replies as above)

5d. "To ask parent's advice."
(Repeat replies as above)

5e. "To help around the house, or on the family farm or in business."
(Repeat replies as above)

The responses to the benefit questions reveal that parents in LDC do rely on their children for support in old age. However, they do verbalize some uncertainties as to whether children will continue to be as willing in the future to provide such help.

II. COSTS OF CHILDREN

There are a number of different economic costs which children can entail for parents. The most important in LDC is the direct outlay of resources to feed and clothe children, to provide medical care, etc. A distinction must be made between realized and expected costs since child-related expenses increase as the child gets older and in any case, the full magnitude of child support costs will only be realized over the entire child-bearing period. Expected costs should be most important for fertility decisions.

A second major cost of raising children is the time the mother spends caring for them. The extent to which this constitutes a real cost depends first, on the alternatives available to the

mother, i.e. is market work available to her or is her help potentially an important input for the family enterprise, and second, whether having children deters the mother from desired alternative uses of her time. In Western countries, mothers are likely to be employed in the market sector, and must provide alternative child care at considerable cost and inconvenience, so the time required for child care can be an important cost. In LDC mothers have fewer opportunities for paid work but more often work without pay in a family enterprise. Mothers in LDC who work, particularly those working for the family, usually can combine work with child care or have the children cared for by other family members, although hard data on the extent to which child care impedes work by mothers are practically non-existent. Thus, parents in LDC are less likely to consider the mother's time a significant cost of rearing children, though this will undoubtedly change as development proceeds and family arrangements are altered. The opportunity costs of the mother's time will not be considered with direct costs of children, but will be treated in a separate section in Part V.

Another determinant of the felt cost of children is the value placed on alternative goods and services which must be sacrificed to support children – the real opportunity cost of children. Couples who aspire to high levels of consumption, for example, should be more likely than others to consider the expenses of children in making fertility decisions. These opportunity costs will be considered in Part V under Alternative Uses of Income.

Finally, the prevention of births entails costs for couples, but most of these costs are psychologically rather than economic. If information on the price and availability of family planning services or devices is desired, some such information is available through the WFS core questionnaire and the rest can be collected through local sources. These variables will not be considered here.

A. *Realized direct costs of children*

These include basic expenditures for food, clothing and housing as well as more discretionary expenditures, such as educational fees, dental care and recreational expenses.

The best way to utilize surveys to estimate the maintenance costs of children would be to combine a fertility survey with a consumer expenditure survey, so that differences in family expenditures, within income and education levels, could be related to family size and fertility behavior. Another approach, being used in a pilot study in Guatemala,[55] involves repeated interviews with a small sample of families to record family expenditures, time use and fertility. Some current anthropological studies involving continual observations about the costs of children might provide guidance for later surveys. However, none of these approaches seem feasible within the scope of the basic single round of the World Fertility Survey.

A more modest approach is to include some questions on the actual costs of children. Expenditures which are directly attributable to children, such as educational fees, are easiest to ascertain in surveys. Even here, this may be true only if the respondent has already experienced such expenditures. Parents who have had children attending school may be able to report the extra expenses this involves. A possible question sequence might be:

"How many of your children presently are in school?"

( ) Have No children ( ) None in school ( ) _____
Number in school

(IF ANY CHILDREN IN SCHOOL)

"Sending children to school frequently costs the parents some money, for things like clothes, books, fees, etc. What kind of expenses have you had in connection with your children's schooling?"

( ) Special clothing costs
( ) School fees
( ) Books for schools
( ) Other (Specify) _____
( ) No expenses involved

(IF MENTIONS ANY EXPENSES)

"How much have all these cost you during the past year?"

Cost of all such expenses during past year _____

When one turns to shared expenditures, such as those for food and housing, it is more difficult to identify the share which is attributable to children, and particularly to distinguish the marginal cost of the last child. The assignment of the many expenditures made by a family, most of which benefit all or several family members, among the respective users involves accounting skills which are beyond the capabilities or interest of most couples.
Some surveys have asked direct questions about the costs attributable to children and the expected cost of an additional child. The experience with such questions is meagre and contradictory. One pilot study in Pennsylvania reports good results with the following questions about both total and marginal costs of children.

"We would like to get an idea of how much you think you spend on your children compared to the total cost of running the home. We know that your answers will be only estimates, but please try and give us your best guess. (INTERVIEWER: If the respondent has no children ignore part (b) of each section of this question).

1. a. "How much do you spend *weekly* on food?"
   b. "How much do you think you would spend if you had no children?"
   c. "How much do you think another (a) child would cost you for food assuming the child was aged one to five years?"
2. a. "How much do you spend *yearly* on clothing for the family?"
   Repeat (b) and (c) as above.

3. a. "How much do you spend *yearly* on medical expenses for the family including insurance?"

Repeat (b) and (c) as above, excluding the cost of the birth in (c).

On the other hand, the VOC study in Hawaii had less success with such an approach, reporting that respondents were unable to estimate the costs of children when asked the following question:

"About how much money in all do you think it has cost you to raise your child(ren) over the last twelve months?"

Total amount _____

B. *Expected levels of direct costs of children*

As mentioned before, expected costs may be more important than realized costs for fertility decisions. Although the total costs of children will only be experienced over the entire-child-rearing period, most couples have some rough idea of the magnitude of these costs and their views should influence family size decisions.

One thing which could be done, even in a short questionnaire in a less developed country, is to explore perceptions of specific costs which are likely to be sizeable and are clearly identified as child-related, such as expenditures for education. In many less developed countries, parents feel strongly about the value of providing education for their children. They recognize that this will be a financial burden even though they may not know the precise magnitude of the required expenditure. A question could be asked to establish the level of education deemed minimally adequate. This could be followed by a question on the level to which parents aspire. Then questions could be added on the likelihood that children will achieve these levels, with indications of why they might not do so. These questions probably should be asked separately for sons, whose education presumably will be considered most important, and repeated for daughters when appropriate. The specification of educational levels would vary as between countries, but a possible set of questions might be as follows:

1. "We are interested in the schooling children receive in this area. In your opinion, what is the *least amount* of education (if any) that a boy needs nowadays to make a satisfactory living around here?"

(INTERVIEWER: If the respondent answers by giving a level of schooling, such as primary graduate, go on to ask):

"Let's see, how many years of schooling would that amount to?"

Number of Years of schooling _____

2. Now let's think about the plans you have for the education of your own family. What is the highest level of school which you expect your sons (any sons you might have) to attend?"

( ) Primary ( ) Junior High ( ) Senior High
( ) Univ. or college ( ) Other (Specify) _____

(IF SAYS DEPENDS ON ABILITY) "If sons have ability, which level do you expect them to attend?" _____

"How many years of schooling does that level require around here?"

_____

(No. of years)

3. "You just said that you would like your sons to go to school for ——— years. Do you think any of your sons (or any sons you might have) may stop going to school before that?"

(INTERVIEWER: Check only one choice)

( ) Yes	( ) Maybe	( ) No, none will stop
( ) Yes, qualified	( ) Uncertain	( ) No, qualified
( ) Some will or may stop	( ) Depends	(If NO, skip Question 3a)
( ) One or more already stopped		

↓ ↓

3a. "Why do you think they(he) may (did) stop going to school?"

(INTERVIEWER: Check as many as are mentioned)

( ) School expenses are too high for our family
( ) Children needed for work – cannot go to school for that reason
( ) Other reasons mentioned (Specify) _____
( ) No reason given or reason not clear.

A coding scheme of the reasons children's school attendance may fall short of parental ambitions should segregate economic from non-economic causes. For example, analytically it is important to distinguish whether it is economic pressures as distinct from health problems or scholastic aptitude which limit educational attainment. The first two stated choices, which probably will be mentioned fairly often by respondents, are clearly economic reasons for leaving school, but the variety of other factors affecting school leavings were not easily segregated by the interviewer during the pre-tests into economic and non-economic causes. Thus, it seems preferable to have all other reasons recorded open-ended, relegating to the coding process the establishment of a procedure for distinguishing between economic and non-economic causes. The Costs and Benefits Module in Occasional Paper No. 12 provides

a shorter series of questions on education. Although the separation between economic and non-economic reasons for school leaving is useful analytically, a more in-depth analysis would have to recognize the possible impact of economic factors on health and even on intellectual ability.

4. (IF HAS SPECIFIED ANY LEVEL ABOVE ____ AS LEVEL EXPECT SONS TO ATTEND)

   (See footnote 56 for explanatory comments)

   "You said that _____ was the highest level which you expected your own sons to attend. Do you know or have you ever tried to find out how much it costs to send a child to (*highest level mentioned*)?"

   4a. (IF KNOWS, OR HAS TRIED TO FIND OUT): "How much do you think if will be, considering all costs?"

   _____

   (cost per child per year)

   (A similar sequence of questions could be added for daughters, where appropriate)

This question sequence, asking the desired level of schooling and whether the respondent was knowledgeable about the costs entailed was used in Taiwan. Parents disclosed high ambitions for their children; 81 per cent aspired to either high school or college, but most had no idea of the costs involved. In a longitudinal study, parents with high aspirations who could also estimate the costs were found less likely to go on to have an unwanted child than those who could not calculate the cost of their education plans, while parents with no educational plans were most likely to have an unwanted birth. A further question on whether the planned level of education was likely to constitute a heavy financial burden did not distinguish between couples on the basis of fertility behavior.

Parents attach importance to education because they regard it as an avenue for economic advancement. A supplementary question can be asked about their expectations regarding the children's likely future standard of living. This question should be left to the end of this section, lest it influence their answers to the other questions.

"When your children are grown and married do you expect them to have a standard of living that will be much higher, somewhat higher, about the same, or less than yours is now?"

( ) Much higher
( ) Somewhat higher
( ) About the same
( ) Lower
( ) Depends (specify on what) _____

Another possible and more general line of inquiry about perceived costs of children would be to ask parents how many children they could support before it would constitute a heavy financial burden, as was done in the Hawaii VOC study. They found this question worked well in six countries, including four less developed countries, particularly when used in conjunction with statements about ideal family size.

"We would like to know how much of a financial burden it is to raise children, for a family in your circumstances."

"If you were to raise only *one* child, would it be fairly easy economically, somewhat of a financial burden, or a heavy financial burden?"

	Fairly Easy Economically	Somewhat of a Financial Burden	Heavy Financial Burden
	☐ → ASK (2)	☐ → ASK (2)	☐ → GO TO NEXT Q.
(READ RESPONSE CHOICES AFTER EACH ITEM)			
(2) How about *two* children?	☐ → ASK (3)	☐ → ASK (3)	☐ → GO TO NEXT Q.
(3) How about *three* children?	☐ → ASK (4)	☐ → ASK (4)	☐ → GO TO NEXT Q.
(4) How about *four* children?	☐ → ASK (5)	☐ → ASK (5)	☐ → GO TO NEXT Q.
(5) How about *five* children?	☐ → ASK (6)	☐ → ASK (6)	☐ → GO TO NEXT Q.
(6) How about *six* children?	☐ → ASK (7)	☐ → ASK (7)	☐ → GO TO NEXT Q.

(7) What do you feel is the largest number of children you could raise without their becoming a heavy financial burden to you?

_____ children

The above approaches toward measuring costs and benefits of raising children produces indicators of prevailing behavior patterns and attitudes. They avoid precise quantitative questions to which most parents do not know the answers. The advantages of this approach are obvious. It should produce more meaningful answers and should be more workable in difficult interviewing situations in LDC.

Responses to questions about such specific aspects of economic life as expected support in old age, plans for children's education, etc. can be related individually to measures of fertility and contraceptive behavior. In addition, responses to groups of questions which relate to a somewhat more general concept can be combined into indices. Replies to a single question may be distorted by peculiar circumstances, misinterpretation of a question, etc.; an index aggregating replies to a number of questions is likely to be more valid than any of its components. For example, measures of perceived costs and benefits can be constructed by combining replies to a number of relevant questions. Such measures were constructed in the Taiwan study. The index measure for the economic burden of children combined: (a) spontaneous mentions of the costs of children as a disadvantage (or advantage) of large v. small families; (b) references made to child costs as a reason for the family's worsening economic circumstances; (c) the existence of high education plans plus a knowledge of the relevant costs; and (d) whether education was spontaneously mentioned as a reason for saving (see Part V). The resulting cost sensitivity index had a substantial negative relationship to ideal family size and a positive relation to use of contraception. Each of the components of this index was also related to fertility behavior, but the combined index was a more consistent predictor. For a more complete description of these indexes, see E. Mueller.[57]

PART V

OBTAINING SURVEY DATA ON THE OPPORTUNITY COSTS OF CHILDREN

Instead of attempting to measure outlays on children directly, one may approach costs via the economic sacrifices parents have to make to raise children (i.e., opportunity costs). Two types of opportunity costs which children can have for parents will be discussed: 1) the opportunity cost of time devoted to the care of children, and 2) the alternative uses for income which must be devoted to the support of children.

I. THE OPPORTUNITY COST OF THE MOTHER'S TIME

The cost of children is not limited to the money parents spend on them. An important additional cost is the value of the time the mother devotes to them, on the assumption that this time alternatively could have been spent in remunerative work. Remunerative work is here interpreted broadly to include both market work for direct pay or profit and unpaid work in a family enterprise where the "pay" is the contribution the wife's work makes to the productivity of the family enterprise. This discussion initially only concerns the measurement of the opportunity cost of the mother's time with respect to market work, since unpaid family work undoubtedly conflicts less with child care responsibilities and presents different measurement problems. The opportunity cost of unpaid family work will be discussed later.

Measuring the opportunity cost of the time spent in child care requires first an assessment of the mother's earning capacity – the magnitude of her likely pay rate, along with some indication of the opportunities for employment. The social and familial acceptability of market work as a legitimate activity for mothers may influence her labor force participation. The availability of alternative child care is relevant since that will determine the feasibility of combining market work with rearing a family. Finally, since the motivation for work may not be solely economic, some indication of the wife's attitude toward working is relevant.

Wife's working status has additional implications for reproductive behavior which will only briefly be mentioned here. The entrance of women into the labor force and particularly work away from home, should influence her behavior and attitudes in ways which will affect fertility. Entering the modern market economy brings exposure to new ideas and stimuli which can profoundly affect her tastes with regard to: new consumer goods, more modern recreational activities, a better education for her children and a role for herself for which a large number of children may be irrelevant or a hindrance. Working as an unpaid family helper, so prevalent among women in LDC, is less likely to influence fertility in the same way,

both because it provides less exposure to a modern way of life and because children presumably interfere less with such work.
In brief, for women neither the reasons for working nor the consequences of working are purely economic. The question sequences used in this section have therefore been extended somewhat beyond the bounds of economics. The additional non-economic questions should help to specify the social environment and personal tastes which impinge on the choice between additional children and income earning activities.[58]

A. **The magnitude of the cost:** An assessment of the opportunity cost of child care requires estimating the earnings which the wife could receive if she were not needed at home to care for children. These are most difficult to estimate if the wife is not currently working. In that case her potential wage rate may be estimated on the basis of her age, education, previous work experience and location, recognizing that such estimates are rough and cannot allow for wage differences due to levels of motivation, continuity of job experience, local employment opportunities, etc. If the wife is currently working, then her current pay rate can be used to estimate the opportunity cost of a (another) child. Even here, this measure may be unduly low if the wife's current earnings are adversely affected by previous interruptions for child care during her working career. This particular problem probably would be most relevant in Western countries and for professional type jobs. If the wife is only working part-time because of child care responsibilities, her current wage rate could be used to estimate full-time potential earnings, but the customary low wages paid for part-time work may produce a downward bias.
A number of the variables needed to estimate potential earnings already are included in the WFS core questionnaire. The labor force questions ascertain if the wife has ever worked for money, if she is currently working for money and whether she worked for money before marriage. For each such work experience the following is obtained: occupation, employment status, location of work and whether she worked full or part time. The wife's education also is obtained.
The needed wage data for women could be obtained from outside statistics, if available, or generated in the survey by adding questions on pay rates. If the wife had worked for pay in the past 12 months, the following questions could be asked:

1. "You told me earlier that you have been working for pay this past year. How many hours have you worked in the average week?"

   Hours worked in average week _____

2. "How much have you been earning from this work in the average week?"

   Earnings _____
   (per week)

Where the wife indicates that she has worked less than full-time a question about the availability of additonal work could be added:

3. "If you wanted to work full-time, do you think you could find such an opportunity?"

   ( ) Yes ( ) No ( ) Uncertain

If the wife has not worked for pay during the past 12 months, information is needed on both employment opportunities and on potential wage rates. The following sequence of questions is suggested:

(IF WIFE HAS NOT BEEN WORKING FOR PAY, ASK QUESTIONS 4 and 5)

4. "If you wanted to work for pay (outside your own business) (outside your own farm), do you think you could find work around here which would be alright for you?"

   ( ) Yes or yes, qualified
   ( ) Maybe, uncertain, don't know
   ( ) No or no, qualified

(IF ANYTHING BUT NO):

4a. "What kind of work might that be?" _____

4b. "How many hours a week could you spare for such work?" _____
(hours)

4c. "In that amount of time, how much do you think you might be earning in the average week in such work?"

Expecting earnings _____
(per week)

The accuracy of the answers would depend on the wife's knowledge of existing wage rates and on her realism in assessing her own job capabilities. A further question could explore future work plans.

5. "Do you think that some time in the future you may go to work?"

   ( ) Yes ( ) No ( ) Depends (Specify on what) _____

A possible alternative sequence of questions which could be used to ascertain job availability for wives and adolescents (but not for the primary job earner) is as follows:

"If you (or another member of your family) wanted to earn some money are there any jobs available around here which they could do?"

( ) ( ) No

(IF YES) – ask each of the following questions and record in chart below

a. What kinds of jobs are these?
b. At what time of the year are they available?
c. How much do they pay per day?
d. Are these jobs for women, girls, boys, or what?

Kinds of jobs	Time of year	Pay per day	Kinds of workers hired

The questions outlined here relate to current and expected labor force participation. The WFS obtains data on wife's work participation only with reference to particular periods of her life. More complete historical data is needed to explain past fertility decisions. A possible model for obtaining complete historical data on market work as related to fertility and child spacing might be the Hawaii VOC survey which collected complete data on the wife's work history in relation to her birth history, whether or not she had worked before she had children, between each birth, and after child-bearing was completed, the number of months worked in each period and whether she had to make alternative child care arrangements during each period of work. (See Appendix B (Exhibits 3 & 4) where alternative detailed question sets on women's work are presented.)

B. **Acceptability of market work for mothers:** Even if reasonably well-paying jobs are available, social or familial pressures may make it difficult for married women to accept market work. This is particularly true for less developed countries, but even in Western countries market work by mothers of young children is not always accepted. Some assessment must be made of the acceptability of market work for mothers, particularly if the employment is outside the home and for non-relatives.

The following questions are suggested, with the wording adjusted in each case to be appropriate for either current or future work. First of all the wife could be asked about her husband's

attitude towards mothers working outside the home. (Similar questions could be asked about the attitude of her mother or mother-in-law where appropriate).

"How about your husband. Do you think he would approve of a mother holding a job outside the home if her family needed the money?"

( ) Yes ( ) No

(IF YES) "Would he approve if the family didn't really need the money, but the woman wanted to work anyway?"

( ) Yes ( ) No

This same question could be asked directly of the wife to elicit her attitude as to the appropriateness of work for mothers, as follows:

"How about you. Do you approve of a mother holding a job outside the home if her family needed the money?"

( ) Yes ( ) No

(IF YES) "Would you approve if the family didn't really need the money but the woman wanted to work anyway?"

( ) Yes ( ) No

This question seems general enough so that it could be asked both of working and non-working mothers, but could be omitted for working wives, if felt it could be interpreted as critical of their present work. If the husbands are interviewed, they could be asked how they feel about their wives working. A suggested question worded for husbands whose wives are not currently employed, could be adapted as necessary.

"You said that your wife has not been working during the past year. When all the children are in school and growing up, do you think it would be a good idea for your wife to work and earn some money? Or should she remain a full time housekeeper?"

( ) Good idea for wife to work
( ) Wife should remain full-time housekeeper
( ) Depends on her
( ) Depends (other) "Depends on what" _____

C. **Availability of alternative child care:** Most estimates of the opportunity cost of children assume that the mother must choose between gainful employment and child care, but mothers may be able to care for their children while working or provide a substitute source of care. In

less developed countries it is frequently possible for mothers to combine employment with child care since they often work in situations where they can tend the children while at work. In addition, substitute child care frequently is provided by relatives without cost. In Western countries, employment for women usually requires her absence from home, family alternatives for child care are less available, and non-family arrangements are fairly costly.
The following question which is framed for a LDC could also be used in a developed country by altering the list of cited alternatives.

"In your case how are (would) the children (be) cared for while you are (were) at work?"

(INTERVIEWER: Check as many as are mentioned)

( ) Children old enough to get along without any supervision; in school, working, etc.
( ) I could work at home, so it's no problem
( ) Could take children with me to work
( ) Siblings or other family members could care for children
( ) No suitable substitute care available
( ) Other (Specify) _____

(IF APPROPRIATE)

"Would you have to pay for this?"

( ) Yes ( ) No

(IF YES) "About how much per week?" _____
(amount per week)

(For a developed country one could assume that there would be a cost and the question could be:)

"About how much would (do) you have to pay for this per week?"

_____
(amount per week)

In developed countries where familial arrangements for alternative care are less prevalent, a further question might be added:

"Are you satisfied that good care would (is) given to your children while you work?"

( ) Yes, satisfied
( ) Somewhat satisfied
( ) Not very satisfied
( ) Dissatisfied

D. **Preferences for working or for alternative uses of time:** Most women probably work because they need or want the additional income, but for some women work away from home provides additional gratifications and this can influence fertility. Data on the motivations for work could be useful. A suggested question might be:

"Women may have different reasons for working. Earning money is usually one advantage. Are there any other advantages of working which (might) influence you to work outside your home?"

( ) No ( ) Yes – "What are they?" _____

Some women may prefer to devote their time to household tasks rather than work for pay, even if child care is not a problem. A possible question with regard to this might be:

"Compared with other married women you know, how much do you enjoy the regular housekeeping activities? Would you say you like them:"

( ) Much More ( ) About the same
( ) Somewhat More ( ) Less

Some economists recognize the productivity of time spent in household activities and have incorporated this into the new micro-models of fertility behavior. In these models, time is regarded as a resource used to provide utility, both through market work, through child care, and by other production in the household. Work on a family farm, in a family business, or on household tasks may be treated as household production in such a model. Elaborate data on the use of time by all family members is needed for these new models of household decision making. Butz cites the need[59] for a survey which "records the amount of time each household member recently spent in farming, cottage industry, school, cooking, child care, cleaning house, improving house or land, eating, leisure, sleeping or working in the labor market." Obviously, such an elaborate data set is beyond the scope of the WFS. Interesting data on household production activities were collected by the Survey Research Center for the study, *Productive* Americans,[60] but the study did not include data on fertility behavior.

E. **Measuring the Opportunity Cost of Unpaid Family Work:** Most rural wives in LDC do some work on the family farm while other wives help in a family business. Measuring the opportunity cost of child care for wives who are unpaid family workers requires: (a) an assessment of the extent to which such work conflicts with child care, and (b) some measure of the value of the wife's time to the family enterprise.

Many assume that child care presents no problem for women in LDC who work in a family enterprise. Because work in a family enterprise frequently takes place at or near the home and permits more flexibility in working hours, it is less likely to conflict with child care than does

market work. However, empirical data on the actual child arrangements utilized in such situations are not available. In many cases, siblings care for younger children, but the quality of such care may be substantially below what adults would provide. A survey of village development studies by the IDS[61] reports evidence that children reared by adults are healthier than those cared for by children. Providing care for the children may be a problem for many mothers who work in family enterprises. For example, a number of mothers interviewed in Thailand in a KAP survey cited their work obligations on the farm as their reason for wanting to prevent additional births. A possible question sequence bearing on this problem might be:

"Some women find that having children makes it difficult for them to work in the family business (on the farm) as much as they want. In your case, does caring for your children interfere with your ability to work in the business (on the farm)?"

( ) Yes ( ) No

(IF YES) "In what way do they interfere with your ability to work?"

(IF NO) "How much would having another baby interfere with your ability to work? Would it interfere a great deal, somewhat or only a little?"

( ) Would interfere a great deal
( ) Would interfere somewhat
( ) Would interfere only a little.

Obtaining a quantitative measure of the wife's contribution to the family enterprise is not feasible in a fertility survey. Questions on her hours of work and the type of tasks she performs could provide a rough ranking by intensity of work effort, while information on the availability of market work and her potential market wage rate could provide some rough indication of the value of her time.

II. PREFERENCES FOR ALTERNATIVE USES OF INCOME

A different way of assessing the cost of children is to look at the opportunities – in the form of alternative expenditures – which couples have to forego if they have more children to support. The presumption is that the stronger the preference which couples have for alternative expenditures, the more aware they will be of the financial burden of supporting children. Similarly, the stronger the desire to accumulate assets, the more burdensome economically a large number of children should appear. Some supportive evidence for these ideas comes from the Taiwan Study where consumption aspirations for modern goods and services within income class was the best predictor of the perceived burden of children.[62] Some possible alternative uses of income for which measures should be obtained would be: the accumulation of

business, farm, and financial assets, new consumption goods and services and better housing, and more education for children.

Preferences for alternative goods and services can be measured objectively, by what the couple has already purchased or accumulated, or subjectively by stated desires to own more or better items. Most of these variables already have been discussed in other sections, namely, achieved consumption of modern durables and housing, accumulation of investment assets and educational aspirations for children.

A. *Additional consumption variables:*

Use of modern recreational services: Whether this is a relevant variable for a country depends on whether modern recreational activities which cost money are available and attractive to many people. In one survey (in Taiwan) the husband was asked about the frequency of movie attendance, of eating out in restaurants and of vacation trips. A survey in rural Indias asked the husbands how often they had gone to hotels, to the cinema or to town during the past year. A composite index of consumption of services was positive related to contraceptive use and negatively related to ideal family size for young couples in Taiwan.[63] This is consistent with the idea that modern recreation can be competitive with caring for a large family both with regard to time and money.

Consumption aspirations: Aspirations for increased consumption can be measured by incorporating into question sets for present consumption an additional query on plans for future purchases.

1. "Are you hoping to buy some (more) of these objects [i.e., bicyles, watches . . .] in the future or would you say that they are not worth the cost to you?"

   ( ) Hopes to buy ( ) Does not hope to buy ( ) Uncertain

   1a. (IF HOPES TO BUY) "Which ones do you think you might buy some day?" and, "Are there any of these that you plan to buy in the next year or two?

The chart used for recording present ownership of modern objects can also be used to note hopes and plans for additional purchases. A similar approach can be used with regard to recreational activities, as follows:

2. "When you think of going to the movies, taking a trip, etc., would you like to do some of these things (more often) in the future?"

   ( ) Yes ( ) No

   2a. (IF YES) "Which ones?" _____

Plans for improving housing can be obtained by first asking whether present housing is satisfactory and, if it is not, going on to ask:

3. "Do you plan to do something in the future to try to improve your housing?"

( ) Yes ( ) Uncertain ( ) No

3a. (IF YES) "What are you planning to do?" _____

A composite measure can also be constructed for consumption aspirations; in Taiwan, this measure proved to be strongly related to family planning behavior.[64]

B. *Savings behavior:*

Family size may influence savings behavior in a number of ways, the most obvious of which is the constraint imposed by the consumption needs of a large family. A large family could diminish the felt need for saving insofar as children are seen as providing security for the parents in their old age. On the other hand, having a large family may increase the incentive to save if parents regard providing economic security and education for their children as an important objective.

The best way to study the relationship of fertility to savings probably would be through adding fertility data to large scale savings surveys which may be undertaken in various parts of the world. Accurate data on the amount of savings can not be obtained in an economic fertility survey, since this requires a long detailed set of questions which inquire about both changes in assets and changes in debts over a period of time.

Even though reasonably accurate savings data are not obtainable in a fertility survey, it is feasible to inquire about (a) attitudes toward saving and, (b) the incidence of saving in certain major forms. Such data might be useful, both in their own right and in the contribution they could make to understanding other aspects of the respondent's behavior. For example, statements made by respondents about the importance and purposes of saving may include references to saving for education of children and for old age.

Attitudinal questions about the perceived need for savings and purposes for savings pose problems since some respondents will say immediately that these questions are irrelevant for them because they are unable to save. In situations where there are a large number of very poor families for whom saving is completely impossible, it would be embarrassing to press for answers or the answers might be meaningless. In other situations, some experimentation should be conducted in a pre-test to find ways of asking these questions of everyone, since attitudes about saving may be important even for couples not currently saving. In one survey, 15 per cent of the respondents who said they weren't able to save indicated in another part of the interview that they actually had accumulated some savings in the past.

In asking the purposes of saving, open ended questions can be used, allowing the respondent to spontaneously indicate what he considers important purposes. A further possibility is to present a list of possible purposes with the respondent indicating the importance he attaches to each. The two approaches can complement each other. Spontaneous expressions by the respondent about his specific purposes for saving may single out those most salient, while

the other approach can provide valuable additional information about specific purposes for saving, for example whether an important motivation for saving is to facilitate later consumption.

There are technical problems even in obtaining rough measures of the incidence and order of magnitude of savings. Measures of the proportion of couples with savings will be inaccurate if respondents differ in the way they define "savings". A series of questions asking whether the couple has accumulated savings in any of a list of specified saving media may provide more meaningful responses. If the couple admits to having some savings, the respondent still may be unable or unwilling to specify the exact amount accumulated. A question asking for a rough approximation of accumulated savings as a proportion of the family's income has proven more feasible and can provide a crude classification of families by the order of magnitude of their savings effort.

A suggested question set to obtain savings data in a fertility survey might start out with a general question on the desirability and purposes of savings.

1. "Now we would like your ideas about saving. Do you feel for a family like yours, that it is very desirable to save for the future, somewhat important, or is it unimportant?"

   ( ) Very desirable ( ) Unimportant
   ( ) Somewhat important ( ) Can't save

   1a. (IF DESIRABLE OR SOMEWHAT IMPORTANT TO HAVE SAVINGS) "In your case, what would be the main purposes of savings?"

   _____

   1b. (IF SAYS CAN'T SAVE) "If you were able to save, what would you regard as the main purposes of savings?"

   _____

A question about specific purposes of saving might then be asked of everyone except the few who say that saving is unimportant.

2. "Here is a list of things that some people want to save money for. I will read the list to you and then I would like you to tell me which of these reasons for saving are *very important* in your case, which are *less important* for you, and which are *not important at all.*" (List answers below)

Reasons for Saving	Very Important	Less Important	Not Important
Saving for emergencies	( )	( )	( )
Saving for old age	( )	( )	( )
Saving to buy land	( )	( )	( )
Saving to start or improve a business	( )	( )	( )
Saving for dowries, weddings, etc.	( )	( )	( )
Saving for education of children	( )	( )	( )
Saving to buy large consumer goods – like motorcycles, etc.	( )	( )	( )
Saving to improve or build or buy a house	( )	( )	( )
Saving to improve a farm (If a farmer)	( )	( )	( )

To obtain even a rough classification of couples by order of magnitude of accumulated savings it is necessary to ask specifically about savings accumulated in various forms. A possible question might be:

1. "Since you have been married, have you been able to set aside savings or reserve funds in any of these ways?"

	Yes	No
Savings account or postal savings	( )	( )
Insurance policy	( )	( )
Money lent out	( )	( )
Farmer's association or cooperative share	( )	( )
Etc. (as appropriate for particular country)	( )	( )
Other (Specify) _____	( )	( )

(IF YES TO ANY FORM OF SAVING):

1a. "Would you say these accumulated funds amount to:"

( ) Less than two months' income
( ) About two months' income
( ) More than two months' income

(IF MORE THAN TWO MONTHS' INCOME)

1b. "As much as half a year's income?"

( ) Yes ( ) No

(IF YES):

1c. "As much as a year's income"

( ) Yes ( ) No

Since people may not regard as "savings" money they have put into their homes, business, etc., a specific question should be asked about such saving.

2. "Some people also put money into houses or land, or into their farm or business. Since you have been married, have you and your wife been able to do any of the following?"

	Yes	No
Invest in your own home	( )	( )
Invest in other houses or rental property	( )	( )
Invest in a (your) business	( )	( )
Invest in land	( )	( )
(for farmers) Invest in your (a) farm	( )	( )

(IF YES TO ANY OF ABOVE):

2a. "Would you say the amount you have been able to invest in these amounts to:"

( ) Less than two months' income
( ) About two months' income
( ) More than two months' income

(IF MORE THAN TWO MONTHS' INCOME):

2b. "As much as half a year's income?"

( ) Yes ( ) No

(IF YES):

2c "As much as a year's income?"

( ) Yes ( ) No

A few additional questions could be asked which also relate to savings behavior.

1. "If your income rose, so that you had a little extra money every year, which of the following would you regard as the most important use for this extra income?"

(INTERVIEWERS: Read the following list and record below which use the respondent says is most important)

Buy better food or clothing for the family
Add to savings or reserve funds
More education for children
Buy land
Improve housing
Buy large consumer goods such as bicycles or a television
Invest in a farm or business
Pay off debts

Most important use for extra income _____

1b. "What would you choose as the next most important use?"

Next most important use _____

2. "Some people around here borrow money and then find they have difficulty in paying it back. Have you had this problem frequently, occasionally, or almost never?"

( ) Frequently ( ) Occasionally ( ) Almost Never

(IF YES):

1c. "As much as a year's income"

( ) Yes ( ) No

Since people may not regard as "savings" money they have put into their homes, business, etc., a specific question should be asked about such saving.

2. "Some people also put money into houses or land, or into their farm or business. Since you have been married, have you and your wife been able to do any of the following?"

	Yes	No
Invest in your own home	( )	( )
Invest in other houses or rental property	( )	( )
Invest in a (your) business	( )	( )
Invest in land	( )	( )
(for farmers) Invest in your (a) farm	( )	( )

(IF YES TO ANY OF ABOVE):

2a. "Would you say the amount you have been able to invest in these amounts to:"

( ) Less than two months' income
( ) About two months' income
( ) More than two months' income

(IF MORE THAN TWO MONTHS' INCOME):

2b. "As much as half a year's income?"

( ) Yes ( ) No

(IF YES):

2c "As much as a year's income?"

( ) Yes ( ) No

A few additional questions could be asked which also relate to savings behavior.

1. "If your income rose, so that you had a little extra money every year, which of the following would you regard as the most important use for this extra income?"

(INTERVIEWERS: Read the following list and record below which use the respondent says is most important)

Buy better food or clothing for the family
Add to savings or reserve funds
More education for children
Buy land
Improve housing
Buy large consumer goods such as bicycles or a television
Invest in a farm or business
Pay off debts

Most important use for extra income _____

1b. "What would you choose as the next most important use?"

Next most important use _____

2. "Some people around here borrow money and then find they have difficulty in paying it back. Have you had this problem frequently, occasionally, or almost never?"

( ) Frequently ( ) Occasionally ( ) Almost Never

APPENDIX A

SUGGESTED SETS OF QUESTIONS FOR OBTAINING INCOME DATA IN A LESS DEVELOPED COUNTRY

A. A QUESTION SET FOR OBTAINING WAGE AND SALARY INCOME IN A LESS DEVELOPED COUNTRY

(The interviewer is instructed to identify on the household schedule each family member who works for wages and salaries. All the questions are to be asked for each such person (identified by a number in the household schedule) and recorded below.)

W1. How much did _____ make on _____ regular job during the last month?

_____ (approp. currency) _____ (approp. currency) _____ (approp. currency)
Person No. _____ Person No. _____ Person No. _____

W2. And how much did _____ make on _____ regular job during the past 12 months? *(Enter in chart below: Col. 1).*

W3. Did _____ receive from an employer any compensation that you _____ haven't included yet in the form of free housing, rental allowance, food, and the like?

_____, _____, _____.
Person No. _____: no ( ) yes ( ) What was it? _____
Person No. _____: no ( ) yes ( ) What was it? _____

(IF YES):

About how much would the value of these things be per year? I mean how much would they cost you per year if you had to pay for them? *(Enter in chart below: Col. 2.)*

W4. Did _____ receive any other income from _____ regular work that you haven't included yet, such as a bonus, pay for extra hours, other allowances, etc.?
Person No. _____: no ( ) yes ( )
Person No. _____: no ( ) yes ( )

(IF YES) How much did that amount to in the past 12 months? *(Enter in chart below: Col. 3).*

	Past 12 months			
Person No.	Col. 1	Col. 2	Col. 3	
	Regular Pay	Income in Kind	Other income from job	Total
Total				

B. A QUESTION SET FOR OBTAINING FARM INCOME IN A LESS DEVELOPED COUNTRY

(INTERVIEWER: Check Household Schedule. If anyone is marked (F), the family has income from a farm and the following questions should be asked.)

F1. How much farm land does your family cultivate?

_____
(appropriate units)

1a. Does any of this land belong to relatives not living with you, but who share in the proceeds of the farm?

( ) No ( ) Yes → How much? _____
(appropriate units)

1b. Is any of this land rented in:

( ) No ( ) Yes → How much? _____
(appropriate units)

1c. In addition, do you own any land which you do not farm?

( ) No ( ) Yes → How much? _____
(appropriate units)

F2. Thinking of all the land your family farms, what kind of land is that?

Type of Land	Owned	Rented In	Total
(List those appropriate for country)			
Other			
Other			

F3. How many crops did you grow on your land last year – four, three, two, or what?

_____

F4. What were your principal crops in each growing season? Let's start in july a year ago. What crops did you harvest in July, in August, etc. (until June, this year) *(Check on Worksheet A, Col. 2.)*

ASK FOR EACH MAJOR CROP GROWN

F5. What was the total amount of _____ which you produced from your (first) (second) (third) crop – including amounts sold in the market or to *(where appropriate might have)* farmer's association, etc. or amount consumed in the home, and any amount given in payment to others? *(Enter in Col. 3).*

F6. What was the price per (appropriate unit) which you received for your _____ *(enter in Col. 4).*

F7. What was the value of your _____ crop before subtracting expenses *(Enter in Col. 5).*

F8. Did you have any income from animal products? What kind? *(Check on worksheet B, Col. 2).*

	WORKSHEET A – VALUE OF CROPS				
Products (A list appropriate for country in question) Col. 1	Check if Produced Col. 2	Amount Produced Col. 3	Unit	Price per unit (appropriate currency) Col. 4	Total value of product. (appropriate currency) Col. 5
Product No. 1 First crop					
Second crop					
Third crop					
Product No. 2 First crop					
Second crop					
Vegetables					
Others (specify)					
Total					

INTERVIEWER: ask for each kind of animal *(For eggs ask total value only).*

F9. How many _____ do you have now? *(Enter in Col. 3).*

F10. How many _____ did you sell in the past 12 months or consume in your home? *(Enter in Col. 4).*

F11. What price did you receive per _____? *(Enter in Col. 5).*

F12. What was the total value of your production of _____ *(Enter in Col. 6).*

WORKSHEET B – VALUE OF ANIMAL PRODUCTS					
Animal Products (List those appropriate for country) Col. 1	Check if Produced Col. 2	Number now Col. 3	Number Sold or consumed Col. 4	Price per unit (appropriate currency) Col. 5	Total Value (appropriate currency) Col. 6
Animal Product 1					
Animal Product 2					
Animal Product 3					
Total					

F13. Did you produce anything else on your farm that we haven't included yet?

No ____ (Go to F14) Yes ____

(IF YES) ↓

F13. What was the value of these other products during the last year?

_____

(appropriate currency)

F14. Of course, you had expenses too. First, during the past 12 months how many people did you hire to work on your farm either year around or only at certain times of the year?

None ____ (Go to Q. F15.)

Year around: _____ (Hired whole year)
(No. of workers)

Casual: _____
(No. of man-days)

F14a. How much in total did you pay for labour during the past 12 months? *(Enter on Worksheet C).*

F15. About how much did you have to spend on supplies during the past 12 months, such as on seeds, fertilizer, weed killers and insecticides, animal feed and the like? Anything else?

(Enter items on Worksheet C).

F16. Thinking only of your farm expenditures – how much did you spend during the past 12 months for interest, farm taxes, water charges, young animals, etc.?

(Enter items on Worksheet C).

INTERVIEWER: do not include the following under expenses:

Payments on land or purchases of land,
Construction of farm buildings,
Debt repayments, purchases of farm equipment.

F17. (If any land rented in – Q.F1b) How about payments to a landlord – how much did these amount to?

(Enter on Worksheet C).

F18. Any other large expenses? *(Enter on Worksheet C).*

WORKSHEET C – EXPENSES	
Kinds of Expenses (must be appropriate for country involved)	Total Expenditures in past year (appropriate currency)
Labour	
Fertilizer	
Insecticides and weedkillers	
Seeds and seedlings	
Animal Feed	
Interest	

WORKSHEET C (continued)

Farm taxes	
Water charges	
Young animals	
Payments to Landlord	
Other (Specify)	
Total	

F19. (IF FARM IS PARTLY OWNED BY RELATIVE NOT LIVING IN HOUSEHOLD – F1a)
How much of your farm income did you give to the relative who owns the farm with you? _____

What kind of sharing arrangements did you have?

_____

C. SUGGESTED SET OF QUESTIONS FOR OBTAINING BUSINESS INCOME IN A LESS DEVELOPED COUNTRY

B1. You said earlier that _____ (and) _____) worked in (your/his) own business or a family business. Did the business grow during the past 5 years or so, or did it decline, or was there no change?

Grew _____ Declined _____ About the same _____ Uncertain _____

B2. Approximately how much were your sales or receipts from the business in the past 12 months – before any expenses?

(appropriate currency)

_____ last year

_____ last month

B3. And what has been the total income of the business after paying for all expenses and taxes – including income that may have belonged to partners or other owners – in the past year?

(appropriate currency)

_____ last year

_____ last month

(IF SAYS DOESN'T KNOW INCOME):

B3a. *(Show card with income brackets)* Which of these income groups best describes what your income probably was last year?

Last year (appropriate income brackets)

1. Under _____
2. _____
3. _____
4. _____
5. _____ and over

B4. About how much is the total value of this business. I mean how much would you have to pay for the equipment, stocks of goods, building (if you own it), and the like if you bought them today? Would it be

Less than _____ (Skip to B8)
(appro- _____ (Ask B5 and following)
priate _____ (Ask B5 and following)
value _____ (Ask B5 and following)
brackets _____ or more (Ask B5 and following)

B5. You said that the income of the Business last year was _____ (B3)

Was all of this income used to meet family and personal expenses, or was some of it saved or used for other purposes?

All used for Family expenses ____

Some of it saved and/or used for other purposes ____

↓

What particular purpose? _____

B6. Did you invest any money in machinery or equipment for the business, additional stocks of goods or inventories, business buildings, or the like during the past year?

Yes ____ No ____ (Go to B7)

↓

(IF YES)

B6a. What kinds of investments did you make for the business?

_____

B6b. How much did that cost? _____ (appropriate currency)

B7. Did you increase the revolving fund of the business last year?

Yes ____ No ____ (Go to B8)

(IF YES)

B7a. How much did you add to the revolving fund last year?

_____

(appropriate currency)

B8. Did the income of the business belong entirely to you and/or members of your household, or did you have to share it with a partner or relatives who own part of the business, but live elsewhere?

Entire income belongs to household ____ Income was shared (Ask B8a.)

B8a. What was the share of the partner(s) (or relatives)? _____

(appropriate currency)

B9. During the last year how many people did you employ in your business either year around or at a certain time?

None ____ (Skip 9a and 9b)

B9a. Year round _____ Full-time or part time _____

(No. of workers Hired whole year)

B9b. Casual: _____

(No. of man-days in last year)

D. A QUESTION SET FOR OBTAINING "OTHER INCOME" IN A LESS DEVELOPED COUNTRY

(Ask all respondents)

We have talked about income that you and others in your household may have earned from (your regular job) (your farm) (your business). During the last 12 months did you or any member of your household (sharing income with you) have income from other sources that we have not yet talked about, such as

	No	Yes	(IF YES) amount (appropriate currency) in past 12 months
An extra job	( )	( )	_____
Interest or dividends	( )	( )	_____
Rent from a house or farm or share in a farm	( )	( )	_____
A share in a business	( )	( )	_____
A pension or annuity from Government or business	( )	( )	_____
Other (specify) _____			_____
total			_____

E. QUESTIONS USED FOR MEASURING "INCOME CONSTRAINT"

1. *(From the O'Donnell-Robinson study in Pennsylvania – see footnote 27)*

   If you had as much money as you needed, how many children would you want?

2. *(From the Hawaii Value of Children Study – see footnote 39)*

   Suppose your family increased, to double what it is now, would that affect the number of children you want?

   ( ) Yes ( ) No ( ) Don't Know

   (IF YES) How might it affect the number you want?

3. *(From the Family Growth Study in North Carolina – see footnote 28)*

   Some people say that if they had plenty of money they would have planned this thing or that thing differently. If you had all the money you want, how many children would you choose to have, knowing that you could have exactly the number you would want?

APPENDIX B (Exhibit 1)

SUGGESTED CODE FOR OPEN-ENDED QUESTIONS ON ADVANTAGES AND DISADVANTAGES OF SMALL AND LARGE FAMILIES

"Most people feel that a couple with (5) or more children have a large family. In your view, what are the main advantages of having such a large family?"

Code:

( ) 1. Less worry about child deaths
( ) 2. Other non-economic advantages
(Children are fun, interesting; quality of home life better; happier family; stronger family ties)
( ) 3. Economic advantages
(More people to earn money, support parents; more people to help on farm, in business or around house; siblings can help each other financially; more chance to have gifted or successful child)
( ) 4. Uncertain; depends; ambiguous whether economic or non-economic advantages; unable to give reasons
( ) 0. No advantages in having large family

"Are there any important disadvantages to having (5) or more children?"

( ) Yes ( ) No (Go to Q. A.2.)

(IF YES) What are they? _____

Code:

( ) 1. Non-economic disadvantages
(Quality of family life suffers, noise, quarrels, etc. health of mother may suffer; children may get less care)
( ) 2. Economic disadvantages
(Cost of bringing up children; costs of education, housing etc. Can't give children so much education; mother can't work)
( ) 3. Depends; uncertain; ambiguous whether economic or non-economic advantages; no reasons given
( ) 0. No disadvantages in having large family

"Most people feel that a couple with only (3) children or less have a small family. What are the main advantages of having such a small family?"

Code:

( ) 1. Non-economic advantages
(Quality of family life better, less noise, quarrels etc. Better for health of mother; children can get more care)

( ) 2. Economic advantages
(Cost of bringing up children less; cost of education, housing etc.; can give children more education; mother can work more)

( ) 3. Uncertain; depends, ambiguous whether economic or non-economic advantages; no reasons given.

( ) 0. No advantages in having small family

"Are there any important disadvantages to having only _____ children?"

( ) Yes ( ) No

(IF YES) "What are they?"

Code:

( ) 1. More worry about child deaths

( ) 2. Other non-economic disadvantages
(Miss the fun of children; poorer quality of home life; less happy family; weaker family ties)

( ) 3. Economic disadvantages
(Fewer persons to earn money, support parents; fewer persons to help on farms, in business or around house; siblings can't help each other financially as much; less chance to have gifted or successful child)

( ) 4. Uncertain; depends; ambiguous whether economic or non-economic disadvantages; unable to give reasons

( ) 0. No disadvantages to having small family.

APPENDIX B (Exhibit 2)

QUESTION SET TO OBTAIN CHILD-TIME USE
(A pilot survey designed for Brazil)

We are interested in the school attendance of your own children. (Ask separately for each child 6–16 and record answers in box)

a. Did . . . go to school last year?
b. How many hours a day is he (she) usually in school, including the time it takes to walk to and from school?
c. How much time does . . . usually spend helping with household chores such as fetching water, gathering wood, cooking, cleaning, taking care of younger children, and the like?
d. How many days in the normal week does . . . help on the farm such as working in the fields, caring for animals, herding, etc.
e. When . . . does this farm work, how many hours a day does he (she) usually do it?
f. Is there any other work which . . . does to earn money or obtain goods for the family? How often does . . . do this in the normal week?
g. When . . . does this kind of work, how many hours does he usually do it?

Enter Child No. from HH Listing (p. 1)

Usual time spent					
b. Hours per day in school					
c Hours per day spent on HH chores					
d. Days per week helping with farm work					
e. Hours per day when doing farm work					
f. Days per week spent on other income earning activities					
g. Hours per day when doing such work					

We have just talked about the normal activities of your children. Is there any time of the year when your children *need* to do more work than that?

☐ No

☐ Yes → When does that happen? _____

How many weeks of the year would that be in most years? _____

APPENDIX B (Exhibit 3)

QUESTION SET FOR OBTAINING DATA ON THE WIFE'S LABOR FORCE HISTORY IN RELATION TO HER FERTILITY HISTORY
(from Hawaii VOC study)

(FOR WIVES NOT CURRENTLY WORKING)

1. Did you work at all between _____
(ASK FOR EACH INTERVAL UP TO LAST CHILD; RECORD ALL ANSWERS IN TABLE)

(FOR EACH INTERVAL IN WHICH RESPONDENT WORKED, ALSO ASK THE FOLLOWING QUESTIONS):
How many months did you work during that time?
For most of this work were you able to care for your children while you were at work or did you have to make other arrangements?

INTERVAL	W = Worked NW = Did not work	No. of Mos. Worked	M = Mother takes care O = Other arrangements
the time you first got married and the birth of your first child			
the birth of your first child and your second child			
the birth of your second child and your third child			
the birth of your third child and your fourth child			
the birth of your fourth child and your fifth child			
the birth of your fifth child and your sixth child			

2. Have you worked at all since the birth of your last child?
1 ☐ YES 2 ☐ NO (GO TO 3)

2a. How many months have you worked since the birth of your last child?
_____ months

2b. For most of this work, were you able to care for your (child/children) while you were at work or did you have to make some other arrangements?
1 ☐ Care for children while working
2 ☐ Other arrangements

3. Have you worked at all during the last 12 months?
1 ☐ YES 2 ☐ NO

3a. During the past 12 months, about how much money have you earned from the work you've done?
_____ money earned

(GO TO 147)

APPENDIX B (Exhibit 4)

DETAILED QUESTION SET ON WIFE'S WORK
(From a pilot Survey in Brazil)

We are also interested in the work that the married women in the household do.

Try to interview each married woman separately. Enter information in box on next page.

1a. How many hours per day do you normally spend doing household work and taking care of children?

b. How many days a week do you help with farm work such as caring for laborers working in the fields, and the like?

c. When you do such work, how many hours a day do you usually do it?

d. Is there any other work you do to earn money or obtain goods for the family? How often do you do this in the normal week?

e. When you do such work, how many hours a day do you usually do it?

f. How much do you earn per day?

2. We have just talked about your normal work. Is there any time of the year when you need to do more work than that? ( ) No ( ) Yes

(IF YES) When does that happen? _____

How many weeks of the year would that be in most years? _____

Woman No. from HH listing

Usual time spent				
1a. Hours per day spent for housework and children				
b. Days per week helping with farm work				
c. Hours per day when doing farm work				
d. Days per week spent on other earning activities				
e. Hours per day when doing such work				
f. Earnings per day (in cruzeiros)				

Footnotes

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WORLD FERTILITY SURVEY

OCCASIONAL PAPERS

1.	Fertility and Related Surveys	William G. Duncan
2.	The World Fertility Survey: Problems and Possibilities	J. C. Caldwell
	World Fertility Survey Inventory: Major Fertility and Related Surveys 1960–73	
3.	Asia	Samuel Baum *et al*
4.	Africa	
5.	Latin America	
6.	Europe, North America and Australia	
7.	The Study of Fertility and Fertility Change in Tropical Africa	John C. Caldwell
8.	Community-Level Data in Fertility Surveys	Ronald Freedman
9.	Examples of Community-Level Questionnaires	Ronald Freedman
10.	A Selected Bibliography of Works on Fertility	György T. Acsádi
11.	Economic Data for Fertility Analysis	Deborah S. Freedman (with Eva Mueller)
12.	Economic Modules for use in Fertility Surveys in Less Developed Countries	Deborah S. Freedman and Eva Mueller
13.	Ideal Family Size	Helen Ware
14.	Modernism	David Goldberg
15.	The Fiji Fertility Survey: A Critical Commentary	M. A. Sahib *et al*
16.	The Fiji Fertility Survey: A Critical Commentary–Appendices	M. A. Sahib *et al*
17.	Sampling Errors for Fertility Surveys	L. Kish *et al*
18.	The Dominican Republic Fertility Survey: An Assessment	N. Ramírez *et al*
19.	WFS Modules: Abortion · Factors other than Contraception Affecting Fertility · Family Planning · General Mortality	WFS Central Staff

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