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RESEARCH PROPOSAL

INCREASING EDUCATIONAL AND ECONOMIC OPTIONS OF
ADOLESCENT FEMALES: A CROSS-NATIONAL STUDY OF
POLICY IMPLICATIONS FOR REDUCING FERTILITY AND
RAISING FEMALE STATUS

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SUMMARY

The basic thesis of this cross-national research proposal is that changing the educational and economic opportunity structure of adolescent females before they embark on their marital/fertility career can produce interrelated social and personal gains: (a) raise female status and broaden life chances; (b) delay age of marriage or first union; (c) reduce normative needs and perceived benefits of a large family; and (d) develop voluntary goals for small families. Adolescent females potentially offer the greatest saving in births averted of any target group, yet they have been traditionally barred from and unreachable by the extant family planning approach in LDCs.

The project capitalizes on the recent synthesis of fertility research findings which reveal that the strongest factors predicting fertility decline have been those which relate specifically to the position of the woman. It links these factors into a coherent theory aimed at showing why female opportunity structure should have such strong impact on women's status, economic participation in development age of entry into union, contraceptive orientations, and fertility behavior. The theory combines two conceptual strands: the economists' empirically-backed insistence that perceived costs vs. benefits of children affect fertility, and Blumberg's work on the antecedents and consequences of female status. The missing link is provided by proposing to disaggregate the cost/benefit model by sex of partner. The resultant heuristic model suggests the following sequence: educational/economic opportunity increases female autonomy and status, while decreasing perceived utilities in an early union and a large family; her new life situation and increased autonomy are correlated with later entry into union and greater likelihood of voluntarily carrying out low fertility goals.

The proposed research aims at evaluating existing situations which are changing the traditional opportunity structure of adolescent females, rather than setting up costly and time-consuming demonstration projects. The methodology relies principally on the elegant and powerful quasi-experimental design known as "regression-discontinuity analysis", which should permit maximum generalizability of the findings to non-studied groups.

At present, the research is projected for three of the following countries: Jamaica, Morocco, Philippines, Colombia, or possibly, Pakistan or Indonesia. The theoretical framework and flexible research design of the proposal enable country selection to be made on the basis of feasibility, without damaging the integrity of the project or its potential impact for policy interventions.

Given recent analysis of the empirical importance of the variables linked to female status in reducing fertility, and the new concerns for raising female status in order to enhance human resources and economic development, the results of the present project should be of vital concern for policy makers in Third World countries in and beyond

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Curriculum Vitae - Rae Lesser Blumberg

Joyce Justus

Reprints - Campbell

the target nations. The research is not politically sensitive, and could point the way to a policy intervention in fertility less sensitive in many developing countries than the currently used family planning approach. If effective, it could help decision makers to better allocate scarce resources (educational, family planning and development funds they would spend in any case) so as to maximize impact on fertility.

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INTRODUCTION

Overview

This proposal concerns a cross-national research project of low political sensitivity and high immediate policy relevance to evaluate the thesis that:

changing the educational and economic opportunity structures of adolescent females before they embark on their marital/fertility careers can concurrently serve as a vehicle to:

(a) increase their autonomy and status; (b) delay age of marriage or first union; (c) reduce normative needs for and perceived benefits of a large family; and hence, (d) sharply reduce family size. Thus, advancing educational and career opportunities for adolescent girls serves as a feasible and effective strategy for lowering fertility in many LDCs.

Female education and employment, along with measures of factors (a), (b) and (c) above, increasingly have been emerging as the strongest predictors of fertility decline. Adolescent females are the potentially highest payoff target group in terms of births averted; however they traditionally have been kept from utilizing and consequently have been unreachable by the extant "family planning" approach. This research project would provide for the first time a micro level evaluation and demonstration of how factors relating to increased female status serve to reduce fertility in LDCs. The results should

help decision makers in target countries and other developing nations, who are trying to lower population growth rates, to better allocate limited resources (educational, family planning and development funds which they would spend in any case) toward this goal.

Conceptual Framework

The underlying paradigm is a synthesis of two conceptual approaches to fertility decline based on: (1) the economic utilities of children; and (2) the antecedents and consequences of female autonomy and status. A group of economists have asserted vigorously that fertility is a relatively rational process affected by considerations of expected costs vs. benefits of children. Some of these argue that fertility among Third World poor remains high because at the level of the family, utilities in children continue to outweigh the costs. The value of children is indeed a significant variable, under certain conditions. But as the costs/benefits approach is presently formulated, it cannot explain why recent re-evaluations of decades of fertility research indicate that factors related to the status of women are the most powerful determinants of fertility decline. Specifically, findings show that it is not education in general, but women's education; not modern employment, but women's modern employment; not age of marriage, but women's age of marriage that most strongly predict fertility decline in Third World countries.

Disaggregating the economists' costs/benefits model by sex of partner will permit an evaluation of these findings. Such disaggregation provides the missing conceptual link to determine whether, as hypothesized, these factors operate through changing the woman's utilities early marriage and many children from positive to negative. The

model invoked to explain how the process works is derived from Blumberg's research on the antecedents and consequences of female autonomy and status (e.g., Blumberg 1974, 1975, 1976, forthcoming).

Under present conditions, education and modern employment are the main determinants of greater female economic autonomy. Female economic autonomy, in turn, has been shown empirically to be the strongest predictor of women's ability to exercise greater control over other areas of their lives. These areas include: marriage (including age of entry into union), household power and fertility. If educational and economic opportunities can be provided before women embark on their marital/fertility careers, the evidence indicates that they will: (1) marry later (a factor which in itself provides for one payoff vis a vis fertility by lengthening the generation span and postponing women's entry into union to a point here their fecundity is irreversibly lower) and, more importantly, (2) need, desire, and have fewer children. Moreover, the increased female productivity and status which ensue should have positive impact on national efforts at human and economic development.

Research Strategy

Target Group. The present approach permits access to the group among whom the greatest savings in births averted may be realized: non-elite adolescent females who have not yet begun their marital/fertility careers, and who are thus most amenable to being reached by new opportunities and policy interventions. This strategy contrasts strongly with the present family planning approach, which verwhelmingly reaches women in mid or late fertility trajectory, among whom few additional births remain to be prevented thus reducing the fertility reduction payoff.

Target Countries. Research will be carried out in at least three of the following countries: Jamaica, Morocco, Philippines, Colombia (in each of which experimental and control situations are available), and possibly, Pakistan or Indonesia. This list could be altered without threatening the integrity of the project, theory or research design.

Methodology

Rather than initiating costly and time-consuming demonstration projects, it is proposed that existing situations be studied in a controlled quasi-experimental manner, using primarily a "regression-discontinuity" design. Developed by the eminent methodologist, Donald T. Campbell, this design is a powerful and elegant way of approximating experimental and control groups in a natural setting. Regression-discontinuity analysis is best used where some "experimental" treatment is provided to part of a population according to a strict selection criterion. Four contrasting research situations relevant to the theoretical paradigm would be explored. In the first two, Jamaica and Morocco, educational/economic opportunity is being provided for a part of the adolescent female population according to a strict selection criterion, but the research sites vary in pre-existing female status. In Jamaica female status is relatively high; in Morocco it is relatively low. The remaining two contrasting situations may be found in the Philippines, where female status traditionally has been fairly high. In certain areas, new opportunities for adolescent girls are emerging; in other areas, traditional avenues for female economic autonomy are eroding, and few new opportunities are available. (See Section

To test the theoretical paradigm we propose four major independent variables: (a) educational/economic opportunity; (b) female status; (c) age of entry into union; and (d) perceived benefits vs. costs of children which characterize the adolescent females in the research samples. Interrelationships among these four independent variables and their impact on the dependent variables, fertility goals and behavior, would be explored. Findings are hypothesized to correspond to the following model: as women's status variables rise, the utilities of large families to women decrease. Simultaneously, women's power to control their own fertility outcomes, in directions consonant with their own perceived child costs vs. benefits, increases with rising status. This effect will be most dramatic where the provision of educational and economic opportunities to adolescent females results in a delay of marriage or union, a rise in status, and an increase in economic autonomy.

Policy Considerations and Impact

A number of policy-relevant advantages accrue from the proposed research, over and above the expectation of significant empirical results. (1) The variables involved are open to policy implementation; moreover, they are the strongest predictors in the fertility literature. (2) Voluntary impacts on fertility limitation practices and, potentially on higher age of entry into union, can be anticipated. Rather than having to be imposed, these changes would be seen as compatible with the self-interest of the target groups involved. (3) To the extent that the program has the hypothesized effect of delaying age of marriage/first union, an additional variable with its own powerful

"two-for-one" payoff in reducing fertility is added to the population impact. This is because higher age of marriage, best predicted in Third World countries by female schooling, functions to: (a) increase the span of each generation, which slows the pace of population increase; and (b) delay women's childbearing until an age where their fecundity is irreversibly reduced.

(4) Because of the unique target group--those with the strongest potential payoff in births averted--visible results should be evident within several years if the hypotheses are borne out. (5) Furthermore, the research should impact not only on fertility but also would implement International Women's Year and Percy Amendment goals to raise female involvement in national development as well as their status.

The research findings should alert policy makers in countries where high fertility is a burden that the problem may be unwittingly aggravated by failing to devote resources to female opportunities. It is postulated that every dollar spent on boys' education not matched by a dollar spent on girls' may be lost to the nation by the subsequently higher fertility of those girls. Furthermore, because recent findings indicate that it is not GNP growth per se, but the amount of income that filters down to the bottom 60 percent that acts as a main stimulus to fertility decline, every dollar spent on development plans that are capital, vs. labor intensive, and which fail to provide opportunities for women as well as men, may be neutralized by the continued high fertility of the excluded.

The theory underlying the proposed research stems from the interweaving of two heretofore distinct conceptual strands. One involves an approach becoming increasingly popular in the population field in recent years: that fertility is a relatively rational process affected by perceived costs vs. benefits of children. The second, which is backed by analyses of cross-cultural research findings, is focused on the antecedents and consequences of female economic autonomy and status that have fertility impact. Combining these two theoretical strands provides a powerful explanatory frame for fertility. For one thing, this frame helps to impose a coherent pattern on many of the apparently disjointed or inconsistent findings of decades of fertility research. For another, it points the way to needed research, by identifying and specifying a "package" of inter-related variables which hitherto have not been studied together at the micro level of single households or individuals. Finally, it should guide the translation of findings into policy implementation.

The Cost/Benefit Approach. There are two schools within this general framework. The first, composed largely of neo-classical economists, has been growing steadily since Gary Becker's influential 1960 article began to buck the Malthusian tide. Focusing on the household, this approach explains families' fertility behavior in terms of their perception of the expected costs vs. expected benefits of children. This school of thought, however, has concentrated largely on the middle classes of high-income countries, and it is the low fertility and high costs of children of this group which most frequently capture its interest. Even when researching Third World countries, members of this school tend to devote most of their attention to the "higher child costs--smaller families" side of the costs/benefits equation.

It is to the other side of this equation, the "higher child benefits--larger families" issue that the second school dedicates its primary attention. This group is more concerned with the impact of social structural variables on fertility, and argues that not only is fertility a fairly rational response throughout human history, but that for many of today's Third World poor, high fertility makes good sense, because children bring them the hopes of benefits greater than costs (see, e.g., Schnaiberg and Reed 1974). Mamdani (1972), who restudied the well-known Khanna family planning experiment in India, concludes that rather than being the cause of their poverty, the many children of the poor represent an attempted solution to their plight.

Members of this school see the calculus of costs and benefits of children as shaped by the position of the family within the larger social structure. Thus, if the poor are having large families as a way of coping with their plight, one must examine the structural factors which condition both their plight and their expected ratio of benefits vs. costs.

The increasing penetration of the market economy has meant that even the more isolated "subsistence" populations need to acquire cash in order to survive. Concomitantly, as individualized property and earnings, subject to the vicissitudes of the market, reshape economic life, pre-existing communal systems of mutual aid and old age support tend to be eroded. Social alternatives are seldom available since the less developed the country, the more limited the social assistance to the poor majority. Thus, "modernization" seems to involve intensified crises of insecurity for the poor (Schnaiberg and Reed, 1974). For

these people, raising half a dozen children provides the safest, best known means of achieving the problematic goal of security. Even young children can start to contribute labor and/or income and provide the hope of future assistance.¹

These factors militate to keep "traditional" levels of fertility high. Moreover, recent evidence brings to light an even more disturbing situation: traditional levels of fertility may be increased as people respond to the new opportunities and uncertainties of the cash economy (see e.g., AAAS, 1974). As there is new demand for wage labor the poor family that produces more than the number of children their circumstances dictate - for perceived labor, crisis and old age assistance - may view these additional children as investments. There are some risks: more mouths to be fed through the dependency period, and in regions where females are not economically productive, the risk of additional daughters. But in return, the extra offspring give the family more chances of having some of its members gain a foothold in the uncertain but alluring wage labor economy.

1. For a cogent summary of the arguments and some of the references concerning the benefits of children for many segments of the poor in an emerging capitalist economy, see Michaelson, 1975. For excellent discussions of the nature and types of aid that children can provide for parents, see Schnaiberg and Reed, 1974; Schnaiberg and Goldenberg, 1975. Not only the absolute level of the benefit flow is important, but also its relative level--and its degree of dependability--compared with other possible sources. And the benefit flow stems not from the expected marginal utility of each child, but from that of the whole set of children. Schnaiberg and Reed also alert us to the problem of how utilities are discounted over time. Mamdani (1972) stressed that to the Indian peasants he studied, the short-run benefits of child labor were weighted more heavily and distant future outcomes discounted. Schnaiberg and Reed note that Enke and other economists also discount future benefits, so for the macro cost/benefit models of fertility developed by this school, child labor also would loom large. However, they note, other work (see Krutilla, 1973) implies that where there are no alternatives for a distant future occurrence, such as support in old age; parents would tend to weight these future utilities of children more heavily. Thus the arguments tend to converge: For the poor in a market economy, with some expectations of short-term labor or earnings from children and no hopes for governmental assistance in future crises and old age, there are powerful utilities in large families operating throughout the life cycle.

It is in the light of this argument that we should interpret the recent convergence of findings (summarized in ICP 1974:8-9) on the importance of more egalitarian income distributions for fertility decline. Examining cross-national data, Kocher (1973) concludes that income distribution is the best indicator of fertility decline: where income inequality remains high, fertility has not been reduced. Similarly, a World Bank report (1974) based on 1960-65 data on 64 countries found that increases in the income share going to the bottom 40 percent of households had a stronger impact on fertility decline than did increases in average per capita income. In parallel fashion, Rich's (1973) 40 nation correlation study found that augmentation of the incomes going to the poorest 60 percent contributed more to fertility decline than increases in average per capita income. Rising income shares among the poor probably index a positive change in their opportunity structures, and hence cost/benefit calculations with respect to children.

Whether or not such redistributive processes will occur in the long run, the potential fertility of contemporary cohorts of adolescent girls is an area where intervention may be effective in the short run.

Syntheses of the vast fertility literature (e.g. Williams 1973); ICP 1974) provide clues as to why such intervention may be effective. Although these publications do not attempt to pull together the survey results on this dimension, it is clear that the strongest predictors of low fertility refer to the condition of the female. Education is one of the best measured, the most consistent and often the most powerful predictor variable of smaller family size, and the strongest education variable is that of female education (see, e.g., ICP 1974:12-13). Similarly, female employment--when it constitutes a

non-household economic pursuit that is relatively incompatible with simultaneous childtending--is more significantly related to fertility decline than the general, or male, employment variable.

In fact, some U.S. research indicates that in the case of income the male and female variables have opposite effects for fertility: increasing male earnings raises fertility somewhat, but increasing female earnings or income potential dramatically decreases fertility (see Cain and Weininger 1973; DeTray 1972).

The ICP literature review also gives credence to the recently resurrected variable, "age of marriage," once one of the principle factors in the early theorizing about fertility determinants. (1974: 25-28). Moreover, the ICP review shows that age of marriage relates most strongly to fertility in developing countries. Dixon (1971) has added the relevant finding that age of marriage correlations are generally higher for females than for males. Interestingly, Dixon's multiple regression results showed that literacy of teen-age girls emerged as the strongest predictor of female age of marriage.

While the focus of the cost/benefits approach has been the household or family, members of the "Beckerite" school include certain variables associated with women among the factors that increase the cost of raising children: specifically, the increasing opportunity cost of women's time as their education and employment possibilities rise. Nevertheless, these factors are examined only in the context of the household. Ironically, in two of the most influential of these recent field studies (Mueller 1972, on the costs of children in Taiwan; Mamdani 1972, on the benefits of children in India), the interviewees were the husbands.

Cost/benefit analysis that remains conceptualized at the level of the household, family or couple. (even if tapped via an interview with the husband) can tell us little about the role of the woman, or explain why the literature indicates that the female-linked variables are the strongest predictors of fertility.

To understand the pattern, we first must disaggregate the cost/benefit model by sex of partner. (Not all fertile sexual unions involve established families, households or even long-term husbands; the cost/benefit calculations of the male and female partners will not necessarily in all instances coincide.) Analysis of the impact of these "female" variables on the woman's costs vs. benefits in an early-begun and high fertility career will provide the missing element. Then, invoking Blumberg's paradigm and cross-cultural findings on the antecedents and consequences of female autonomy and status will further clarify the pattern.

1. Education. Education provides the possibility of a "two-for-one" payoff on fertility via both indirect and direct economic opportunity mechanisms; moreover, it tends to have a strong impact on raising the woman's age of marriage in developing countries--which is precisely where female age of marriage shows the strongest negative correlation with fertility. The indirect effects of female education increase the probability of marrying a man with a stable, low fertility-inducing, modern sector job; the direct effects increase the woman's probability of working in an activity relatively incompatible with simultaneous childtending responsibilities. The direct effects are potentially much more powerful.

The levels of education associated with these fertility-reducing outcomes vary widely from country to country, over time, and for both sexes. In most areas at present, there is a "threshold" level for education: the person who receives an education below this level generally will be unable to get a stable modern sector job. Above this level, there should be an employment payoff for additional educational achievement. As employment opportunities continue to expand more slowly than the labor force in most Third World countries, the threshold level rises (see, e.g., Carnoy 1972). Where an elementary school certificate was once the passport to a steady white-collar future and basic literacy provided entree to stable factory jobs, the requisite levels may have risen to elementary school completion for blue-collar jobs and high school graduation for non-manual employment.

In certain countries (such as India, where unemployment extends through the Ph.D. ranks) there is no level of schooling that completely eliminates the spectre of unemployment. Nevertheless, males with more education have a better chance of landing the increasingly scarce and decreasingly well-remunerated but stable modern sector jobs. And families with middle class aspirations have had to educate their daughters to higher levels so that their educational attainments remain above the "threshold" for success in marrying such a man.

In addition to the possibility of a "good" marriage, education can enhance the economic prospects of the woman herself, for it provides improved access to those occupational and income-earning opportunities which tend to be relatively incompatible with child-²ending responsibilities.

² The degree of compatibility with simultaneous childbearing responsibilities is analyzed as an important predictor of female economic productivity in Brown (1970), Whiting (1972) and Blumberg (1974). In the

The activities of women in Third World countries listed in national accounts as "labor force participation" can be classified as to how easily they can be combined with care of small children. A woman working in a factory, store or office usually cannot bring along a baby unless day care facilities are provided. But a woman who is a vendor or engaged in handicraft production at home, or doing domestic day work, normally finds no difficulty in working with her youngest child: she may even be able to profit by involving older children. Figures on female labor force participation that fail to take this mother-child compatibility factor into account come up with a mixed bag of economic pursuits, with differing or even contradictory potentialities for fertility reduction.³

The more "child-compatible" pursuits also tend to be marginal or non-urban occupations where other life circumstances also militate for high fertility. The impact of female employment on fertility is consequently a source of confusion in the literature. Nevertheless, available figures on the better-paid, stable jobs invariably demonstrate correlations with lower fertility and more education (see, e.g., Kennedy et al., 1974, who present data on Venezuela).

latter, however, it is stressed that its effects tend to be outweighed by labor demand vs. available supply. When demand is high enough, women may be pulled into traditionally "incompatible" activities (e.g. "Rosie the Riveter" of World War II fame) and childcare arrangements underwritten by those who need female labor. Conversely, in time of male labor glut, men may edge women out of even traditionally "compatible" occupations (e.g., the increasing proportion of male telephone operators in the U.S. during the early 70's recession).

3. Depending on the statistical procedures of the countries involved, a wide variety of activities are or are not counted in the "economically active labor force" figures.

2. Economic Opportunities. This subject is presented in the broader context of antecedents and consequences of female autonomy and status:

a. Antecedents of female economic autonomy and status.

Lenski (1966) posits three major sources of stratification-linked power: power of property (more generally, economic power), power of force (physical coercion), and power of position (in a politico-administrative hierarchy). Blumberg has proposed that the most important determinant of women's general level of equality in life opportunities vis-a-vis the men of their group is their relative degree of economic power. Empirically, there are no known human societies where women achieve even a 50-50 representation in the political power system; with respect to the power of force, women's share of it is everywhere negligible. Only with economic power do we encounter empirically the full range of variation: there are societies where women have virtually zero autonomous economic power--where they may own barely more than their earrings (e.g., Rwala Bedouin), whereas in other groups they may control the lion's share of the economy (e.g., Iroquois).

Although her data base is small (12 societies), Sanday (1973) has posited and found that female economic productivity seems to be a necessary precondition for any substantial degree of economic power. On the one hand, she found that women's productive labor did

4. During 1973-74, Blumberg was the recipient of a Ford Foundation Faculty Fellowship on the Role of Women in Society. During that year she elaborated and began a preliminary empirical test of a cross-societal paradigm of factors affecting the position of women.

do not necessarily give them high status: there were societies where men did the major part of productive labor yet remained severely subjugated. On the other hand, in no society where women played a significant role in economic production did they have any real degree of economic autonomy.

Blumberg posited female participation in economically productive activities as an apparently necessary precondition for economic power. A series of variables termed "strategic indispensability" factors are proposed as mechanisms to help women translate labor power to economic power. Certain variables relating to kinship systems also are posited as affecting the degree of economic control women are able to exercise in a society.

Regardless of how achieved, it is hypothesized that women's relative degree of economic power constitutes the most important determinant of how free and equal they can be in comparison with the men of their group.

Additional possible sources of "female power" mentioned in the literature also were included in the paradigm, but with the prediction that they would be less important than the economic power variable. These included power of force, political power, degree of ideology of male superiority, age gap between the spouses, and extent to which the husbands assist with domestic and childrearing tasks.

In essence, the dependent variable of female status can be measured by means of a series of basic life options which are known to occur in all human societies.

b. Consequences of female economic autonomy and status.

These "life options" include female's relative freedom to (1) initiate marriage (including whether, when, and with whom); (2) terminate a union; (3) Engage in premarital sex; (4) engage in extra-marital sex; (5) control freedom of movement; (6) take advantage of extant educational opportunities; (7) control fertility (including type of intervention, spacing, and preferred sex ratio, as well as completed family size); and (8) exercise household power.

Using a pilot sample of 61 pre-industrial societies and data coded from the Human Relations Area Files and Murdock's Ethnographic Atlas (1967), it was possible to measure enough of these variables for a preliminary test of the paradigm. As predicted, economic power proved the strongest determinant of women's relative status, i.e., of the degree of equality of their "life options." Specifically, preliminary computer runs indicate that 57% of the variance in an index of life options was explained; the index of female economic power accounted for 47% of that variance, i.e., 82% of the variance explained (male use of force against women accounted for almost all of the remainder.)

Due to lack of coverage in the Human Relations Area Files data base, it proved impossible to measure all the proposed life options. Among the unmeasured casualties were women's degree of control over fertility outcomes. Nevertheless, the paradigm proposed a coherent explanation linking female autonomy with fertility, and other research has provided support for many steps along the hypothesized chain.

In the paradigm dealing with pre-industrial societies, economic power was measured by an index incorporating women's relative control of the means of production; their relative control of allocation of surplus; and their rights with respect to property accumulation and inheritance. In the context of contemporary nations, women's degree of "paycheck power" constitutes a main road to economic power for most non-elite groups. And female education constitutes a main predictor of their likelihood of earning "paycheck power."

The main sequences of events that follow in the wake of increasing female economic opportunities have important consequences for fertility. In the strongest case, the economic opportunities involve non-household pursuits with relatively low compatibility with simultaneous child-tending. And these are the ones for which female schooling seems most determinative.

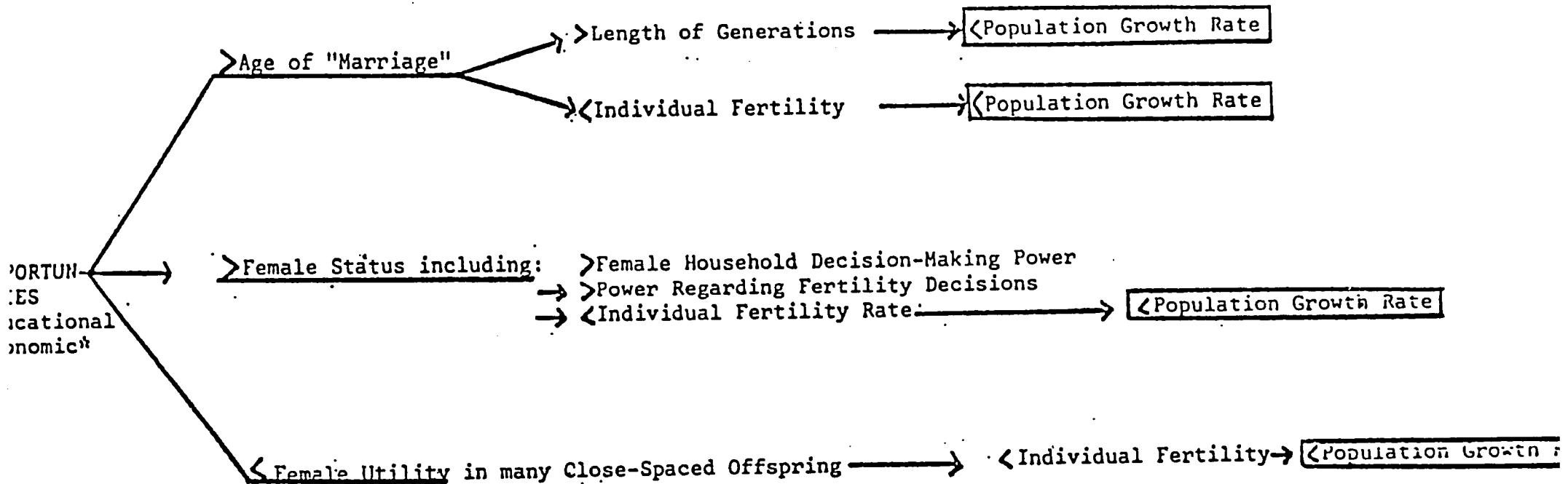
This salient interconnection between female education and economic opportunity is incorporated into Figure 1, which diagrams three major chains of fertility-impacting effects that are empirically supported as springing from enhanced female economic opportunity and involvement. These relate to: (1) age of marriage; (2) female status; and (3) utilities in (many and closely-spaced) offspring.

The review of the literature indicates that where adolescents are educated and economically productive -- especially if they earn wages -- there is a tendency for the age of marriage to rise. A higher age of marriage, in turn, affects population growth in two ways. On the one hand, it lengthens the generation span. If this

FIGURE 1

GREATER ADOLESCENT FEMALE STRUCTURAL OPPORTUNITY RESULTS IN LOWER FERTILITY BOTH VIA LATER AGE OF ENTRY INTO UNION AND GREATER MALE

POWER



* Of low Childcare compatibility

KEY: > = Greater

< = Lower

Note: Proposed interrelationships among female status, age of marriage, and female utilities in children variables are not diagrammed.

is raised from say, 20 to 25 years, the number of generations in a century is reduced from five to four. Among populations reproducing above replacement rate (approximately 2.1 offspring per couple), a situation akin to compound interest, the implications on the pace of population growth are obvious. On the other hand, later marriage tends to be associated with lower completed family size. Women who delay marriage cannot regain the lost years of (higher) fecundity; in LDCs, as age of marriage goes up, completed family size goes down.

Secondly, to the extent that women dispose of "paycheck power," they enjoy a relatively more equal position on a number of dimensions vis-a-vis the men of their group. One of these dimensions is household power (see e.g., Blumberg, 1974, 1976, forthcoming; Mandel, 1975). Among contemporary populations, Blood and Wolfe (1960) established the "paycheck power -- household power" link for the U.S., and these findings since have been replicated fairly consistently (see, e.g., Scanzoni, 1972). Blumberg further proposed that greater economic power would be associated with greater control over fertility -- and indeed with lower fertility. Sipes (forthcoming), in a 17-nation study, has found that female fertility is inversely correlated with their status (in part measured by economic power indicators).

Finally, a study by Weller (1968) shows that the sequence of translation of women's "paycheck power" to smaller families seems to run as follows: employment means greater household decision making power, which is manifested (among other things) in greater controls over fertility.

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Third, and foreshadowed by the discussion of the first two chains, women's utility in children changes. Cross-societal evidence indicates that women who are importantly involved in economic productivity tend to arrange the timing and number of births around their economic activities and not vice versa. For example, in most non-Arctic hunting-and-gathering societies, women are the primary producers -- their gathering accounts for 60%-80% of the diet (see, e.g., Lee and DeVore, 1968). These societies are usually semi-nomadic and do not use much child labor. If the woman were burdened by more than one small child at a time, her economic productivity, and group subsistence and mobility, would be adversely affected. The evidence indicates that these "primitive" women achieve four-year spacing between births (see, e.g., Whiting, 1968), and small family size, averaging around 2.0 with a standard deviation of 1.4, according to Birdsell, 1968. Similarly, women in polygynous horticultural societies also achieve fairly wide spacing (via long post-partem sex taboos, for the most part). More children would seem to be more of an asset in horticulture than in foraging, and indeed family sizes are larger in the former. The "fertility convenience" or utilities of economically productive women may not necessarily involve similar patterns of spacing, family size or even preferred sex ratios, but tend to vary by the technoeconomic and socioeconomic circumstances that affect the woman's cost/benefit calculus in children.

In summary, there are three major points concerning women's utilities;

With economically productive women, one must calculate their utilities in children separately from those of their

2. Methodology

The closer we can come to a true experiment, in which individuals are assigned to "treatment" and "control" groups in a random manner, the more confidence we can have in the validity of the findings. Where it is impossible or unethical to conduct such a randomized treatment experiment in a natural situation, two solutions are considered most effective methodologically: (a) quasi-experimental research design, and (b) multivariate statistical analysis.

(a) Quasi-experimental design.

It may be possible to find a natural analogue to the field experiment, even though the investigator cannot randomly assign people to differing "treated" or "untreated" statuses. Campbell has developed research designs that are non-reactive (i.e., don't make waves) even in policy-sensitive areas, and permit much greater control over threats to validity of interpretation than the typical field survey or case study (see e.g., Campbell 1963, 1968, 1969, 1974; Campbell and Stanley, 1966). Which of these designs could be used in a given instance (and whether a quasi-experimental design is possible) depends on the type of data that can be gathered in a specific situation. One of the most powerful and elegant of these quasi-experimental designs is that generally termed "regression-discontinuity" analysis. The defining research circumstance which permits application of the design is present in at least two of the proposed research sites, Jamaica and Morocco.

Regression-discontinuity analysis. The basic requirement is that some particular treatment or opportunity be made available to certain individuals in a population on the basis of a strict, and quantifiable, selection criterion. The selection criterion may be based on merit, such as a cutoff score on an exam, in which all those achieving an above-cutoff point score are deemed eligible for the opportunity. The criterion may be based on need, in which case all those falling below a certain point on the test would be aided. Or it may be based on some whimsical or idiosyncratic criterion unrelated to factors believed associated with making successful use of the opportunity. As Campbell puts it, "It is the dimensionality and sharpness of the decision criterion that is at issue, not its components or validity" (1969:252)

Where such a decision criterion is available for exposure to the opportunity, or "treatment," we would proceed as follows: Let us assume that the decision criterion to be considered is a sharp cutoff score on an examination administered to adolescent girls interested in receiving an educational opportunity. Individuals who had scored within a given distance above and below the cutoff point would be identified. By dealing with those representing a relatively narrow range of scores, we would be controlling such confounding factors as socioeconomic status, "I.Q.," birth order, etc.

5. There is the drawback of not being able to generalize our results to more extreme-scoring groups with the same degree of confidence. This can be handled to a certain extent by means of multivariate analysis of pre-existing aggregate data covering the entire range, where available, or resorting to a limited amount of sampling of those arrayed at more extreme points along the continuum.

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Passing the examination admits the adolescent girl to an opportunity situation, but since socioeconomic, ability and situational factors continue to cause attrition among the group, not all the respondents on the "pass" side of the sampling frame will have completed the opportunity "treatment," or achieved success as a result. Yet, none of the initially fairly similar below-cutoff sample had any of this treatment, i.e., their opportunity structure remained unchanged. Thus, we would expect that the above-cutoff group had changed more with respect to the dependent variable, the post-test measure.

Translating to fertility terms, we would expect more of the "pass" group to have moved into a life situation where their utilities in children were lower while their costs of children had risen. We would predict that their fertility goals and behavior would be below those of the candidates who had just missed out. The research situation in Jamaica - where youngsters must pass the "eleven-plus" examination in order to get into a secondary school - corresponds almost exactly to the hypothetical example, as will be seen in the country discussion below. The Moroccan situation is similar: it is reported that periodically a large number of adolescent girls line up to register for a popular, presumably opportunity-providing program offered by the Foyer Feminine, but there are only a limited number of places. Here, all the girls have demonstrated the same pre-treatment behavior (the effort to register) but only the first N are accepted. Those who were far back in the queue are the below-cutoff group; those ahead of them, the above-cutoff population.

Ideally, we would follow above and below selection criterion groups longitudinally to further control for extraneous influences. But given the three-year time limit envisioned for this study, it will be necessary to place more reliance on cohort groups and attempt to assess what has happened to those who went through the selection criterion say, X, Y and Z years ago. Circumstances and resources permitting, we will make every effort to also measure change directly by following up cohort groups in each research site toward the end of the study.

Regardless of whether the design is applied longitudinally or cross-sectionally, statistical techniques have been developed to analyze the impact of the regression-discontinuity phenomenon (see, e.g., Sween, 1971). The techniques involve analysis of the regression of the above - and below - cutoff groups with respect to the dependent variable. A double extrapolation procedure is followed, to see if there is a significant gap, or "discontinuity," between the regression of the two groups. If there is, it can be inferred that the treatment in question was causally involved.⁶

(b) Multivariate analysis

There are a number of situations where no amount of ingenuity can enable the social scientist to apply a quasi-experimental design. If the variables can be measured with sufficient

6. Appendix A consists of brief reprints of some of Campbell's writings concerning this quasi-experimental design. It should be noted that he has agreed to serve as a methodological consultant to the project.

precision for quantification, by normal field survey or case study techniques, much of the deficiency can be remedied by using a good multivariate analysis technique, such as multiple regression, so that the relative weight of the measured variables can be assessed. The basic model is one of variance explained. Depending on how completely the relevant independent variables are included and the validity and precision of measurement, a greater or lesser amount of the variance in the dependent variables will be "explained" statistically (i.e., in terms of R^2). Multivariate techniques give the relative contribution of each independent variable, net of the impact of the others, in accounting for the explained variance in the dependent variable. Multivariate techniques will be used for much of the analysis of data from all research sites. Information obtained from the basic open-ended interviews will be reduced to quantified variables. Should the level of measurement definitely not permit the utilization of parametric techniques of multivariate analysis, we will make use of non-parametric equivalents, such as Multiple Classification Analysis (MCA) or Automatic Interaction Detector (AID).⁷

7. A recent study (Kim, 1975) concluded that the old fears concerning distortion of findings as a result of using parametric techniques on weaker data which did not meet all the requisite assumptions seem not to be borne out; accordingly he recommends use of parametric techniques for much "softer" levels of measurement than has hitherto been considered appropriate.

3. Data Source and Collection Procedures

In each research site, basic information will be derived from open-ended interviews with all individuals in the sample. Depending on the research setting, regression-discontinuity or conventional multivariate analysis strategies will be utilized, but additional materials, also will be collected, in an effort to "triangulate in on reality." The procedure is roughly analagous to making a map of terrain which never before has been mapped in its entirety.

To establish general parameters for the relevant variables, we shall utilize available aggregate data from national census, fertility surveys, etc., broken down by the relevant age group and local region wherever this level of disaggregation can be achieved. Standard multivariate analysis will be used.

Secondly, to achieve greater depth concerning the information gleaned from the basic interviews, sub-samples will be selected for more intensive and qualitative assessment. Ethnographic methods, including depth interviewing, participant observation, elicitation of subjective devices such as an "autobiography of the future," construction of case histories, etc., will be employed. Suitable analytic techniques, such as content analysis, will be utilized, and the results of this more profound and wide-ranging picture added to that obtained from the basic instrument.

Third, to further pinpoint the microlevel contingencies affecting the responses of the more intensively studied sub-samples, supplementary interviews will be conducted with appropriate family members. Thus, for girls too young to be in fertile union, a sub-sample of the mothers will be interviewed. For other groups of respondents interviewed at a later age (e.g., those who took the Jamaican eleven-plus examination, say, 10 years ago), supplementary interviews for those already in a union will be conducted with spouses. To provide a rough approximation of a matched control group for a given sub-sample of respondents in one of the situations not using the regression-discontinuity design, some of their sisters also will be interviewed.

Fourth, to draw a bridge between the interviews with individuals and the highly aggregated secondary data referred to above, we will collect background information on the local opportunity structure. Specifically, we shall assess the extent to which education is available; how equitably it is allocated by sex, age and class; the local educational threshold level for non-elite adolescent females; the extent of economic opportunities and how these are differentially available by sex, ethnicity and socioeconomic status; the extant patterns of income distribution, land tenure, and ethnic stratification. All these factors will be evaluated for their impact on the life chances of non-elite adolescent girls. Results of the objective local opportunities survey can be contrasted with respondents' subjective map of the same phenomena.

Research Situations and Sites

The research would be carried out in collaboration with a regional social scientist (female where possible) who would serve as project director, in affiliation with a host institution. Our goal would be to explore a variety of situations in which the initial levels of female status, educational and economic opportunity structures affecting adolescent girls, and other relevant factors were rather dissimilar. The availability or non-availability of a "strict selection criterion" situation would determine whether the regression-discontinuity design would be applicable. The requirements could be met in a number of countries. The present list involves sites believed suitable for both paradigm-testing and policy-relevance. The visits to ascertain the existence of suitable research situations, host country professional personnel and research institutes would reveal other locations that could be substituted for the present list of countries.

(a) Criteria for site selection

- (1) Educational/economic opportunity is being provided for some part of the adolescent non-elite female population; a strict selection criterion is being used; but pre-existing female status varies.

Two research sites are indicated here: Jamaica and Morocco. In the latter, female status traditionally has been much lower than in the former. The "treatment" subject to a strict selection criterion admittance to secondary school based on passing the eleven-plus

examination in Jamaica, and admittance to the Foyer Feminine program, based on space availabilities, in Morocco.

- (2) Female status is relatively homogeneous, the provision of a strict selection criterion is not at issue, but the direction of change in the existing educational/economic opportunity structure varies.

The Philippines constitutes a possible research situation where, within the context of generally high female status, the following may be found: (1) a site where new opportunities for adolescent girls are emerging (e.g., in certain industrial suburbs of Manila); (2) a site where traditional avenues of female autonomy are eroding and few new opportunities are available to adolescent girls. For example, there are numerous villages, found in both the wet rice and corn-producing areas, where women have been important in farming and marketing but where new cash crops and rationalized distribution networks from which women are largely excluded, are emerging.

(b) Alternate site possibilities

Colombia: Traditional female status is not as high as in the Philippines but both research situations are present. Along the North Coast, the erosion of female economic autonomy has been studied (e.g., Rubbo, 1974). Sites with increasing female opportunities may be found near several of the main industrial centers. In addition, the amount and quality of available aggregate data on the relevant variables is high, and both in and out of government there are well-trained social scientists and well-established research institutes with experience in studying the principal variables.

Indonesia: A Moslem country with the fascinating distinction of having traditionally high female status, it could contrast with or supplement the high female status/non-Moslem Philippines or low female status/Moslem Morocco.

Pakistan: Similar to Morocco in being a Moslem country of traditionally low female status, applied research would be salient since government-backed efforts at family planning per se have not had a commensurable effect on birth rates.

5. Variables

In addition to the variables discussed, standard background information concerning demographic, kin networks, socioeconomic and ecological characteristics will be collected. Relevant attitudinal data, including, where appropriate, contraceptive orientations will be also collected. In addition to data on a standardized group of variables to be investigated in all research sites, site-specific variables also will be examined. Additional hypotheses and variables that may be suggested during the pilot phase of the research will be incorporated into the design, as deemed appropriate. A brief outline of the research variables follows:

INDEPENDENT VARIABLES 1

Standard background indicators (demographic history and composition of the household; kinship networks; socioeconomic indicators, including a measure of level of economic insecurity; rural-urban; etcetera.

Educational/economic opportunity structure variables.

INDEPENDENT VARIABLES 2

Female status variables including both antecedents of economic autonomy (such as inheritance, property, etc.), and "life options."

Age of union variables.

Expected costs vs. expected benefits of children variables (including but not confined to a replication of the scales used by Mueller, 1972).

Contraceptive orientations, knowledge and experience, when appropriate.

DEPENDENT VARIABLES

Fertility aspirations and achievement goals.

Research Areas

Summary descriptions follow of the research proposals/policy potentials of the six countries under consideration. Possibilities in Indonesia and Pakistan are mentioned only briefly: more detail is presented for Colombia, Morocco and the Philippines, according to the information at hand. The Jamaica proposal receives the greatest measure of attention because (a) much more detailed information is available, and (b) possibilities are good for getting the project off the ground early in the program, since personnel contacts have been made and much of the initial work on procedures established. Consequently, Jamaica could be the first project undertaken and serve as a heuristic model for the remaining projects.

During the initial phase of field work in Jamaica, feasibility trips would be undertaken to other countries to assess the research situation and host country liaisons and establish research procedures. Jamaica has been scheduled as the first project in order to allow time to develop the other projects and provide a procedural basis for the field operations.

According to the project timetable (see _____), data from the first Jamaican field phase will be speedily analyzed. The initial results will serve to modify the subsequent research phases in Jamaica and to inform the research design and instrumentation for research in other countries.

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JAMAICA

Introduction

Jamaica provides an ideal setting in which to explore the interrelations among the problems of educational opportunity, economic opportunity, socio-economic status, age at entry to first union, perceived benefits vs. costs of children, and fertility goals and behavior. That these are serious problems in Jamaica is indicated by the importance assigned to them by government and development agencies.

Government action has been directed at a number of these issues in the recent past. The post independence period (1962-1972) has been marked by increased expenditures directed towards improving and expanding the educational system. There also have been attempts to ensure that children of non-elite women have improved access to education beyond the primary level. Interest in fertility and in the improvement of family life also have expanded considerably, especially since the creation of the National Family Planning Board in 1967 with the expressed goal of population control through a reduction of the birth rate. Even more recently, 1972-76, largely as a result of the personal interest and efforts of the wife of the prime minister, the government has become concerned to improve the status of women per se, and more especially of non-elite women. There is, therefore, an increasing awareness of the interrelationships of these problems and of the need for centralized action in combatting them.

Dislocations accompanying the processes of modernization and urbanization also contribute to the urgent need to understand the factors noted above. The rural small farm woman, comprising by far the largest population cohort among Jamaican females, traditionally has been responsible for marketing the family's crops and, as a result, has held economic decision making power. This position has recently been seriously threatened by attempts to modernize the marketing system: government has established a statutory corporation to purchase farm produce directly from the rural farmers for distribution through retail outlets in the major urban centers. It may be too early to measure the total impact of this new marketing arrangement. The male small farmers and not their women, are engaged in dealing with the agents of the Agricultural Marketing Corporation; farmers receive the cash for produce sold, thereby eliminating the flow of family cash from marketing through the women. Women can no longer control the cash flow, but must depend on their men to provide some, all, or none of the cash received.

The combination of natural rural increase, decreasing soil fertility, and the consequent increased allure of the city has pushed men and women off the land and into the urban centers in search of work. The modernizing sector has been unable to absorb this additional labor force, due in part to the low overall rate of expansion, and in part to the introduction of capital-intensive industry.

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Although there is increased access to education, the system, legacy of British Colonial Administration, has been an elite one, with fewer and fewer places available at the top. Moreover, entry is controlled by examination at each level beyond the primary, with primary school education the only level attainable by the bulk of the population. On the one hand, it appears that primary education is insufficient to permit access to most of the relatively stable and above subsistence wage jobs. On the other hand the very existence of national examinations which regulate access to the educational levels required for non-underclass status provides us with a handle to apply a powerful quasi-experimental methodology concerning the impact of the provision of educational/economic opportunities on the status, age at first birth, fertility aspirations and behavior of young Jamaican females.

The Research Problem

(1) Fertility

Jamaica's present demographic situation is dominated by drastic falls in mortality which have not been matched by corresponding declines in fertility. During the past two decades there has been a natural increase of close to 3 percent per year (Sinclair, 1974). However, emigration, on an unprecedented scale, has prevented massive net increments in population. Such a situation is undesirable from a national standpoint since (a) there has been a shift from emigration of semi-skilled and unskilled young males to an emigration of highly skilled persons; therefore the net loss

to the country is greater, and (b) the receiving countries (The U.S., and Canada to a lesser degree) are unlikely to continue accept immigrants at current high levels. Some benefits have accrued to the country as a whole from this emigration: an improved sex ratio balance, since women and families are now involved in the emigration process; increased earnings in foreign currency obtained from remittances; and a reduction of the net annual rate of population increase to 1.4 percent during the intercensal period 1960/70.

(a) Types of Union

Special mating patterns have developed historically largely as a result of the economic marginality of a large segment of the population. (This has happened elsewhere under similar structural conditions.) Traditional classificatory systems of families in terms of marital status essentially based on legal factors cannot capture the broad spectrum of family forms. A more realistic treatment is to utilize a threefold classification based on the presence or absence of two characteristics -- legal sanction and sharing a common household. Three types of unions can be delineated: (a) Marriage, that is legally married and sharing a common household; (b) Common law (or Consensual), sharing a common household without legal marriage; and (c) Visiting, the Census classification for a female who is in a sexual relationship with a man but not sharing a household with him. Women outside of these three types are designated in the Census as Single. In all three types of unions women are exposed to the risk of fertility. Risk may be highest in the visiting unions where women's control over her fertility behavior is lowest, since children in and of themselves are often the reason for the

continuance of visiting unions. Each subsequent birth is perceived the woman as a basis for making the relationship more secure and developing the possibility of establishing a more stable form of union (Davenport, 1961). Indeed it may be that it is the difficulty in accurately identifying visiting unions, in differentiating them from the "single" category which accounts for the fact that slightly fewer births are recorded among women in visiting unions during the 1960/70 intercensal period. Visiting unions occur most frequently among younger, non-elite women.

Young non-elite women who have failed to obtain post-primary education, with its promise of economic payoff, generally begin the domestic cycle in visiting unions, which may be followed by a common-law union after the birth of two or more children; the common-law arrangement may or may not eventually result in marriage (Davenport, 1961; R.T. Smith, 1958). More recent data on fertility by union type will shortly be available based on Roberts and Sinclair's Socio-Cultural Factors in Fertility/research project (1976, in preparation).

(b) Family Planning Programs

First efforts at family planning (1939-1943) centered around a few prominent persons. One group was much concerned about the "unwanted child," presuming this was the reason for the overwhelming majority of Jamaicans who are born to unmarried mothers. For another voluntary group the relevant issues concerned the lack of stable homes, and perceived widespread irresponsibility with regard to parenthood. Much of the voluntary work in the field was

therefore directed towards improving the lot of the family and not so much occasioned by an awareness of population problems. Indeed women's fertility behavior was believed to be irrational and irresponsible and middle class women became the self-appointed guardians of the morals of the lower class. Improved contraceptive measures were seen as the means for reducing the numbers of children born to each father so that fathers would be prepared to accept the responsibilities within their means. To the extent that these early family planning organizations were concerned with issues of responsible parenthood and illegitimacy no attempts were made to discover why women did in fact have many children since there was no appreciation that non-elite women derived benefits from children. During the period 1943-63, the few family planning programs operating were fragmented and generally met with little success. Government reaction during the period was one of benevolent neutrality.

In fact, government's first public recognition of the existence of family planning came in the Five Year plan of 1963. The official document mentioned the need for government to improve the awareness of the effects of rapid population growth and to provide contraceptives for those who desire them. At the time, government ministers emphasized that family planning and fertility control were the responsibility of the individual and that government had no intention to compel anyone to adopt birth control measures. Within four years, a new sense of urgency appeared. In 1967 came government's

first public acknowledgment that rapid population growth was a problem, and that it was retarding national development. In that year, the National Family Planning Board was established under the general supervision of the Ministry of Health. The major focus of the Board has been the provision of a wide range of contraceptives. In 1967, when it was created, the Board announced as its goal the reduction of the birth rate (from 35.9 to 25/1000) within ten years. It now appears that this goal may not be met. (The figures for 1970 indicate that the birthrate has increased to 39.1/1000.) Consequently, it is instrumental to identify supplementary means to achieve fertility reduction in younger age cohorts in Jamaica since they are such a significant, potentially high fertility proportion of the population.

(c) Fertility of Females 15-19 Years.

A brief analysis of the fertility data of women 15-19 years reveals some interesting trends:

1. There has been a 10.8% increase in this female population in the 1960/70 intercensal period.
2. A 52% increase in their fertility is recorded during the same period.
3. The same population contributed 14.1% to the total fertility.
4. The percentage of mothers in this group has risen from 13% in 1943 to 22% in 1960 to 31% in 1970, in short, more than doubled in the past 27 years.
5. Only 6% are acceptors of contraceptives, the median age for acceptors being 26.1 years (Sinclair, 1974; Jamaican Census, 1970 Preliminary Report).

There has been a general rise in the fertility of women of childbearing years as both sterility and sub-fertility continue to decline. Many more women are mothers. They are starting to have

children earlier, and continuing to have them throughout their childbearing years. The costs for development of this fertility increase are being felt in all quarters. Little wonder then that government has become involved in a positive way in attempting to reduce births. It seems clear that the segment of the population responsible for the most disproportionate share of the fertility increase is precisely the segment least affected by family planning. One reason for this may be that adolescent females, the target population for this study, are for the most part inaccessible to family planning programs, and attempts to recruit clients from this age group are resisted by their mothers, the churches and the majority of opinion leaders in the society, a situation no government would dare to risk.

2. Education

Efforts at overall expansion of the education system have lagged far behind the growing demand. There have been several attempts to streamline the system, to make it more compatible with both national and local needs. Some 53 junior secondary schools have been introduced (although staffing problems have prevented them from functioning effectively). Four new secondary schools have been built in the rural towns, thereby reducing the necessity for adolescents to migrate to Kingston or Montego Bay in order to attend school. All existing schools have been enlarged during the past 24 years. Several have

8. The magnitude of the problem and the earliness with which it has to be tackled is perhaps best illustrated by the fact that during 1970 in the major metropolitan hospital where most non-elite women are attended, the average age of mothers at birth of first child was 15.9 years!

added new facilities for the teaching of natural sciences, home economics, woodwork and auto mechanics, an entirely new phenomenon which strikes at the very foundations of this elite education system. Yet despite these efforts the bulk of the school age population cannot attend beyond the primary school because of the severe limitation on available places beyond the primary school level.

An important characteristic of the post-primary system is the significance that examinations play in recruitment. At each level beyond the primary school entrance is by examination. By far the most important of these, in terms of the effects on the life chances of the individual, is the "eleven-plus" examination. This is the national examination on which entrance to secondary school is determined, and one's score on the examination is the sole criterion which determines acceptance. It is administered by the Ministry of Education at centers throughout the island to boys and girls prior to attaining their 12th birthday. Out of a possible maximum of 600, a passing score is established annually by statistical means.

In an attempt to control for social class distinctions, and to insure that children of the poor have some access to secondary school, government established the following ratio: 70% of all the available places in any given year must go to children from the state-financed schools. The remaining 30% is available to children taking the examinations from the private preparatory schools. These schools are fee-paying, relatively expensive and overwhelmingly middle class. The data on the 1974 examinations are instructive:

	<u>Took examination</u>	<u>Awarded scholarships</u>
Boys	10,950	1,875
Girls	19,747	2,880

Scoring in the top fifteenth percentile assures not only admission to secondary school but also allowances to cover costs of tuition, room, board, books and clothing. This is by far the best position to be in, and the only one which guarantees underclass children the chance of finishing school. Most of the remaining cohort who score above the cutoff receive only tuition scholarships. But the bulk of the students do not pass the examination. In 1974, out of 19,749 females who took the examination, 16,869 failed, that is 85%. This should be viewed in light of the fact that not all members of the age cohort do in fact take the examination which could further increase the rate of failure.

Completing secondary school is a prerequisite for jobs considered to be secure, offering potential for advancement and prestige. The average age for completion is 17.5 years (1974). For those who do not go beyond primary school the mandatory school leaving age is 15 years. It is important to note that very few females in secondary school drop out because of pregnancy. All women principals of secondary schools for girls interviewed in 1972 insisted that the drop out rates were very low, and the pregnancy drop out rates were virtually non-existent (Justus, 1976). The only principal who could even recollect any pregnancy-related drop out rates estimated that these were less than 1% during her tenure. Females who enter secondary school, therefore, are more likely to begin their fertility

careers later, and to be employed in situations incompatible with child keeping.

Consequently, it appears that the adolescent girls under 20 years attending secondary schools do not make a major contribution to the significant increases in birth rates of this group as a whole.

Secondary school students may be less likely to be pregnant than their age cohorts who attend primary school only, due to the fact that the primary school cohort is out of school and unemployed or underemployed at 15 years. The average age of birth at the major maternity hospital which serves the urban under class is 15.9 years (1970) suggesting that it is the primary school females who are in the high risk category. Secondary school graduates are less likely to have children out of wedlock or to be involved in visiting unions. Secondary education and the mobility it conveys is likely to postpone the age at first union. When it occurs, age at first union, first pregnancy and marriage are likely to be coterminous (Moses, 1975; Justus, 1976).

Research Design and Methodology

The Jamaican research follows the general procedures outlined in the methodology section. Site-specific procedures involve the selection of two cohorts of adolescent girls who took the eleven-plus examination at two different points in time. We would undertake to:

(a) deepen the basic information (derived from open-ended interviews) by means of intensively studied sub-samples; (b) broaden the information

in the context of existing aggregate data and our opportunity survey data; and (c) validate the data by longitudinal studies of the first cohort.

Fieldwork will start with the selection of the sample for the first (1971) cohort. Using existing records for the eleven-plus examination administered in 1971, a primary sample will be selected from among those who scored immediately above and below the pass/not pass cutoff score. Those who scored immediately above (and therefore were admitted to secondary school) will be the "experimental" group, and those who scored immediately below (and failed) the "control" group. The aim is to draw a sample large enough to be appropriate to the type of treatment; this will be done by progressively extending out on either side of the cutoff point until a large enough sample is gained.

Research data on this sample will be derived by means of an open-ended interview schedule to elicit such factors as:

Socio-economic status, demographic and kinship variables:

Economic position of household (including degree of economic uncertainty)

Household composition data

Mating and fertility history of mother

Kinship network ties and aid flows

Education of respondent variables:

Levels attained

Schools attended

Scholastic performance

Recollections about the eleven-plus examination

Self evaluation variables:

Subjective assessment of life chances

Educational threshold assessment

Images of the future

Mating and fertility aspirations

Employment aspirations

Migration aspirations

Two sub-samples for intensive study will be drawn from this larger 1971 sample, one rural, one urban, utilizing ethnographic methods, including in-depth interviews and participant observation. The subjects also will be asked to write an "autobiography of the future" (Rubin and Zavalloni, 1969; Maingot, 1975).

Mothers of the subjects in both sub-samples also will be interviewed, both with regard to the above mentioned variables and additional factors such as the following:

- Household activity (male vs. female)
- Perceived costs/benefits of children (male vs. female)
- Perceived existence/dependability of alternative non-child sources for benefit flows.
- Socio-economic background (e.g., education, occupation, etc.)
- Status of women factors
- Fertility career goals and behavior
- Knowledge and use of contraceptives
- knowledge of local opportunity structures/educational thresholds

Local opportunity surveys will be carried out to evaluate the impact of ongoing programs on the education of women and their implications for fertility. We will try to obtain objective measures from local informants, records, participant observation, etc., concerning the availability of female education and economic opportunities, the local educational threshold for females, the pattern of income distribution, the local economic base (e.g., crops, system of land tenure, industry, etc.). These would be supplemented by (and contrasted with) subjective assessments from the mothers and daughters in the sub-sample.

Fairly early in the project, a second sample will be drawn from persons who took the eleven-plus examination at a period prior to 1971. Ideally, we would interview persons in the 20-24 age group, where the differences between the proposed high vs. low fertility trajectory

should already be evident. To determine the exact year, it will be necessary to identify the oldest cohort group not yet affected by emigration to the point where any interpretation from the data would be invalid. Essentially, we would replicate the study among this group, with two exceptions. Information collected from the mothers of the first intensive sub-sample will be collected from the respondents themselves; and where a spouse is present, he also will be interviewed.

Research Resources:

Dr. Joyce Justus, the Jamaican anthropologist who formulated the basic "eleven-plus" research proposal (see attached vita) will be the project director. Host country institutional connections will be established, and a local research team recruited. Discussions concerning affiliation and recruitment will be held with the Institute of Social and Economic Research, the Census Research Programme and the Sociology Department of the University of the West Indies (Mona). The University of the West Indies has a number of well-trained social scientists who have been engaged in fertility research as well as research on economic and educational opportunity, income distribution, and the like.

In addition, Jamaica possesses a wealth of sources from which aggregate data can be derived relating female education, occupation and fertility:

The Bureau of Census
Department of Education -- Statistical Division
The Census Research Programme, University of the West Indies
The Jamaica Manufacturers Association
Department of Statistics
Ministry of Youth and Community Development
National Family Planning Board
Jamaica Teachers Association

Secondary Schools:
St. Hugh's High School (Urban)
Excelsior Education Centre (Urban)
Mannings School (Rural)
St. Mary High School (Rural).

Feedback

As indicated in the accompanying project timetable, data from the first phase of field research will be speedily analyzed. The schedule also calls for prompt write-up of this data, with the initial "product" available by the end of the first year of the project. A workshop will then be arranged to discuss the preliminary findings with policy makers in relevant ministries and institutions. The early Jamaica report also will provide procedural guidelines for other country projects, before field data collection gets under way.

Workshops will be scheduled regularly during the course of the three year Jamaica project, to present on-going findings and provide mutual feedback between researchers and policy makers.

MOROCCO

Research Focus and Design

Given its apparent adaptability to the use of the powerful regression-discontinuity design (as discussed in the Methodology section), our first goal for a research locus would be the Foyer Feminine program conducted by the Ministry of Jeunesse et Sports. The Foyers are described in an AID report as "a network of local institutions for the education and training of young women who have either left school by the age of twelve or have never had formal education at all." Basically, their objective is to train females between 12 and early 20s for occupational and homemaking skills: marketable skills taught include sewing and embroidery. Family planning information is communicated in a non-offensive way to both girls and their mothers.

The methodological salience of the Foyer as an experimental research site is the method of recruitment: "We are told that lines form in the early hours of dawn on registration days, and only the first lucky registrants are accepted. There is evidently no problem in communicating the importance of this training to the recipients; they know how valuable the Foyers can be." As noted in the discussion of the regression-discontinuity design, the "first lucky registrants" would be the "experimental" group; girls farther back in the queue would be the "controls."

Nationally, about 30,000 young females are touched by the Foyer on a regular basis, about 1.5 percent of the 2,000,000 girls in the target age group. Centers exist in many parts of the country: for example, in Fez province, with a population well over 1,000,000, five centers serve about 160 a week on a continuing basis.

Very early in the Moroccan field research, it would be desirable to locate both an "experimental" and a "control" group (i.e., the successful and unsuccessful registrants, respectively, who had lined up for a given registration day). They would be followed up after at least a one-year time lapse. Meanwhile, efforts would be made to locate a cohort of females who had had Foyer Feminine training some X years previously and a comparable matched cohort who had not (perhaps sisters could be interviewed). These cohorts would be studied with respect to female status, age of marriage and fertility outcomes.

Relevant Research Findings

Morocco is an especially appropriate research site in the light of available statistical information on a number of the variables included in the proposal.

- 1) Belghiti's survey of rural females (1970) showed that close to nine-tenths are married within two years after puberty: 50% before they reach puberty and an additional 37% during the first two years following puberty.
- 2) Education for girls is expanding. In 1947, there were only 15,080 girls enrolled in primary schools; in 1971, 423,005. (Division des Statistiques et Banque Marocaine du Commerce Exterieur, 1971:25). Also in 1971, 7% of girls (vs. 14% of

boys) were in secondary schools (Lahbabi, 1970:55).

- 3) The proportion of women in the labor force is rising, and many of the working females are young. Between the 1960 and 1971 censuses, female labor force participation rose 75% (100% in the urban areas). Moreover, job opportunities seem to be opening for the younger women, where fertility impact is hypothesized to be highest: census figures show that some 59% of female workers (vs. 35% of male workers) are under twenty-five (Recensement General de la Population, 1971).

In short, if our hypotheses concerning the fertility declines predicted for such adolescents are borne out, policy makers would not have to start from scratch to take appropriate action. Rather, they would have the easier task of enhancing existing trends, perhaps concentrating on extending them more vigorously in the rural areas where Belghiti's age of marriage figures indicate that much remains to be done. Such an approach would seem to have great potential given the fact that although the Moroccan government has had a family planning program since 1966 (Mernissi, 1975B), a 1973 estimate indicated that only about 3% of Moroccan women of childbearing age were in couples utilizing modern contraceptive methods (Castadot and Abdelkader, 1973)

Research Resources

a) Personnel

Dr. Fatima Mernissi, a Moroccan sociologist trained in the U.S. who is actively involved in research concerning changing female roles, and has written an excellent book on the topic (1975a), may be

suitable candidate as research director. Malika Belghiti, who carried out a study (1970) concerning female status and interrelationships in the rural family is another potential research person. A third relevant research source and possible contact, although not a Moroccan national, may be Vanessa Maher, who recently completed a study of the changing position of Berber women in the southern part of the country (1975).

b) Data sources

The Censuses of 1960 and 1971 can provide data on age distribution by marital status, female education and employment, and other standard parameter variables. (It should be noted that the United Nations has a complete set of the published Moroccan census analyses, and the Population Council, a nearly complete set.)

The 1966-67 KAP study offers promise of further data. The survey was based on two major samples: rural and urban. What distinguishes the KAP study is the existence of an urban subsample of single females, ages 15-25. Presently, these data are largely unanalyzed. We would run comparisons on the unmarried vs. married females in the age cohort with respect to as many of our relevant variables as can be gotten from the tapes. Copies of the tape and codebook can be purchased from the collection of KAP surveys at the Roper Center. Additionally, the Population Council has the tape for the rural sample. According to Robert Lapham of the Council, the only restriction on use of the tapes is the requirement that the Statistics Division in

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the Moroccan Ministry of Plans receive a copy of any report based on the data.

A feasibility trip to Morocco would be scheduled for very early in the three year life of the proposed study to ascertain the viability of the proposed Foyer Feminine locus, and locate the appropriate project director and institutional base.

THE PHILIPPINES

Introduction

Over the last few years, the government of the Philippines has become very conscious of the development-hampering impact of the high rate of population growth, and has been vigorously promoting family planning programs and population research.

There has been an extremely important social science fallout of this concerted effort to curb population growth: the development of rich sources of data and numerous population institutes staffed by well-trained, experienced social scientists. The following material is based on information from U.S. social scientists presently conducting population research in the country.

Two Tentative Research Situations

1. Emerging opportunities for adolescent females. Salaff's study (1976) of girls and young women employed in Hong Kong factories provides a concrete model with obvious parallels in the Philippines for possible application and perhaps even partial replication. Salaff found that young factory women tend to be encouraged to remain single longer: their families are not eager to give up their daughter's earnings contributions. Over time, the young women gained some independence and control over some of their income. They too were not disposed to be hasty about retirement to marriage and motherhood; moreover, their fertility goals for that eventuality were relatively low.

Assuming that a similar locus of economic opportunity for young females exists in the Philippines, could we expect analagous results with respect to female autonomy, age of marriage and perceived fertility needs and goals? There are a number of industrial suburbs which have heavy female employment (Peter Smith, personal communication, 1976). Much of the modern sector employment in these sites consists of factory labor forces that are heavily weighted with young females in our target age categories. To give one example, there are many working in a textile factory in Balig, a suburban fishing barrio (out of Carmona), roughly 15 kilometers from Manila. This barrio has been studied by Stephanie Smith, a young Philippine anthropologist. Her findings support the view that factory employment seems to be generating the increased female autonomy phenomenon predicted by our paradigm and encountered empirically by Salaff. In short, it would seem quite relevant to study an industrial suburban situation on the order of Balig (and if it were Balig, we would have the collaboration of Ms. Smith).

2. Declining bases of traditional female economic autonomy; few emerging modern opportunities for adolescent females. In this situation, Rubbo's study (1975) of the erosion of female autonomy and status under the impact of rural modernization on the North Coast of Colombia might serve the same heuristic function as the Salaff Hong Kong study vis a vis the first proposed research situation: to identify and possibly replicate a parallel in the Philippines

According to Robert Hackenberg, there are ample opportunities to investigate such a phenomenon in either of the Philippines' two main environmental zones, the wet rice area involving much of Luzon and approximately one-half of Mindanao, and the traditional high-density poverty areas, the corn-producing lands of the Visayas and the remaining half of Mindanao. In both these crop ecosystems, according to Hackenberg, the economic position of women involves occupational structures parallel to the males: farming and small scale trade. Traditional female autonomy has been high, buttressed by equal inheritance. This enables married women to operate their own land more or less as a personal enterprise; they also market produce and keep the income.

Rubbo's study fits into the more general rubric provided by Boserup (1970). Boserup's well-known thesis is that rural modernization in regions where women have had high economic autonomy based on their position in farming and trade tends to destroy the base of the women's traditional status without permitting them access to emerging cash economy opportunities.⁹ The net result is the decreasing contribution to national development of one half of the rural population. The negative consequences for the women themselves are apparent; the negative impact on their nation's development only lately has come to be recognized (see, e.g., United Nations, 1972; Tinker, 1976).

Neither Rubbo's study nor the Boserup thesis deals directly with fertility consequences. Assuming that a similar situation exists in the Philippines--where in the last few years many wet-rice and corn

9. These new opportunities involving rural innovations, cash crop production and town employment tend to go to males, while the new patterns of larger scale, rationalized trade undercut the women's contro

Areas have been benefitting from land reform, infra-structure investment and other prosperity-enhancing changes--can we expect analagous consequences? It would then follow that women's declining position relative to the men of their group makes them not only more dependent financially, but also militates against their postponing union and limiting their fertility. As far as we know these issues have not been studied in the Philippines rural and small town context. Yet these areas account for perhaps 70% of the population and an even greater share of the continuing high fertility.

Relevant Data Sources, Institutions and Personnel

1. Data. There are three macro level data bases which offer promise of providing parameter values for many of our variables and/or the opportunity of generating new findings relevant to our proposed research.

(a) The National Demographic Sample (NDS). These surveys were conducted in 1968 and 1973. The 1973 results are currently being analyzed for the University of the Philippines Population Institute (UPI) by Dr. Peter Smith at the University of Hawaii's East-West Population Institute. His results to date concerning the ever-married female population are in line with our expectations: female education has strong inverse impact on fertility; female SES indicators powerfully predict later marriage; age of marriage substantially and inversely

of local markets. The thesis is held to apply to large areas of Sub-Saharan Africa, Southeast Asia and Oceania, as well as areas of female marketing/farming involvement in Latin America and the Carribbean.

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affects completed fertility.

Equally important for our purposes, data were gathered on single females 15 years and older in both 1968 and 1973; these data have remained virtually unanalyzed. Since age is measured in calendar years, it would seem highly desirable to run an analysis comparing the relevant educational/economic characteristics and fertility-linked variables of 1) single females 15-19, and 2) their married counterparts. A copy of the tape can be purchased on request from Dr. Mercedes Concepcion, Dean of UPPI, who would be informed of all the projected analyses.

(b) The National College Entrance Exam (NCEE) has been conducted for the last two years, according to Dr. Hackenberg. It is controlled by the Bureau of Public Schools, and provides a strict numerical cutoff point determining admission to higher education. Since the Philippines has one of the world's largest proportion of the age cohort enrolled in college, and a reputedly high educational threshold level for stable modern sector employment, the potential for doing a replication of the Jamaica eleven-plus research is obvious.

(c) The National Census. This was last done in 1975, and is known as the Barangay census because it substituted Barangays, the government's 42,000 new political units, for the previously used

10. The 1973 survey includes female education and unique new female employment scales (differentiating modern vs. traditional sector, in-home vs. outside-home activity), household economic level (determined by physical indicators such as dwelling building materials), spouse's characteristics, new scales comparing husband vs. wife labor utilization, and a wide variety of fertility variables, including all the standard KAP-type data. The 1968 effort included more standard labor force history data, but lacked the new scales. The Ns are 9412 in 1973 and roughly 8400 in 1968.

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enumeration districts. Preliminary tabulations are in progress at UPPI.

Other data bases exist as well. Numerous KAP studies involving only the standard KAP variables have been done in the last six to eight years. Several national local and regional surveys (such as the one in Davao City), were conducted. Robert and Beverly Hackenberg have carried out considerable survey research which includes variables relevant for our project. Shortage of existing data is not a problem in the Philippines.

2. Institutions and Personnel. In preliminary discussions with U.S. experts, the following were identified as possible sources whom it may be advisable to contact with respect to potential research collaboration:

(a) University of the Philippines Population Institute (UPPI)
Dr Mercedes Concepcion, the Dean, is considered by many to be the foremost figure in Philippine population research.

(b) Population Center Foundation. This active center, which tends to be private sector-oriented, is described by Hackenberg as receptive to new projects. Our U.S. contacts identified the following individuals: The Honorable Imelda Marcos, First Lady of the Philippines, President; Conrado Lorenzo, M.D. (a gynecologist), Executive Director; Aurora Go, Director of Research; Generoso Gil, present or former Program Director, Information Division. Dr. Go's position as a female social scientist, acting as research director of an important population organization, is worth noting given our

conviction that appointing women project directors in each country would enhance USAID human resource development goals with respect to women.

(c) Population Commission. This is the key government agency in charge of all population programs. Rafael Esmundo, M.D. is Executive Director.

(d) University of the Philippines, Los Baños. A very active survey research center at Los Baños concerned with rural and economic development problems is a likely potential data and institutional base for our second research situation. Dr. Gelia Castillo, a Cornell-trained sociology Ph.D., affiliated with the Center, is a strong potential contact for research liaison or project directorship for our proposed rural and small-town investigations.

(e) Census Bureau. The Executive Director is Tito Mijares.

(f) Others. Several economists were mentioned, including Pepe Incarnacion, who constructs TEMPO-type population models; Mahar Mangahas, who heads the National Economic Development Authority (NEDA), and Ernesto Pernia of the School of Economics at the University of the Philippines. As is well known, sociologist Dr. Mary Racelis Hollnsteiner also is involved in considerable relevant research. Finally, in Davao City, Beverly Hackenberg recommended contacting two local female social scientists, Irene Santiago and Remedios Ignacio Rikken.

An early feasibility trip to the Philippines is indicated in order to establish institutional affiliation, project directorship and staffing. Proposed research situations and strategies will be developed in collaboration with Philippine social scientists.

ADDITIONAL OR ALTERNATE POTENTIAL RESEARCH SITES:

BRIEF OVERVIEWS

A. Colombia

Colombia offers the potential of research situations analogous to those for the Philippines at a lower level of traditional female status. There is also an advantage in the rich base of existing data, organizations connected with population and female status research, and highly trained social scientists. (In this respect, too, the situation is analogous to that in the Philippines.)

Research Situations

Rubbo's work on the erosion of female autonomy under conditions of economic change is highly significant (1975). Her study was focused on the North Coast region. Here, economically marginal agricultural wage laborers of both sexes (with the women earning much less) are emerging; many of them work on the expanding sugar plantations.

The traditional subsistence farming of the women, involving tree crops and horticulture, and providing a year-round yield, is being undercut. It is being replaced by Green Revolution crops grown by men--often on the land formerly farmed by the women before they were prevailed upon by the men to cut down their coffee and cocoa trees. But this high risk/high gain venture has not increased the economic security of the women, and in a bad year, migration remains the only solution for either sex. In the towns, women's dependency on men is increased wherever they cannot find economic opportunities on their own.

An obvious next research step would be to focus on the consequences of these changes for various measures of female status, age and type of union (female-headed households are very common in the Colombian underclass), and fertility goals and outcomes.

Also, zones similar to the industrial suburbs of Manila exist in such urban areas as Bogota and Medellin. Thus, a research situation of increased opportunities for adolescent females would seem easily accessible.

3. Research Resources

The existing data base is very rich in Colombia. Over and above the usual census and KAP data, there are a number of surveys that contain many of our variables of interest. For example, in 1975 the Asociacion Colombiana de Estudios para Poblacion (ACEP) completed a sample survey of some 6,000 women in the at risk category, for whom detailed data concerning labor force participation, family planning orientations, fertility history, etc. were compiled (William McGreevey, personal communication, 1976).

Furthermore, a number of female social scientists are actively engaged in research linking women's status and fertility variables. Prominent in this group is Magdalena Leon de Leal, Director of Research at ACEP. She and an ACEP colleague, Elsi Bonilla de Ramos, currently are studying the impact of educational expenditures on fertility for the Smithsonian's ICP. Dra. Leon de Leal is presently attempting to start a new research unit within ACEP which would study

problems related to women and their fertility. Tentatively, it would be known as Centro Colombiano de Estudios de La Mujer, and a conference with ACEP donor institutions (Ford Foundation, etc.) is being planned for May 17-19. Among the areas of interest proposed for the research center are: female labor force participation, economically inactive women, rural women, and machismo. Such a nucleus clearly would offer an effective potential liaison should Colombia project prove feasible.

Another social scientist active in the forefront of research linking female status variables and fertility is Cecilia Lopez de Rodriguez, an economist with Fe y Desarrollo. In 1975, Fe y Desarrollo published her study on female labor force participation and fertility. Also in 1975, Dras. Leon de Leal and Lopez de Rodriguez collaborated on a historical/census background paper for ICP in which trends concerning female labor force participation and fertility were traced back into the 19th century. Three other social scientists affiliated with the Centro Colombiano de Poblacion (CCRP) are potential resource contacts: Elsa Gomez, a Ph.D. candidate at Ohio State University, is working on conjugal communication and fertility. Elena Prada Salas is directing the Colombian World Fertility Survey (another good data resource which should be completed in time for its utilization in a potential Colombia project). Carmen Inez Cruz has been studying the migration of Colombians to New York City. William McGreevey of ICP, presently engaged in relevant related research in Colombia, supplied the information concerning the above resource people.

Finally, a most important research contact is Dr. Virginia Gutierrez de Pineda, the foremost family researcher in Colombia, works both with the University of the Andes and ASCOFAME (Asociación Colombiana de Facultades de Medicina).

Dr. Blumberg has area experience in Colombia, and conducted a TEMPO feasibility study for a maternal-child health/family planning effort there in 1974. This study produced many valuable insights and entrees into the relevant Colombian data sources, institutions and human resources.

Given the very promising picture presented by Colombia as a potential project research site, a feasibility trip appears to be high in priority.

B. Indonesia

As noted in the Methodology section, Indonesia offers a fascinating situation in that it is a largely Moslem country which long has had high traditional female status based on women's economic autonomy in farming and market trade. Here too, recent agricultural innovations and the spread of wage labor are reported to impact negatively on the position and prospects of non-elite rural women (e.g., Stoller, 1976). Studies of urban Indonesian women are being completed by Dr. Mely Tan, Head, Social Sciences Division, National Institute of Economic and Social Research, and Dr. Hannah Papanek, a U.S. sociologist.

Additional research in these areas is being conducted by two University of California-Santa Cruz anthropologists, Nancy Tanner and Shelly Errington.

C. Pakistan

Vigorous government-backed family planning programs thus far have proved disappointing in curbing high rates of population growth. Pakistan, a Moslem country where female status has been traditionally low, makes it a good analogue to Morocco. In contrast to Morocco, however, the Pakistani government is very anxious to raise the average age of marriage for females, and is poised on the brink of a program to promote this goal. Such a program might include legal changes, although it is recognized that new statutes in themselves are insufficient to accomplish the task if no other variables enter into the intervention program. Two potential contacts for feasibility information are Dr. Stephen Sinding, the USAID Population Officer in Islamabad, and Dr. John Cool, the Ford Foundation Representative in Islamabad. Dr. Cool's main present programmatic and research interest is reported to be female status.

Procedurally, feasibility trips to Indonesia and Pakistan might be combined with first site visits to the Philippines and Morocco.

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