I S S U E S I N M E A S U R I N G
D E V E L O P M E N T P R O G R E S S

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Development without prosperity, urbanization without opulence, without sophistication, without urbanity -- that is apparently the path.

-- Kingsley Davis on Asia's cities

What exists is too constricting; what might exist is not constricting enough.

-- Richard Stone on social data

C O N T E N T S

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Prefatory Note

If there were little difficulty associated with the measurement of development progress and the objective of reaching the poor majority, there would be no need for this paper. In fact, however, each of the indicators included in Congressional legislation presents some difficulties in measurement and still others in their interpretation as a guide to policy. In preparing this paper I have reviewed some one hundred recent publications or unpublished works and had discussions with about eighty persons dealing with measurement problems per se; measurement in developing countries with poor data sources; problems with the use of aggregate and micro-data in analysis of relationships between variables; and the nature of findings concerning one or more of the subject variables. This review confirms the complexity of the task. In reviewing this evidence I have sought to identify problems but to avoid an air of hopelessness in the task of identifying, reaching and improving the lot of the poor through specific improvements in their experiences of productivity, fertility, mortality, employment, and income.

This paper has been prepared very largely on the basis of unpublished, current works which their authors have been willing to share with me. Because many of these works were being subjected to revision and in some cases may have contained information not widely available and treated as confidential, this document should also be so treated. Particular findings are subject to change and hence should not be quoted. In a sense this paper is an experiment in qualified confidentiality -- of a form in which scholars circulate their ideas still subject to change in the hope of enjoying the

courtesy of their readers in maintaining a limit on that circulation and a readiness to accept future change.

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International development policy is no longer satisfied with feeding horses and allowing sparrows to take care of themselves. The alleged transfer of resources from the 'poor of the rich' to the 'rich of the poor,' said by many to have characterized international assistance in the 1960's, is giving way to concern with the poor majority in the poorest countries. In a recent study by the Brookings Institution, the new shape of donor concern is summarized in the suggestion of a lending program for the poorest countries through world aid budgets.[1]

The World Bank supports the 'Fourth World' of the poorest countries by granting access to the soft-loan, IDA window to those countries with low per capita incomes. The entry of specific concerns with the poor majority onto a development criteria scene formerly dominated by debt repayment capacity, and other 'hard' measures of development effort, has created a need for new kinds of information to estimate development progress. This paper surveys some of the issues associated with the generation of this information. Before entering into details of data, we turn first to the process by which the demand for this new type of information was incorporated into the Congressional mandate for development information.

I. New Directions for AID. Foreign aid used to mean dams, roads and bridges. The aid programs of the Post-World War II period were a natural outgrowth of earlier foreign aid experiments. For example, the

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[1] Henry Owens and Charles Schultze, ed., Setting National Priorities, The Next Ten Years, Brookings Institution, 1976, p. 217.

United States government had been assisting the governments of Mexico and Central America in the construction of a Pan American Highway since the 1920's. That project was a technological compromise after abandonment of an earlier dream of an Inter-American railway, which was discussed at international meetings from the 1890's onward. The United States' presence in the Philippines, Micronesia and Caribbean states in the first half of the twentieth century often had capital projects as an adjunct of economic management (as with the customs office of Haiti), maintenance of public order (the Marines in several countries) and advisory services (particularly in the Caribbean but also in the Philippines and Coastal China).

By the 1970's, virtually all elements of the historic aid-as-capital-projects strategy had been called into question. The periodic search for new directions got embodied in a new mandate for the Agency for International Development: Dams, roads and bridges were to be served up on other, multilateral plates. Their inordinate cost in an age of shrinking bilateral aid funds may not be irrelevant to the new directions: "Calendar year 1974 AID disbursements in 1967 prices were 44 percent below 1967 levels."[2] New directions in the early 1970's required a program more appropriate in size and scope to the funds available.

AID decided to concentrate on three areas:

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[2] Agency for International Development, Implementation of 'New Directions' in Development Assistance, Report to the Committee on International Relations on implementation of legislative reforms in the Foreign Assistance Act of 1973, GPO, Washington DC 1975, p. vii.

(1) food and nutrition;

(2) population and health;

(3) education and human resources development.

No dams, roads or bridges. The new directions were not developed just to go out of the social overhead capital business; they were, rather, intended to overcome the thorny problem of assuring that aid reaches the needy. Large projects seemed in the past too often to benefit large landholders, large contractors and the already well-to-do. Thus AID could write in mid-1975 that

> Projects and programs are especially directed toward reaching the poor majority within the populations of [developing] nations. We urge recipient governments to design policies and programs to assure that the benefits of economic growth accrue to all the people and not a select few. Influencing LDC institutions, policies, and systems are indirect but essential means of assuring that benefits reach the broadest group within the poor majority.[3]

But at about the same time, other observers were asking the question, "Is the new strategy working?"

The Senate Committee on Foreign Relations had recently established the new Subcommittee on Foreign Assistance. It held its first hearing on 3 June 1975 and had seven subsequent days of hearings and sessions culminating in September. Among the significant results of those hearings was a further specification of the new directions, including consideration of requirements for AID (and host government) performance on selected progress criteria. Key testimony was given by Professor (of Law) Roy Prosterman of the University of Washington.

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[3]Agency for International Development, Implementation. . . , p. 3.

A. Prosterman's Testimony. Professor Prosterman is an expert on land reform; he is also confident that he has the answer to the right direction the 'new directions' should take:

> We have countries whose development programs have succeeded admirably, we have models, we have targets, we know what will work nine times out of ten, and we have the techniques for measuring what is being accomplished as it is being accomplished. Stated very briefly, Amend. No. 819 proposes to set goals for performance in three basic areas: ownership of land by those who cultivate it, lowered infant mortality rates, and lowered birth rates. . . . Progress toward these three basic goals over successive periods of time becomes, under the proposed Amendment, a central and conscious principle for future allocations of foreign aid.[4]

In his oral testimony, Professor Prosterman described how performance criteria could be used to allocate assistance to countries that perform well. In response to a question from Senator Scott as to whether India would accept these criteria or 'preconditions,' Prosterman said, in part, "India would be one example of a country that would not accept any preconditions . . . ; India under those circumstances would probably have foreclosed itself from receiving, at least, resources under the bulk of our bilateral arrangements.[5] Senator Scott raised a fundamental issue that confronted foreign assistance efforts: Can the U.S. Government establish criteria for aiding the needy in a form that will permit an aid cutoff? An obvious danger is that such criteria-setting flirts with interference in the internal affairs of other countries -- especially if the criteria relate to such sensitive

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[4]US Senate, Foreign Assistance Authorization (1975), p. 507.

[5]US Senate, Foreign Assistance Authorization, p. 522. With that, Professor Prosterman wrote off about half of all the poor people in the AID-assisted countries.

matters as income distribution, unemployment, population and health. Moreover, cutoff criteria place aid recipients on a potentially uncomfortable knife edge: By performing too well, they 'graduate' from the ranks of the aided; by performing too badly, they disqualify for not trying hard enough. There is of course an asymmetry in the fall from the knife's edge since graduation, despite the lack of aid, is a sign of success, whereas the aid cutoff for failure to perform is a passport to oblivion, consignment to the basket cases of this world, candidacy for triage. Can any nation be so consigned?

Naturally enough, the Congress did not wish to make a final decision on that matter: Legislation passed was silent on the application of sanctions.[6] Instead, it emphasized its concern that AID monitor its progress in reaching the poor majority:

> For the purpose of assuring that development assistance furnished under this chapter is increasingly concentrated in countries which will make effective use of such assistance to help the poor toward a better life (especially such countries which are suffering from the worst and most widespread poverty and are in greatest need of outside assistance), the President shall establish appropriate criteria to assess the commitment and progress of countries in meeting the objectives set forth. . . . In establishing such criteria, the President shall specifically take into account their value in assessing the efforts of countries to --
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> (1) increase agricultural productivity per unit of land through small-farm labor-intensive agriculture;
>
> (2) reduce infant mortality;
>
> (3) control population growth;

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[6]Professor Prosterman was evidently well aware of the difficult choices implied by cutting off aid. His testimony included two ways of putting off the decision -- an extension of performance time by two years for very poor countries, and the 'pilot program option' which restricted the performance area to 20 percent of the country's population (US Senate, p. 522).

(4) promote greater equality of income distribution, including measures such as progressive taxation and more equitable returns to small farmers; and

(5) reduce rates of unemployment and underemployment.

The President shall endeavor to bring about the adoption of similar criteria by international development organizations in which the United States participates. Presentation materials submitted to the Congress with respect to assistance under this chapter, beginning with fiscal year 1977, shall contain detailed information concerning the steps being taken to implement this subsection.[7]

AID had already in 1975 prepared its first list of countries by the number of poor people in a document entitled, "The Congressional Mandate: Aiding the Poor Majority."[8] Appendix A to that document, reproduced here as Table 1, listed the poor-majority population in 37 AID-assisted countries for which income distribution data were available. Numbers could not be presented for 27 other AID-assisted countries for lack of income distribution data. The absence of that data may be taken as an ominous sign that, contrary to the assertions of Professor Prosterman that "we have the techniques for measuring what is being accomplished as it is being accomplished," available data on income and its distribution is woefully lacking. The figures in Table 1 certainly should not be taken too seriously since small changes in the definition of who are the poor; alterations of exchange rates between currencies, and even new estimates of the population of the several countries could all lead to large changes

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[7] House of Representatives, Committee on International Relations, New Directions in Development Aid, Excerpts from the Legislation (Washington DC, GPO 1976), p. 2.

[8] AID, Implementation . . . , pp. 74-5.

Table 1

Poor majority populations in AID-assisted countries

"POOR MAJORITY" IN AID ASSISTED COUNTRIES, ACCORDING TO PROPORTION OF POPULATION RECEIVING LESS THAN $150 PER CAPITA PER YEAR (1969 PRICES) LISTED BY AID REGION AND BY CONTRIBUTION TO "POOR MAJORITY" POPULATION OF THE REGION [1]

	Total population (millions)	Percent of population receiving $150 per capita	"Poor majority" population (millions)
Near East and South Asia:			
India (64-5)	537.0	91	488 7
Pakistan (including Bangladesh) (66-7)	111.8	72	80 5
Egypt (64-5)	33.3	50	16 6
Turkey (68)	35.2	45	15.9
Sri Lanka (53)	12 5	68	8 5
Tunisia (70)	4.9	52	2 5
Regional subtotal	734 7	83	612.7
East Asia:			
Thailand (62)	34.7	65	22 6
Korea, South (70)	32 0	45	14 4
Philippines (71)	37.1	32	11.9
Vietnam, South (64)	17.9	44	7.9
Regional subtotal	121 7	47	56 8
Africa:			
Sudan (63)	15 2	81	12.3
Tanzania (67)	13 2	91	12 0
Kenya (68-9)	10.8	85	9 3
Madagascar (60)	6.5	88	5.7
Malawi (69)	4.5	95	4 3
Chad (58)	3 2	96	3.1
Senegal (60)	3.8	69	2.6
Dahomey (59)	2.5	94	2.3
Ivory Coast (70)	4.2	45	1.9
Sierra Leone (68-9)	2.5	70	1.8
Zambia (59)	4.2	20	.8
Botswana (71-2)	.6	84	.5
Gabon (68)	.5	22	.1
Regional subtotal	71.7	79	56 7
Latin America			
Brazil (70)	93 6	45	42 1
Colombia (70)	21.1	42	8.9
Peru (70-1)	13 6	35	4 8
Ecuador (70)	6 1	70	4.3
Dominican Republic (69)	4.3	38	1.6
Chile (68)	9 8	15	1.6
El Salvador (69)	3 5	43	1 5
Honduras (67-8)	2.6	58	1.5
Guatemala (66)	5 2	22	1.1
Uruguay (67)	2.9	23	.7
Jamaica (58)	2.0	27	.5
Costa Rica (71)	1.7	14	.2
Panama (69)	1 5	15	2
Guyana (55-6)	.8	28	.2
Regional subtotal	168 7	41	69.2
All regions (37 countries)	1,096.8	72.5	795 4

[1] Countries included are the 37 AID-assisted countries for which income distribution data are reported in Shail Jain "Size Distribution of Income Compilation of Data" IBRD, Bank Staff Working Paper No 190, November 1974 27 AID-assisted countries are not included for lack of income distribution data These are Afghanistan, Bolivia, Burundi, Cameroon, Central African Republic, Ethiopia, Gambia, Ghana, Guinea, Haiti, Indonesia, Khmer Republic, Laos Lesotho Liberia, Mali, Morocco, Nepal, Nicaragua, Niger, Paraguay, Rwanda, Swaziland, Togo, Upper Volta Yemen Arab Republic and Zaire But the total 1970 population of these countries was only 242,000,000 compared to 1 097 000,000 for the countries included in the table The method and sources for the tables are as follows. Population and GDP data are for 1970 (converted to 1969 prices in all cases), except for Pakistan, Sierra Leone, Tanzania, Thailand, India, Senegal, Sugar, South Vietnam, Egypt and Zambia, where the data refer to 1969 and Botswana (1968), Chad (1963) and Dahomey (1959) Dates for the income distribution data are shown in parentheses next to the country in the table Income distribution data in the IBRD source cited above were presented in the form of income shares accruing to 20 equal subgroups of the population To calculate the percent of the population receiving an annual per capita GDP below $150 the income share of a subgroup was multiplied by the total GDP figure for that country. This product was then divided by the number of individuals in that subgroup or the total population divided by 20 GDP and population refer to the most recent year for which data are available Using $150 as a guide, the closest 5 percent interval was located and assuming equal distribution within this interval, the approximate percentage determined The order in which countries are presented within regions was determined by the magnitude of the poor majority of the population, col 3.

Source: The source for the population and GDP figures were the "U N Statistical Yearbook 69," and the "U.N. Yearbook of National Accounts Statistics 1971, V. III" respectively GNP deflator indexes found in "Gross National Product," AID, FM/SRD, May 1974, were used to convert all GDP figures to 1969 prices. (Exceptions: Botswana, Jamaica, Sri Lanka Chad, Dahomey, and Guyana GNP deflators were taken from an appropriate regional table of Africa or Latin America in the "U.N. Statistical Yearbook, 1973 ")

Source: Agency for International Development, Implementation . . . (1975) pp. 74-5.

in the estimated number of poor people in each country. And one immediately notes that many large countries in Africa are missing from the list, not to speak of many small countries around the globe.

What information must AID gather to satisfy the Congressional mandate? The legislation speaks of both commitment and progress, i.e., not only what is happening but how public and international efforts contribute to that progress. Consider the following five-question summary of the data-generation, data-use process implied by the search for commitment and progress:

(1) What is happening to agricultural productivity, population growth, infant mortality, unemployment and income distribution?

(2) What are the determinants of these variables and changes in them over time and from place to place?

(3) What is the character and level of government programs that may affect, directly and indirectly, these variables?

(4) What is the specific impact of Policy X, Program Y or Project Z on agricultural productivity, population growth, infant mortality, unemployment and income distribution?

(5) What are the interactions between these indicators of social progress that may enhance the progress of all when there is improvement in any of them?[9]

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[9] The first four of these questions were suggested by Mr. Robert Parke, Director, SSRC Center for the Coordination of Research on Social Indicators.

Questions 1 and 3 require empirical identification of the 'facts' on each variable or government activity taken by itself. Questions 2, 4 and 5 require interpretive investigations about the relationships between variables and programs. Answers to Question 1 provide an indication of progress yet tell little about commitment. The governments of poor countries may be trying hard to overcome the crushing effect of infant mortality and the hopelessness of unemployment yet may be unable to break the vicious circle of poverty. Good fortune -- finding oil or improved terms of trade -- may make progress appear easy. . .with virtually no real government commitment. Since foreign assistance can hardly be designed to give further support to those lucky enough to do well without trying, questions 2 through 5 must also be answered. AID must assess progress, identify commitment in the governments with which it cooperates, and concentrate on project support directly benefiting the poor. To know what it is doing, AID must seek warranted answers to all the questions above.

B. AID's Current Program. One beginning is to see whether AID's current assistance program is directed towards those countries in which the majority of the very poor reside. The recent Brookings Institution study, Setting National Priorities, The Next Ten Years, agrees that "special emphasis must be placed on flows of funds to the lowest income countries" (Owen and Schultze 1976, p. 214). The authors estimate that 80 percent of the very poor are concentrated in South Asia and Subsaharan Africa, with the rest scattered through Southeast Asia, the Middle East and North

Africa, and pockets of poverty in Latin America. Incompleteness of data on the geography of the poor makes it difficult to compare the regional distribution of bilateral AID programs with the regional distribution of the poor.[10] The general outlines, however, indicate that AID's FY76 budget request would have led to expenditure of about a third of its funds in the Near East and South Asia (NESA) region where about three-quarters of the poor of the world (excluding China) are to be found; in contrast, a roughly equivalent third was to be spent in Latin America where about 9 percent of the poor live. AID requested 42 cents per poor person for the NESA region, and $3.75 for Latin America.[11] And little of AID's funds were to be spent in Brazil, the Latin American country which is home to perhaps 60 percent of the Latin American poor, according to the data in Table 1. On a regional basis, AID assistance does not appear in the recent past to have been directed at the most needy.

A similar story appears in examining total US economic assistance (AID funds, PL 480 and Peace Corps) for selected countries. Table 2 ranks 17 countries by the amount of assistance budgeted per poor person. The very high level for Costa Rica, which was to receive over $40 per poor

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[10]Two World Bank papers appear to offer the major informational base currently available on the size distribution of income in developing countries: Shail Jain, "Size distribution of income: Compilation of data," Bank Staff Working Paper No. 190 (November 1974), and Carmel Chiswick and J. Kipnis, "Size distribution of income: Bibliography of basic sources," Bank Staff Working Paper No. 217 (March 1975), World Bank, Washington, D.C.

[11]These estimates are based on the data included in Table 1, combined with data on AID's budget request for FY 76 taken from the same document, New Directions in Development Assistance (1975), pp. 43-60, Appendix 3.

Table 2

Selected Countries Ranked by US foreign assistance budgeted per poor person, FY 76

Country	FY 76 Request ($ 000)	Millions of Poor People	$/Poor
Costa Rica	$ 8,387	0.2	$ 41.93
Dominican Republic	18,509	1.6	11.57
South Korea	164,980	14.4	11.45
Botswana	2,773	0.5	5.55
Peru	26,286	4.8	5.47
Pakistan & Bangladesh	373,870	80.5	4.67
Colombia	34,075	8.9	3.82
Sri Lanka	31,960	8.5	3.76
Philippines	44,308	11.9	3.72
Tanzania	26,032	12.0	2.17
Kenya	14,813	9.3	1.60
Ivory Coast	1,734	1.9	0.92
Malagasy Republic	3,362	5.7	0.59
Thailand	13,451	22.6	0.59
India	219,206	488.7	0.49
Sudan	4,574	12.3	0.37
Brazil	4,193	42.1	0.10

Sources: Col 1: US Senate Foreign Relations Committee, Subcommittee on Foreign Assistance, 94th Cong., 1st Session, Foreign Assistance Authorization: Examination of US Foreign Aid Programs and Policies (Washington DC, GPO 1975), pp. 576-77. Funds for international narcotic control excluded.

Col. 2: Agency for International Development, Implementation of 'New Directions' in Development Assistance: Report to the Committee on International Relations on Implementation of Legislative Reforms in the Foreign Assistance Act of 1973 (Washington DC, GPO 1975), pp. 74-75.

Col. 3: Col. 1 divided by Col. 2.

Costa Rican, is indicative, perhaps, of the diseconomies of small-scale operation of AID programs in countries with few remaining poor persons to whom assistance is supposed to be directed. At the bottom end of the scale, several Asian and African countries were to receive less than a dollar per poor person. Because Costa Rica (and other states of Central America and the Caribbean) is so small, a redirection of assistance given that country to South Asia would have little impact on assistance given per poor person in the latter area. The new directions of AID should lead to greater attention to Asia and Subsaharan Africa.

Income data telling who are the poor and where they are located is largely missing. Less easy to find perhaps is complete data on the five indicators of progress mandated by Congress. Still more difficult, as will be seen in the discussion in the next section, is assessment of the impact of specific policies, programs and projects on these criteria.

II. Problems with Measuring Progress. This section provides a brief overview of data and sources available on the progress criteria; the apparent demand for data as evinced in two AID mission data-generation projects, and consideration of some problems common to any indicator which is to be used for policy purposes.

A. What is available? In the developed countries, social indicators has been a growth industry recently. The National Science Foundation in the United States devotes a significant program to that

topic.[12] Two US government publications, Social Indicators 1973 and StatUS, the latter a monthly prepared by the Census Bureau for the Office of Management and Budget, have greatly increased the sophistication and range of data generally available, i.e., outside academic circles, on the social condition.[13] The Social Indicators Newsletter, published about three times a year, includes information on methodological advances, research projects underway and recent publications, all of considerable use to the scholarly community.[14] An international journal, published in Canada, has published

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[12]Dr. Murray Aborn, Program Director, Special Projects and Social Indicators, Division of Social Sciences, provided Social Indicators Newsletter (November 1975) with a description of more than twenty-five projects currently being supported by NSF -- none of them providing data for developing countries. The social indicators program was warmly applauded in the 'Simon Report,' Social and Behavioral Science Programs in the National Science Foundation, National Academy of Sciences, Washington DC 1976 (see below Footnote 33).

[13]US Office of Management and Budget published Social Indicators 1973 in 1974; it is currently out of print and no succeeding volume has been produced. StatUS. A Monthly Chartbook of Social & Economic Trends, is compiled by the Federal Statistical System, and has appeared three times (July, August and September 1976) in extraordinarily useful format. The high technology used in its preparation should be considered by LDC governments which might wish to undertake similar publications. Dr. Calman J. Cohen provided information on the publication background.

[14]Social Science Research Council, Center for Coordination of Research on Social Indicators, publishes the newsletter. SSRC has also been responsible for many publications in this field, particularly because of the research interests of Dr. Eleanor Bernert Sheldon, President of SSRC and Mr. Robert Parke, Director of the Center for Coordination of Research on Social Indicators. Examples are Kenneth Land and Seymour Spilerman, ed., Social Indicator Models New York, Russell Sage Foundation 1975; and Roxann A. Van Dusen and Nicholas Zill, ed., Basic Background Items for U.S. Household Surveys New York, Social Science Research Council 1975.

two volumes of research papers.[15] Of particular interest are papers on the quality of life and the "Easterlin' effect of rising income and constant happiness.[16] The National Bureau for Economic Research has published five years of volumes of a highly technical journal on measurement; one issue was devoted to Latin America.[17] There are many other publications and research programs dealing with social indicators in the United States and other industrial and postindustrial countries; Social Indicators Newsletter may be consulted for specifics.

Only two instances among the developing countries were found of reasonably comprehensive publication of an avowed set of national social

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[15]Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-life Measurement, ed., Alex C. Michalos (Dept. of Philosophy, University of Guelph, Guelph Ontario, Canada), published by D. Reidel Publishing Co., Dordrecht - Holland.

[16]Willard L. Rodgers and Philip R. Converse, "Measures of the perceived overall quality of life," Social Indicators Research 2, 2, September 1975, pp. 127-52; and Otis Dudley Duncan, "Does money buy satisfaction?" Social Indicators Research 2, 3, December 1975, pp. 267-74.

[17]Annals of Economic and Social Measurement: Journal of Computers, Information Retrieval and Research Methodology (NBER, New York). Volume 5, No. 2, ed. by David Kendrick was devoted to applications of control theory to macro-economics.

indicators: Malaysia[18] and the Philippines.[19] Data is probably available which would permit such publications for many countries: Until governments have a clear purpose and use for such works, however, they probably would do well not to spend their money. In the meantime, United Nations agencies, including the International Labor Office,[20] the Research Institute for Social Development,[21] and the Secretariat[22] have provided international comparative

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[18]Government of Malaysia, Department of Statistics, Socioeconomic Indicators and National Policy: Malaysia. Working Paper - 1. Kuala Lumpur, October 1974, 41 p. Data presented pertain to eradication of poverty; equalization of opportunity among Malaysia's major ethnic groups, and unification or integration of Malaysian society. Includes data from 1967 and 1970 censuses and changes of variables between censuses. Prepared with advice from Dr. Amos Hawley, Ford Foundation. (This information taken from Social Indicators Newsletter.)

[19]Development Academy of the Philippines, Measuring the Quality of Life: Philippine Social Indicators, Manila 1975, 28 p. The work was directed by Professor Mahar Mangahas, UP School of Economics, who reports in an interview that a larger publication will appear, giving details of data provided in summary form in this brief and excellent publication.

[20]ILO, Household Income and Expenditure Statistics, 1960-72: Africa, Asia, Latin America (available in US at ILO offices, Suite 330E, 1750 New York Avenue, NW, Wash DC 20006, 202/634-6335).

[21]Donald V. McGranahan (Director), C. Richard-Proust, N. V. Sovani and M. Subramanian, Contents and Measurement of Socioeconomic Development (An Institute Staff Study of the Research Institute for Social Development, United Nations, Geneva), Praeger Publishers, New York 1972.

[22]United Nations Department of Economic and Social Affairs, Statistical Office, Toward a System of Social and Demographic Statistics, New York 1975; prepared by Professor Richard Stone; United Nations Economic and Social Council, Social Indicators: Current National and International Activities in the Field of Social Indicators and Social Reporting: Report of the Secretary General, New York, January 1975.

data and summaries of general utility. An ILO official published a thoughtful review of the uses of social data for planning, summarized briefly in Table 3 taken from his article.[23] The international agencies have absorbed some of the costly burden of data generation for the developing countries -- the World Bank has also begun to assemble and will soon distribute social indicator data -- and have given considerable attention to the procedures for making use of data in development planning. The interactive system of data preparation, use of indicators in planning, use of indicators in monitoring progress, and creation of new data in light of changed circumstances is a central theme of this paper. Since only two developing countries have yet to create social indicator data (or at least to call it that), one can hardly see that a sequence with data first, then use, is operative. Instead, a prior demand for data is coming rapidly into existence, and data gathering will presumably begin to fill that demand. However, demand to date is centered in the specific needs of international assistance agencies (in this case the United Nations Family, the US Congress and AID) and it is not yet certain that there are potential data users among planners and policymakers in LDCs. To some extent, the two AID projects for data generation in the Philippines and El Salvador, to be reviewed briefly, have as one central purpose generating interest in data on the poor and on the quality of life among planners and policymakers.

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[23] R. V. Horn, "Social indicators for development, planning and analysis," International Labour Review 111, 6, June 1975, pp. 483-506.

Table 3

SOCIAL INDICATORS AND DEVELOPMENT PLANNING
A SAMPLE SEQUENCE

Stage and operation	Characteristics of statistics or indicators
PREPARATORY STAGE. Selection and use of statistics	
(1) Statement of situation in period I	Descriptive and analytical
(2) Supplementary historical and cross-section statistics	
(3) Selection of relevant statistics from above	Orientative
(4) Reformulation of data as indices, ratios, averages, etc.	Derivative
(5) Processing data: regression, correlation, model building	
(6) Relation of processed data (constituent variables) to goals, etc. (contingent variables)	Indicative
PLANNING STAGE. Use of indicators	
(7) Instrumentation of planning alternatives, interaction, trade-offs, etc., as information for (political) decision	Operative
(8) Formulation of accepted plan with statement of set targets, priorities, etc.	Directive
(9) Guide to implementation. Monitoring progress	Cognitive
RETROSPECTIVE REVIEW. Use of indicators and other statistics	
(10) Review of situation in period II. Effectiveness of planning and influence of other factors	Analytical

Note: This sequence serves only as an example. In real situations the sequence of steps can be different, some could be omitted and others inserted. The "characteristics" in the right-hand column are those frequently used in indicator jargon but it should be noted that some authors use expressions such as operative and cognitive in a different sense.

Source: R.V. Horn, "Social indicators for development, planning and analysis," International Labour Review 111, 6, June 1975, pp. 483-506.

B. What Do AID and Its Overseas Missions Want? Overseas missions of AID have already begun to respond to the Congressional mandate for increased information on progress toward reaching the poor majority. Mission efforts in the Philippines and El Salvador are examples.

1. The Philippines. A Project Identification Document (PID) dated 10 Jun 76 requests funding approval to "develop various kinds of baseline data, progress indicators and impact measures to facilitate project design, implementation and evaluation." The development objectives to be served include, in addition to the five progress criteria, increased participation of women in development, improved environmental conditions, and the more economic use of energy. Over a three-year period, existing data will be culled and analyzed and new information will be generated as necessary by sample surveys in cooperation with local Filipino institutions. The AID mission hopes to develop information which will enable it to evaluate the role of AID assistance within the context of the overall government-international donor development effort. The wording of the PID makes clear that the mission would not be satisfied with indicators alone as information must be "useful in establishing measurable linkages between project outputs and overall development goals." The Philippines is in fact among the most advanced of the developing countries with AID programs in terms of the quality and quantity of social indicators. However, there has been little effort directed to establishing the link between the observed levels on the indicators and specific government programs. The economic and social impact analysis in the Philippines will include

measurement of the progress criteria and development of techniques for estimating the impact of specific projects and policies of the government supported by AID.

2. El Salvador. Over the three-year period, 1977-79, the AID mission in El Salvador plans to support a multi-purpose household survey program which will provide data for planning and evaluation of development policies and programs. As the Project Review Paper (PRP) indicates, the justification for this data-generation project rests upon its potential utility in judging AID activities.

> During the next three years the GOES (Government of El Salvador) and USAID will be planning and initiating ambitious new programs in the areas of agriculture, population, health, nutrition and education. If these programs are not founded on reliable basic information about the people to whom they are directed, a great deal of time and resources are going to be wasted. If there is no way of measuring the effects of development programs and policies on the target group, they cannot be adjusted to assure achievement of desired results (PRP 519-0176, 16 Dec 75).

The PRP goes on to identify certain problems in evaluating AID and government development strategy:

a) Death rates, already low, may fall further as the youthfulness of the population increases; and at the same time the number of women in their fertile years has been increasing, thus possibly raising fertility. Impact of the family planning/program on population growth is difficult to judge, and there is little up-to-date information on age at marriage and contraceptive user rates.

b) Between 1961 and 1971, the measured unemployment rate rose from 5 to 13 percent and may have risen to 20 percent by mid-74. Yet no reliable measures exist on unemployment rates since 1971, or even whether the apparent trend was a statistical artifact of changed definitions of unemployment. Naturally, there is no way to judge the impact of public-sector programs initiated under the four-year plan, 1973-77. "Ongoing labor force surveys will be essential to an understanding of how well the country's development plans are coping with unemployment, and it should lead to better and quicker methods to resolve these problems" (PRP, P. 16).

c) Existing income distribution data are unreliable; a benchmark figure is required to begin with so that statistically significant measures of change can be determined. These changes in turn must be analyzed to determine how the distribution of income in any given year is related to the demographic structure of the population, e.g., the fact that younger workers can be expected to have lower earnings than older workers in a given year, even though over the whole life cycle these differences would even out.

d) There are 200,000 families in El Salvador owning farms of one hectare of less. Virtually nothing is known of the characteristics of these poorest of the poor. A household sample survey with farm households proportionately represented in the sample universe will provide a much needed measure of the direction and magnitude of agricultural income over time.

e) Planning for a National Nutrition Strategy requires data on pre-school children and prenatal and lactating mothers. Specific rounds of the multi-purpose household survey can be directed to study of food consumption, morbidity and other features of the health ecosystem including water supply and access to medical facilities.

The details of these plans of two AID missions indicate that they will not be satisifed with a 'social indicators project' that merely measures social conditions and monitors change without reference to the causal links to specific policies and programs. Thus the appropriateness of the next section which reviews the issues with understanding links to policy of these development indicators.

C. Some General Problems Common to All Indicators. Indicators may be judged, with respect to their potential utility, on the dimensions of accuracy, pertinence, timeliness, costliness, sensitivity and specificity to policy needs.

1. Accuracy. From some points of view, wide tolerance of error of estimates of indicators is acceptable: Whether infant mortality rates are 200 or 250 per thousand live births may not matter much if the policy objective at initiation of a health and nutrition program is simply to lower the rate quickly and substantially. But eventually policy must also cope with whether feeding programs, preventive health care, curative services or potable water supplies is having the greatest effect on infant mortality (or whether a particularly judicious combination is most effective). More

advanced programs require that small changes in infant mortality be measured accurately along with the program inputs which alter it.

In may be instructive in considering the accuracy of social and economic data in developing countries to consider Table 4 drawn from a recent study by Irving Kravis, et. al., A System of International Comparisons of Gross Product and Purchasing Power (1975). The study compares income and product generated in ten countries in terms of local, international and US prices for the components of income and product. Table 4 compares the estimated GDP per capita in 1970 US dollars of the ten countries when evaluated at effective exchange rates and by means of international prices. The large deviations between these two measures for the poorest countries is indicative of the probable errors of estimating income differences between the poor and the rich in two different countries.[24] The 'correct' evaluation of Indian per capita GDP is $342, instead of the mere $98 arising from international comparisons using prevailing exchange rates. If these differences were the same (as a percentage of per capita GDP) for all countries, the transformation would cause less significant problems than is in fact the case. For among the

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[24]Comparing urban to rural incomes is also fraught with the problem of whose prices to use in estimating the value of goods consumed and produced. A telling illustration of the problem appears in a neglected paper by Simon Kuznets demonstrating that a large part of the apparent per capita income growth of Latin America (and some other rapidly urbanizing societies among the LDCs) from the mid-50s to the early 70s could be accounted for by a shift of consumers from low-price rural areas to high-price urban ones with little or no real increase in consumption or welfare. See Simon Kuznets, "The problem of evaluating income growth," Economic Development and Cultural Change, 1972.

Table 4

Alternative Estimates of GDP Per Capita, Ten Countries, 1970
U.S. Dollars

Country	Conversion at Exchange Rates	Valuation at International Prices	Ratio
Kenya	$ 144	$ 275	1.91
India	98	342	3.49
Colombia	329	763	2.32
Hungary	1,037	1,935	1.87
Italy	1,704	2,198	1.29
U.K.	2,144	2,895	1.35
Japan	2,008	2,952	1.47
Germany	3,080	3,585	1.16
France	2,902	3,599	1.24
U.S.	4,801	4,801	1.00

Source: Kravis, et. al., A Comparison. . . (1975), Tables 1.2 and 1.3, pp. 7, 8.

countries studied by Kravis and his associates, India appears by exchange-rate comparisons to have a per capita product a third lower than that of Kenya, whereas the use of international prices places India's per capita product 25 percent above that of Kenya. The implications of such a change of relative position would have enormous import for the estimate of the number of absolute poor in South Asia and Africa.

Marcelo Selowsky used the Kravis et. al. data on Colombia to compare what percentage of the population would lie below three alternative poverty lines. The comparison perhaps most similar to data contained in Table 1 is the percentage below US $150. Official exchange rates would indicate that 44.8 percent of Colombia's population is below the poverty line, whereas using Kravis international prices only 15 percent would be below the poverty line.[25] These enormous variations might reasonably cause one to reject such indicators of absolute poverty until such time as better data and intellectual bases have been formulated for comparing countries. Certainly policies of international lending could not be based on small changes in poverty indices so crudely measured. The World Bank has recently considered several alternative ways of defining the poor. One approach suggested was similar to that embodied in Table 1 above, i.e., an absolute poverty line defined by per capita income. A more sophisticated approach to absolute poverty was to estimate income needed for a minimum diet (plus additional nonfood expenditures) and to determine how

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[25] Marcelo Selowsky, "The distribution of public services by income groups, a case study of Colombia, Part I (electricity, water, sewerage)," mimeo., Development Research Center, World Bank (17 Aug 76), Table V.

many people had income too low to purchase the necessary quantity of food. Webb used this approach to estimate the extent of poverty in Lima, other urban, and rural areas of Peru. The percentage of population below this poverty line was 8 percent for Lima, 15 percent for other cities, 100,000+, 15 percent for towns and 50 percent for rural areas, with the national average being 29 percent.[26] The percentage in poverty is somewhat lower than that which appears in Table 1 above, but the manner of calculating who are the poor is distinctly superior as a method.

A still more sophisticated approach, for which no data has been published, is to examine the income and expenditure of households in the twentieth percentile of income as found in budget studies. These households' consumption is not assumed to be adequate; additional food is added to yield FAO minimum caloric and protein intake. The resulting food intake, to which is added an estimate for nonfood expenditures (different in urban and rural areas to adjust for expenditures on housing) is then taken as the minimum necessary consumption: All families falling below that cutoff are then defined as living in poverty. This approach is different in principle from the Webb absolute poverty line because the use of the twentieth percentile group expenditure basket makes possible quite different cutoff lines for the poor in different countries. If poverty is partly a relative and partly an absolute phenomenon, then this approach may be more satisfactory. However, Carmel Chiswick reports that in carrying out

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[26] Richard Webb, "On the statistical mapping of urban poverty and employment," Bank Staff Working Papers No. 227, Washington DC, January 1976, pp. 32-38.

this exercise in Thailand, the estimates of the number of poor, in both urban and rural areas, does not yield results significantly different from those derived from the much simpler per capita income data. What she calls a cost-of-living poverty line finds about 10 percent of the urban population and 20 percent of the rural in poverty -- virtually the same percentages that would be derived by setting the poverty cutoff at $50 per capita annual income, as in Chenery et. al., Redistribution with Growth.[27] The Thai data indicate that the twentieth percentile families in rural areas spent about 65 percent on food; those in urban areas about 50 percent, a major source of difference being house rents in urban areas. If studies in other countries reveal some constancy in the food share at that or a similar income percentile, there may be some consideration given to defining poverty by the share of income spent on food. Such an indicator, being relatively easy to determine, and combining elements of both relative and absolute poverty might have some advantages over per capita income and other measures. However, the World Bank staff are still considering alternative definitions of poverty that have operational significance in terms of available data and adequate theoretical justification.[28] A study

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[27] Based on interview with Carmel Chiswick, Development Research Center, World Bank, 29 October 1976. Ms. Chiswick has written "Measuring poverty," World Bank Staff Working Paper No. A-1, Washington DC 1976, which deals with some issues in measuring poverty in Bangkok. She also prepared (with J. Kipnis) the bibliography accompanying the Shail Jain data on size distribution of income.

[28] These observations drawn from interviews with Jacob Meerman, Agricultural Studies; Charmel Chiswick, Development Research Center, and John English, Urban Studies, all of the World Bank, on 29 October 1976.

by Papanek of the poor of Jakarta could concentrate on a more homogeneous group, despite the presence of many rural-urban migrants, than would be possible with a national-coverage analysis.[29]

2. Pertinence. Social indicator data possesses the very real danger of appearing to be more than it is; often this danger arises from the fact that elements left out of measurement move in directions opposite to that of the elements measured so that real changes are quite different from those reflected in statistics. Two examples may be given.

A recent study of the incidence of malnutrition by the World Bank staff examined the impact of increases in income on nutritional status by age group in order to assess how much improvement could be expected over the next few decades in the absence of a specific nutritional program but with general improvements in the standard of living measured by per capita income.

> An analysis of a comprehensive nutrition survey of low income families in Calcutta shows that the nutrition of all age groups improves with rising incomes. While the nutrient-income elasticities for small infants are higher than for adults, this does not mean that infant malnutrition gets resolved with improvements in income. In fact, we reach the opposite conclusion when assuming that higher incomes are achieved through the mother obtaining employment at a partial sacrifice of breast feeding. . . . Calculations about the loss of breast feeding and the cost of replacing the equivalent nutrients suggest that about 50% of the mother's earnings would need to be spent on the infant for the sheer maintenance of its nutritional health. Clearly, higher

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[29] Gustav F. Papnek, "The poor of Jakarta," Economic Development and Cultural Change 24, 1, October 1975, pp. 1-27.

per capita incomes may not only not reduce but, to the contrary, may increase infant malnutrition.[30]

Since most family budget studies leave breast feeding out of account, and because in the instance of infant feeding the increase in income and consumption iteself causes a decline in breast feeding, the measured improvement is not really pertinent to a fundamental issue of malnutrition.

There are complex and poorly-understood relationships between unemployment as measured by developed-country definitions (Are you looking for work and unable to find it?), unpaid family labor and the allocation of time and resources in the LDC household. The growing awareness that time is not sharply divided between work and leisure -- and perhaps less so in developing than in developed countries -- leads to a questioning of the pertinence of employment data, no matter how accurately measured, when applied to rural and urban informal sectors. Elder children, although unemployed and staying at home, may be using their time productively by investing in the mental growth of younger siblings, may free parents for more time in market work and may even improve their skills in work at home in a kind of on-the-job training provided by parents. Certainly the importance of these dimensions of time use declines as societies become more urbanized and the work/nonwork dichotomy becomes clearer for more the population.

Homogeneity of work experience -- most people in agriculture and petty trade -- reduces the pertinence of employment, mobility and occupational

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[30]Shlomo Reutlinger and Marcelo Selowsky, "undernutrition and poverty," World Bank Staff Paper 202, 1975, pp. 5-6.

indicators. However, the interactive system of homogeneous work experience, nonparticipation in the marketing of personal skills (in both job and marriage markets), and the demand for children to re-enact that system as parent rather than child keeps the system recreating itself. There may not be much that is changing that appears to merit study and measurement. Yet it is the changeless features that must be studied if the system is ever to change. Critical features of the system are those that its members already identify by sanctifying them with ritual -- birth, passage to adulthood, identification of a work role, marriage, birth of one's own children and death. A very complete plan for data gathering on an international scale has been developed and would easily encompass data needs of both homogeneous and heterogeneous systems. The system of social and demographic statistics (SSDS) developed by Professor Richard Stone is perhaps too comprehensive to be realized (see footnote 22). It would probably guarantee against failure by lack of pertinence, but users could easily get lost in the maze of data scheduled for creation if the SSDS were brought into existence.

3. Timeliness. Virtually no data can be generated through procedures that are sufficiently accurate to command respect within the time limits that policymakers normally must respect. John Hunter in his book on Colombia told the story of a Minister of Agriculture who called the statistical office in his Ministry asking for the quantity of potatoes produced annually in Colombia. Two days later the office sent him a plan for conducting a sample survey which would produce the desired information within six to twelve months. Whereupon the Minister canceled his request

for the data and called his wife asking how many pounds of potatoes she bought the previous week; after judicious multiplications, he produced the ministry's estimate of potato consumption (and production) in less than half an hour. The biases in such a procedure obviously vitiate the result -- even if by some chance it were correct. Some data is not worth having, no matter how easy it is to get.

But timeliness raises special problems when there are significant and identifiable lags between inputs (decisions) and outputs. Suppose, for example, that a Prime Minister announced early in 1977 that all mothers should extend breast feeding to eliminate malnutrition and thus improve the eventual health status of children. Even if all women immediately followed the Prime Minister's advice, the measurable impact on the progress criteria under review in this paper would be long delayed:

(1) Fertility might be lower in 1978 and 79 due to extended postpartum amenorrhea;

(2) Infant mortality might decline around 1980 as a result of greater child spacing;

(3) The productivity of these better-nourished children might contribute to higher aggregate productivity from 1998 onwards.

The progress criteria all fall in the bailiwick of human capital investment (with the possible exception of agricultural productivity since that responds also to traditional inputs of capital and land as well as the human element of productiveness associated with schooling, experience and learning-by-doing). Human capital theory has largely developed as an effort

to understand the terms under which people invest today for rewards tomorrow, i.e., there are virtuallyalways delays between investment and result. The delay inherent in these indicators greatly complicates their use for policy.

4. Costliness. Realization of the very complete system of social and demographic statistics (SSDS) described by Professor Stone (see footnote 22) would cost a lot of money. But how much is too much? Data-generating alternatives have not been reviewed systematically with respect to their cost-effectiveness. One multi-purpose household survey undertaken for research purposes was evaluated from the narrow perspective of its possible replication in all countries of the same continent: The financing agency decided that the cost of repeating the survey was too great relative to the information which could be gained.[31] The Government of Pakistan is currently considering several sample survey approaches for gathering nutrition, fertility, mortality and labor-force participation data. Cost and information quality are being taken into account in reaching a decision. The alternatives which might be weighed in deciding how to generate information are rarely conceived as tradeoffs between cost and accuracy, timeliness and completeness, and the other choices which face those who design data aystems. (But see Section IV.D. below for recommendations on multipurpose surveys.)

5. Sensitivity to Policy Needs. Aggregate indicators paint the national picture in broad brush strokes and are hence applicable only to

[31]Based on interview with Mr. Robert McPheeters, World Bank, Sep 76.

broad national policies -- the family planning program, an incomes policy, price controls on key wage goods to hold down the cost of living of the poor majority. A good deal of theorizing is needed to tease out the long and tenuous connecting threads between general policies and, ceteris paribus, the resulting socioeconomic conditions. The extraordinarily complete body of data on the US economy since 1870 has not led to domination or defeat by two principal opposing interpretations of causes of fluctuation in the economy -- Keynesian and monetarist. There is little reason to expect that the wisdom (or its opposite) of specific policies in the LDCs will be finally determined by the availability of general indicators.

Perhaps better results can be anticipated with the study of natural experiments: There are already in operation programs for fertility control, productivity improvement, income redistribution, mortality reduction and employment creation. These existing programs can be studied with experimental and quasi-experimental designs to see what impact they have had -- intentionally and unintentionally -- on the progress criteria discussed here.[32] In applying evaluation techniques to specific projects the gain in specificity may be purchased at the price of irrelevance to other projects and settings. Perhaps for that reason there is an irresistible urge to limit the expense of studies of 'natural experiments' to some small fraction of the project cost -- even though a study which determined the

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[32] On experimental design see Riecken and Boruch, ed. (1974) esp Ch. on quasi-experiments and with special applications to AID, Boruch and Riecken (1974), "Applications of randomized experiments to planning and evaluating AID programs" (AID/cm/ta-c-1055). For a comprehensive listing and analysis of population programs see Roberto Cuca and Catherine S. Pierce, "Experimentation in Family Planning Delivery Systems," (Aug 1976).

reasons for success or failure might lead to considerable savings on future projects.

6. Specificity to Policy Needs. In a recent review of National Science Foundation support of research in the social sciences, a committee found that applied research rarely achieves its policy-impact objective.[33] At issue was how research does impact on policy. The sponsoring-agency staff seemed to believe that identifiable policymakers had to be reached with specific new information which would then form the basis for new decisions.

The review committee, headed by Professor Herbert A. Simon, asserted an alternative information-diffusion model of policy impact. Investigators attack a problem and generate new information about it and new ways of analyzing it. The new information and perspective then diffuses through informed public opinion until the policymakers join the public in looking at the world differently. (The 'publics' involved may of course be quite small -- being interested persons on such matters as the population problem, the energy crisis, the environment, the inflation-employment tradeoff, etc.) With this latter model of information transmission, there is less need to specify policy research needs in terms of the needs of policymakers narrowly concerned with an issue. General information on indicators of progress may inform the public about a problem (high fertility, inequality,

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[33] National Research Council, Committee on the Social Sciences in the National Science Foundation (Herbert A. Simon, Chairman), Social and Behavioral Science Programs in the National Science Foundation, National Academy of Sciences, Washington DC 1976.

unemployment), and basic research, conducted under conditions determined by independent investigators, leads to a gradual specification of real (and difficult) policy choices which, if to be enacted, must be broadly understood by interested members of the public. Resolution of which model of policy impact pertains in developing countries merits thoughtful consideration.

III. Problems with the Five Progress Criteria. Congress introduced five criteria into legislation; several independent scholars, on hearing the list read, or seeing it for the first time, have expressed satisfaction with the list of five.[34] One Filipino expert indicated that of the listed five, only income distribution ought to receive attention since income distribution is the most serious development problem in his view. Other experts evinced special interest in the interactions between the five criteria as aspects of a model of economic and social change which might yield testable hypotheses about the development process and potential prescriptions for policy guidance. The links between income distribution and employment on one hand, and mortality and fertility on another are particularly rich causal connections for careful study. In this section, some of those links will be explored, but the principal focus is on the problems and prospects of measurement for each of the five criteria.

A. Agricultural productivity. Unlike the other indicators included in the Congressional legislation, agricultural productivity is linked to a

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[34]Names of persons interviewed appears in Appendix 2.

specific mode of goal achievement "through small-farm labor-intensive agriculture.". Moreover, it is not labor productivity or the productivity of capital that is to be promoted but "productivity per unit of land." Most economists would be concerned with improving total productivity, i.e., the productivity of all inputs taken together. There may be incompatibility between promoting small farms and increased productivity, but the legislation reflects expert (if perhaps errant) opinion.

In a comprehensive review of rural productivity to developing countries, Berry and Sabot[35] conclude that the observed higher productivity of labor on small farms is a result of a dual labor market in which the preference for self-employment leads to greater time inputs on small farms but, in effect, lower productivity per hour worked than prevails on large farms. Workers on small farms produce more (per land unit) because they are willing to work harder -- not because small farms are naturally more productive. But unless an economic system can induce rural workers to work hard on large farms, the large farms will not realize their natural productive potential. Berry and Cline calculated the increase in output which would result if all farms in selected countries used resources as productively as the average sized farm (usually a rather small one); such increases reach levels of 30 percent and higher for some countries.[36]

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[35]Albert Berry and R. H. Sabot, "Labor market performance in developing countries: A survey," unpub. mimeo., World Bank Development Economics Dept., June 1976, pp. 94-95.

[36]Cited in Berry and Sabot, "Labor market performance in developing countries," p. 119.

A principal issue facing agricultural productivity is the malfunctioning of factor markets, i.e., the failure of market mechanisms to equate demand and supply. Too much labor in agriculture is then associated with disguised un- and underemployment; inappropriate technology is that which blocks the demand for labor and hence the chance to soak up the excess supply. Dualism in labor supply -- the preference for own-farm work -- causes differences in labor productivity between own-family small farms and large units using wage labor. Finally, the wage gap between rural and urban areas has been explained in expectations models as the result of market malfunction. Recent empirical research -- as reviewed in Berry and Sabot cited above -- has gradually cut away some of the mystique of dualism and labor surplus and at the same time cut down the estimates of economic loss suffered by developing countries because of the alleged malfunctions. In the event, these analyses still confirm the existence of gaping chasms of inequality in the rural sector.

The issue of dualism in rural labor markets, particularly as it relates to differential productivity between small and large farms, is intimately linked to the use of time by the household. Recent investigations of rural household behavior in the Philippines[37] have divided the temporal resources of the household into time devoted to market work, time spent on household work and residual time (leisure).[38] In this trichotomy the labor-leisure

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[37]Among the several works on this topic, all of which draw on the Laguna Survey data, see the works by Elizabeth King, "Time allocation in rural Philippine households," Discussion Paper 76-12, 1976, and Barry Popkin (1976). Several other studies are available in draft or are in preparation (see below footnote 48).

[38]This trichotomy is explored in a recent paper by Reuben Gronau, "Leisure, home production and work -- the theory of the allocation of time

choice has given way to the more complex possibility of self-employment or home production. Although much of the analysis of this situation has turned around women's choices of labor market participation (as a potential second earner or unpaid family laborer), the surveys have revealed interesting variations in men's use of time as well. Any study of variations in agricultural productivity, and how they may relate to farm-size choice or appropriate technology, must take full account of the allocation of time within the rural household if warranted conclusions for policy are to be reached. The study of productivity requires the study of inputs as well as outputs -- and on-farm variation of time inputs appears sufficiently important to deserve careful attention -- especially if temporal resources are the major input into agriculture.

To date, however, very few rural household surveys have been conducted which would yield a clear picture of time use. Some earlier studies summarized by Alexander Szalai[39] concentrate particularly on urban areas and more developed countries. Growing awareness of the need for pertinent

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revisited," NBER Working Paper Series No. 137, Stanford CA, May 1976. A lighter but thought-provoking treatment (Why do modern businessmen have so little time for the traditional cinq a sept affaire?) is offered in the excellent short book by Staffan B. Linder, The Harried Leisure Class, New York, Columbia University Press 1970.

[39]Alexander Szalai, ed., Time Allocation Surveys (European Coordination Centre for Social Science Research and Documentation) and The Use of Time, 1972, The Hague, Mouton Co/libri, 868 p. The latter work includes 15 studies on 12 different countries with only Peru among the group fitting the usual definition of a less developed country.

The comprehensive U.N. data system prepared by Professor Richard Stone (footnote 22) gives a great deal of attention to the preparation of time-use data to be drawn from sample surveys.

time-budget or time-use information has set in motion efforts to conduct use-of-time surveys in several countries. In July of 1976, the Agricultural Development Council held a meeting at which some of these studies, currently in progress were discussed, including:

- The Laguna Survey in the Philippines;
- The Botswana multi-round household survey;
- INCAP studies in Guatemala;
- The Malaysia household survey being conducted with Rand Corporation technical assistance.

An earlier, planned study along similar lines in Northeast Brazil produced a small body of pilot-survey data but further field work has been postponed. There may be some few other time-use studies in rural areas of LDCs, but all in all, the importance of such data for policy formulation and resolution of central issues affecting development strategies is in stark contrast to the minimal research inputs made so far. The Economic Commission for Africa has given special attention to African household studies.[40]

Even with significant data improvements via well-designed household surveys, variations in agricultural productivity caused by such unpredictable factors as the weather, climatic change and international price movements make it quite unlikely that a satisfactory basis will ever be drawn up to justify a cutoff of external assistance on grounds of failure to meet productivity goals.

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[40]United Nations Economic Commission for Africa, "List of household data requirements," mimeo., 30 March 1976, is one of a series of papers produced by ECA in conjunction with planned work on the topic.

A recent study by the ESCAP Committee on Population reviews some of the possible relations between agricultural productivity and population growth:[41]

> The growth of population will alter the supply of land in a number of ways: The pressure of population may induce migration to remote areas and the placing of new lands under cultivation. On the other hand, under pressure of population, new housing, roads and other facilities will subtract from the already insufficient amount of land now under cultivation. Furthermore, exploitive practices of forestry and land management in response to population pressures will result in continued loss of fertile top soil through erosion.
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> Water is also a key natural resource in the production process. This is particularly true in the case of agriculture. Wheat, rice and cotton require about 1,500, 4,000 and 10,000 tons of water respectively per ton of crop. Furthermore, 600 tons of water are required to produce a ton of nitrate fertilizer. Water is also required in the production of hydroelectric power.
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> Population growth results in increasing demands for food and energy, thus increasing demands for water for irrgation and hydroelectric power. These demands have resulted in the building of large water-storage reservoirs. This in turn will have a number of favourable and unfavourable impacts on the natural resource situation in the region in which the water impoundment is located. By substituting a large area of water for what was previously a similar area of land, cultivated or forested areas may be lost to production. There will be changes in the annual streamflow pattern, entrapment of fertile sediment that formerly passed downstream, loss of water through evaporation, interruption of biological life cycles, and the creation of a favourable environment for the spread of aquatic growth and water-borne diseases and disease vectors.
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> In 1970 a study of selected ESCAP countries indicated that irrigation requirement would amount to 11.5 per cent of mean annual runoff. By 1990 this requirement will have nearly doubled to 20.4 per cent of mean annual runoff.

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[41] United Nations Economic and Social Commission for Asia and the Pacific, Committee on Population, "Interrelationship of population change and environment, with special reference to the rural sector" (Item 4 of the provisional agenda), Interrelationship of Population Change and Economic and Social Development (E/ESCAP/POP/1/L.1, 7 May 1976), pp. 14-15.

The interrelationships discussed here are exceedingly complex, particularly the specific role to be accorded to alternative rates of population growth in the steady but, in some respects, immutable running down to the sea of ecological systems in which man claims an ever larger niche. The productivity issues for agriculture should be linked to larger features of national and (as with the delicate matters of the waters of the Ganges river system) international ecosystems. These issues are particularly pressing in South and Southeast Asia because of high current levels of population density and the persistent knocking at the door of environmental decay which that density implies.[42]

Agricultural productivity is intimately linked to the problem of malnutrition in developing countries. A recent World Bank study has restudied the malnutrition problem and reexamined data developed several years ago by the United Nations Food and Agricultural Organization on food deficits and malnutrition. The new Bank study demonstrates that the malnutrition problem is more severe than had been thought:

> . . .We estimate that 56 per cent of the population in developing countries (850 million people) had calorie deficient diets in excess of 250 calories per day. Another 18 per cent (280 million people) had deficits of less than 200 calories per day.[43]

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[42]For analysis of an East African case see Barbara Knapp Herz, Demographic Pressure and Economic Change: The Case of Kenyan Land Reforms, AID/PPC/PDA, Washington, December 1974. Investment in the Swynnerton land reform paid off, but continuing population growth seems to be on the way to placing rural Kenya in a low-level equilibrium trap.

[43]World Bank Staff, "Undernutrition and poverty: Magnitude and target-group oriented policies," Staff Working Paper No. 202, December 1975, p. 3. A printed version of this document prepared by Shlomo Reutlinger and Marcelo Selowsky was distributed in October 1976.

The earlier FAO estimates of malnutrition were predicated on estimated food deficits by regions of the world in a manner which aggregated together deficit and surplus countries in the same region. The World Bank study makes the more realistic assumption that individual countries which have deficits experience malnutrition uncompensated by imports from nearby countries. The aggregate deficit of calories is but 180 billion units when countries are counted together but is 260 billion when the calorie deficits in deficit countries are added up.[44] The deficits, however, are not distributed the same by regions with the two calculations; for example, the FAO estimate showed Latin America to have no food deficit (and hence no problem of malnutrition) whereas the new estimates place the deficit in deficit countries as totaling 19 billion calories per diem. The jointness of problems of agricultural productivity and malnutrition requires careful attention to measurement of the problem and the targeting of policies to deal with it.

B. Infant mortality. Infant mortality is usually expressed as a ratio of infant deaths in a given time period to the number of live births in the same period. For many developing countries the rates have declined significantly in the past. Table 5 presents data which a United Nations group considered the most reliable on declines in infant mortality: Few countries were considered to have reliable enough data over several decades to warrant publication of statistics. The substantial changes which can occur in this measure make it useful as an indicator of progress in

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[44] World Bank Staff Paper No. 202, p. 13.

Table 5

Infant Mortality Rates for Selected Developing Countries, 1935-1939 and 1960-1964

Country	Average Annual Rate		Percentage Decline
	1935-1939	1960-1964	
Ceylon	182	54[a]	70
China (Taiwan)	144	28	81
Costa Rica	144	73	49
El Salvador	125	70	44
Jamaica	127	48	62
Malaysia	149	58	61
Mauritius	151	61	60
Puerto Rico	123	45	63
Singapore	152	31	80
Trinidad and Tobago	104	41	60

Source: United Nations, Demographic Yearbook, 1966 . . . (1967), table 14; cited in UN Determinants and Consequences of Population Trends (New York 1973), p. 125.

[a] Four-year average.

development; however, problems with measurement are so severe that the infant mortality rate must be used with caution.

Infant mortality is almost universally under-reported in developing countries. In Roman Catholic countries where parents usually have infants baptized several weeks after birth, parish records will fail to record all infant deaths that occur prior to baptism. In other countries, limited recall is often blamed for respondents' failure to mention infant births and deaths in the case of children who die soon after birth. Ingenious statistical techniques have been devised to estimate response failure; these techniques, particularly the Brass method, have been used in Africa to improve infant mortality estimates, i.e., bring the estimates closer into line with what investigators believe to be the 'true' rates. All such techniques have deficiencies, however, which are argued vigorously among professional demographers. Some interesting techniques require assumptions about the stability of vital rates for the application of stable-population theory. Where rates are changing rapidly these assumptions do not hold and hence the methods cannot yield reliable estimates of infant mortality rates.

Whatever individual, scholarly views may be, one could probably get general agreement to the proposition that small changes in infant mortality from one year to another cannot be measured with any substantial degree of accuracy by small-sample household surveys. Decennial censuses, which do offer a large enough sample to generate a statistically significant infant mortality statistic, often contain questions too general to elicit sufficient recall to get accurate reporting of infant deaths by their surviving

mothers.[45] (Left out of account, by the way, may be infant deaths accompanied by maternal death, in which case neither event might be recorded by periodic census or survey.)[46]

Aware of these problems, the World Health Organization has sponsored surveys specifically directed at determining infant mortality. The Pan American Health Organization published the results of studies in several Latin American cities; the rates discovered in that careful study, directed by Dr. Ruth Puffer, were generally higher for urban areas than had been indicated in official data based on censuses for whole countries including both urban and rural areas. Since it is generally believed that rural infant mortality is higher than urban, this finding gives little assurance that generally available data deserves much credibility. Much less credence, therefore, can be given to any data purporting to demonstrate trends in infant mortality.

1. Policies affecting infant mortality. Several factors within reach of public policy have an impact on infant mortality; these include nutritional status of infants, their access to potable water and sanitary environments, and public provision of preventive and curative health services. Each of these factors may also have substantial impact on general

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[45]For a collection of studies treating, among other medical issues, maternal and infant mortality, see "Malnutrition and infection during pregnancy," American Journal of Diseases of Children, 129, No. 4 and 5, April, May 1975, pp. 419-63 and 549-80; special issue reprinted by Agency for International Development (AID/TAB/Health).

[46]For a review of 160 published items, see Robert Buchanan, "Effects of childbearing on maternal health," Population Reports Series J, 8, November 1975, George Washington Univ Medical Center, 2001 S St. NW, Washington DC 20009, pp. J125-J140.

mortality and morbidity, and life expectancy and hence produce desirable outcomes for elements of the population in addition to infants. Paqueo attempted to evaluate the impact of specific health personnel (doctors, nurses and midwives) on infant survival probabilities for Philippine provinces. He found a significant positive correlation between the presence of midwives in provinces and infant survival, and as expected, no significant relationship with the presence of doctors. The author suggests that "government could have reduced in 1975 the mortality rate from 7 to 1.5 percent, which is about the level in developed countries, by hiring 33,161 more midwives that would cost about ₱ 119.4 million."[47] Analysis of details of expenditure within a sector (such as health policy and programs) will perhaps indicate in all relevant cases the existence of tradeoffs between infant mortality reduction and general improvements in expectation of life for all age groups.

No government would be wise to judge the impact of health investments only on the health of infants, particularly because factors endogenous to the family which govern infant breast feeding are probably much more important determinants of infant health than any external government program.[48] Infant feeding practices in developing countries may be a

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[47]Vicente B. Paqueo, "Family decisions and fertility behavior: The impact of public education and health expenditures," mimeo., Seventh Summer Seminar in Population, East-West Center, Honolulu, 16 June 1976, p. 14.

[48]For studies on this phenomenon in the Philippines see Barry M. Popkin, "The role of the rural Filipino mother in the production of child care time," Discussion Paper No. 76-12, University of the Philippines Inst of Economic Development and Research, School of Economics, July 1976, and the bibliography of works cited herein.

growing cause of the erosion of infant health despite improvements in ecological conditions (provision of potable water and preventive health care, for example) that may be tending to reduce infant mortality. At the beginning of the twentieth century, the first programs to chlorinate urban water supplies in the United States helped reduce infant mortality significantly. However, the removal of bacteria from the infant's environment which had previously caused gastroenteritis was accompanied by the removal of bacteria which caused harmless disease levels of poliomyelitis and hepatitis which had helped children maintain immunity in their post-infantile years. With early immunity lost because of the environmental improvements, children were subject to much more virulent attacks of the diseases later in life when their bodily defenses were inadequate. These cases of offsetting effects offer ground for caution in any attempt to assess the health-improvement benefits of specific programs. Development causes women to work more and limit breast-feeding; better water supplies reduce natural immunities; irrigation systems produce water for agriculture, electricity and schystosomiasis.

In an exploration of the interactions between nutrition, infant mortality and fertility, Anderson and McCabe found that in Zaire complementary programs were needed to have the most desirable policy impact on all the variables studied:

> ....Rises in calorie consumption associated with the early stages of modernization may be expected to increase fertility in noncontracepting populations, if there is no change in infant mortality rates. If, however, infant mortality declines, the total effect of an increase in calories on the fertility of women is ambiguous.

> A major implication of our work is that, if calorie consumption can be held constant and protein consumption increased, both infant mortality and fertility may fall. A major indirect effect of a fall in infant mortality is a fall in fertility, through an increase in the average length of the period of postpartum amenorrhea.[49]

These findings suggest that efficient policies will not be centered on but one of the progress criteria under discussion here. Instead, further investigation of interactions should provide the basis for coordinated food/nutrition/mortality policies.

2. The Infant Mortality/Fertility Link. There is very considerable controversy as to whether reductions in infant mortality will cause pari passu declines in fertility. A World Bank staff review of family planning experimental programs considered sixteen experimental programs that integrated health and family planning:

> These experiments confirm the a priori view that there exists a synergistic relationship between family planning efforts and general health programs. Experimental schemes have proved, however, that there is a lag between improvements in health and fertility reduction. . . . There remains considerable need for future experimentation on the question of design and related cost-effectiveness issues.[50]

The argumentation on both sides of the infant mortality/fertility controversy has become increasingly sophisticated; each advance in understanding

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[49]Barbara A. Anderson and James L. McCabe, "Nutrition and fertility of younger women in Kinshasa, Zaire," Mimeo., Yale Economic Growth Center, Yale University, New Haven Conn (1976), p. 19

[50]Robert Cuca and Caterine Pierce, "Experimentation in family planning delivery systems," mimeo., Development Economics Department, World Bank, August 1976, p. viii.

of the possible relationships — broadly divided into biological and behavioral ones -- has required more detailed micro-data. Within a committee of the National Academy of Sciences, the controversy is being addressed in such manner as to indicate which data could resolve the competition between alternative hypotheses. Guidance on future data needs in this area should come from the committee's deliberations.[51] Recent works on the topic have provided useful new analyses of freshly available data but have not resolved the controversy.[52] At one time, data such as that presented in Figure 1 might have been thought to offer incontrovertible proof that fertility and mortality fall together.[53] However, analysts now recognize that the trends displayed there for four East Asian countries may be the result, not of interactions of mortality and fertility, but of the impact of other variables (urbanization, industrialization, social mobility, etc.) not currently being analyzed. Thus future analyses are bound to be more exacting in their data requirements than are simple explorations for 'the facts.' The design of future data-gathering efforts

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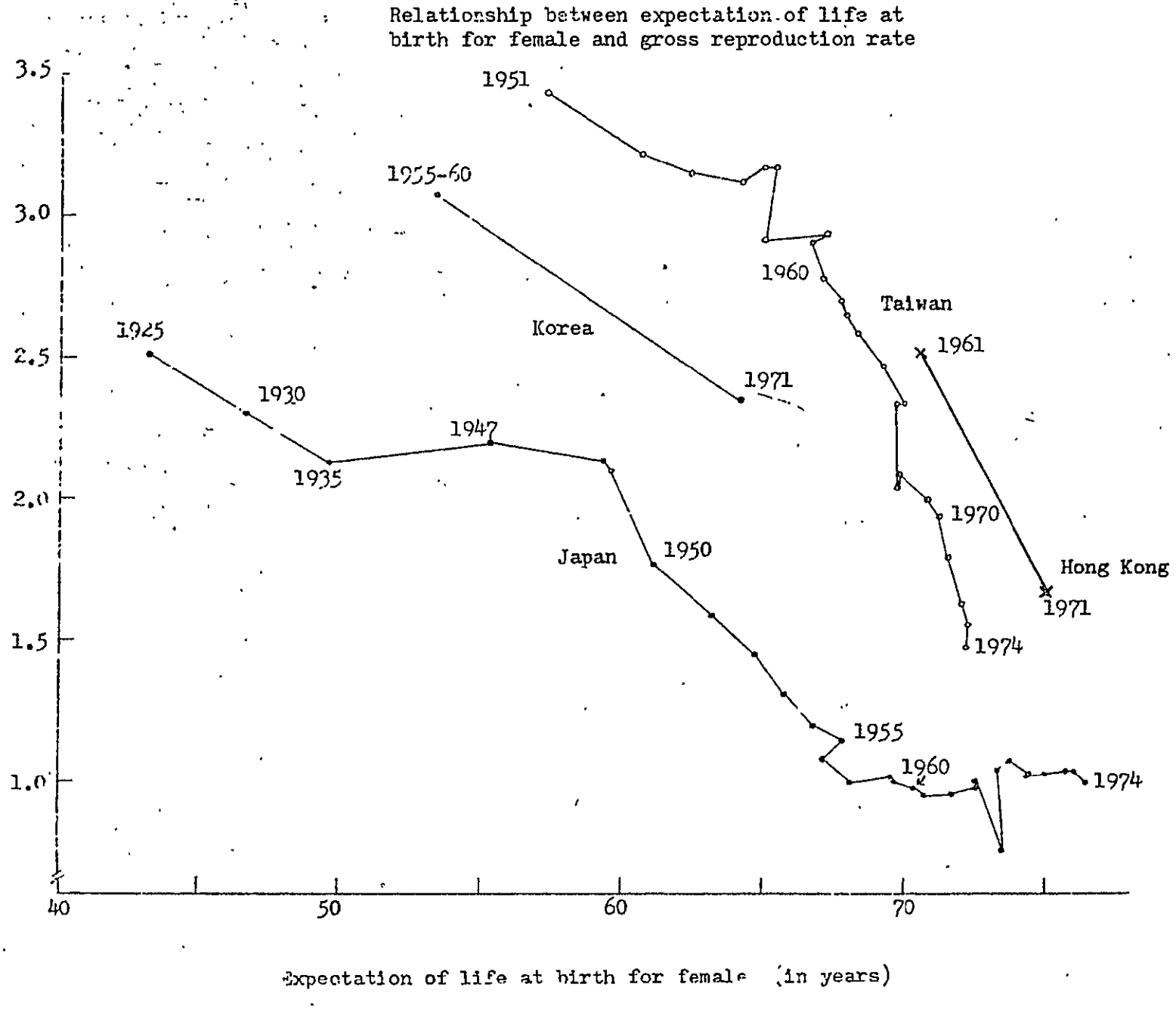
[51]This information is based on an interview with Professor T. Paul Schultz, Economic Growth Center, Yale University. Chairman of the NAS Committee is Professor Henry Moseley, Director, Population Center, School of Medicine, Johns Hopkins University, Baltimore MD.

[52]T. Paul Schultz, "Interrelationships of fertility and mortality," in Ronald Ridker, ed., Socio-economic Correlates of Fertility: Applications to Policy Issues. Baltimore, Johns Hopkins University Press, to appear, 1976; CICRED, Seminar on Infant Mortality in Relation to the Level of Fertility (6-12 May 1975), Bangkok, Thailand, 367 p.

[53]Figure 1 is taken from Kazumasa Kobayashi, "Regional summary of demographic changes and socioeconomic correlates in East Asia -- Hong Kong, Japan, Korea and Taiwan," mimeo., The Center for Southeast Asian Studies, Kyoto University, Kyoto Japan, n.d.; presented at Seventh Summer Seminar, East-West Center, Honolulu, June 1976, p. 25.

Figure 1



Source: Kazumasa Kobayashi, "Regional summary of demographic changes and socioeconomic correlates in East Asia -- Hong Kong, Japan, Korea and Taiwan," mimeo, Center for Southeast Asian Studies, Kyoto University, Kyoto, Japan; Seventh Summer Seminar, East-West Center, Honolulu, June 1976, p. 25.

should be carried out in such manner as to reveal the complex relationships between variables such as nutrition, infant mortality and fertility, all of which social policies are designed to influence. It appears, unfortunately, that one project which might have resolved some issues has been terminated.[54]

C. Population Growth. Reducing population growth comes down essentially to reducing birth rates.[55] Data on birth rates in developing countries has become, unfortunately, a matter of public controversy.[56] Some of the controversy may be resolved by the proximate release of data from the World Fertility Survey which has now been completed in many developing countries. The sampling procedures which have been used in WFS activities are of the highest technical quality; however, the following analysis by William Seltzer may indicate that some important issues will not be resolved by WFS surveys which are generally based on samples of less than 10,000 households:[57]

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[54]Reference is to the Narangwal experiment: See Cuca and Pierce (1976), p. 51, which cites Rural Health Research Center, Narangwal, Punjab, India, The Narangwal Population Study: Integrated Health and Family Planning Services, mimeo., 1975.

[55]This section draws in considerable measure on a recent paper by Nancy Birdsall, "Population-development links: Research for policy," mimeo., Population and Human Resources Division, Development Economics Department, World Bank, August 1976, 31 p.

[56]Reference is to a column by Stephen Rosenfeld in the Washington Post during the summer of 1976 and a newsletter of the Environmental Fund accusing AID of misrepresenting population growth rates.

[57]William Setlzer, Demographic Data Collection: A Summary of Experience, New York, The Population Council, 1973; reproduced in Warren C. Robinson, ed., Population and Development Planning, New York, The Population Council, 1975, pp. 238-239.

> Unfortunately, the requirements of low sampling error and low measurement error are often in conflict. The control and elimination of most of the major sources of measurement error can be achieved most readily when the size of the sample is small. That is, for a given effort, one can come closer to the ideal of controlled observation in small samples than in large samples. On the other hand, large samples, and particularly samples with many first-stage sampling units, are necessary to achieve estimates with small sampling errors.
>
> Let us consider an illustrative example of the effect of sample size on the uncertainty introduced into sample estimates of fertility. Estimates of the crude birth rate based on samples of from 1,000 to 100,000 persons selected from a population with a birth rate of 40 per 1,000 will usually (in about 19 out of 20 samples) fall within the intervals shown in the [right-hand] column of Table 6.
>
> These intervals reflect only the variability due to sampling and thus ignore the possible impact of measurement errors although, as already indicated, measurement error tends to be smallest where sampling error is largest. In addition, because of cost factors, any sample used in practice would involve some clustering of observations. Clustering would tend to widen these intervals, most noticeably where the sample of a given size is based on a relatively small number of large clusters. It should be clear from this discussion that the impact of sampling error must be considered during both the planning and analysis phases of any demographic study employing sampling. More specifically, even moderate-sized samples can provide only very approximate estimates of the level of the crude birth (or death) rate using data obtained for a 12-month period.

Most of the current controversy about birth rates rages within the two-standard-deviation range that small samples produce around the sample mean. And of course even small samples (three thousand urban and three thousand rural households were included in the Pakistan Fertility survey) can still have large measurement-error problems. One may therefore wonder how many questions will in fact be resolved by new data sources about to come on stream.

Table 6

Illustrative Examples of the Sampling Errors Associated with Estimates of the Crude Birth Rate, By Size of Sample

(Sampling errors shown as the two-sigma (2σ) confidence intervals around an assumed crude birth rate [CBR] of 40 per 1,000 population.)

Size of Sample (Persons)[a]	CBR $\pm$ 2σ[b]
1,000	28-52
3,000	33-47
5,000	35-45
10,000	36-44
50,000	38-42
100,000	39-41

[a]Assuming a simple random sample of persons from a very large population in which births are considered to follow a binomial distribution.

[b]Interval expressed in terms of a rate per 1,000 population.

Source: William Seltzer, Demographic Data Collection: A Summary of Experience, New York, Population Council 1973; reproduced in Warren C. Robinson, ed., Population and Development Planning, along with the quotation in the text, New York, Population Council, 1975, p. 239.

In an excellent reconsideration of the demographic transition, Oeschli and Kirk observe that few countries have crude birth rates in the range between 30 and 40 per thousand population.[58] The reason appears to be that once a movement from high to low fertility rates begins, it occurs very rapidly. At any moment in time few countries will appear to be 'in transition.' The very quickness of the transition makes it all the more difficult to predict and to study. The Oeschli-Kirk analysis based on Latin American data fits reasonably well the finding of transition thresholds suggested in earlier work at the United Nations and in empirical studies in the Philippines by Encarnacion.[59] The phenomenon of rapid transition calls for careful study with special attention to the role which government policies and programs may play in facilitating the transition.[60]

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[58]Frank William Oeschli and Dudley Kirk, "Modernization and demographic transition in Latin America and the Caribbean," Economic Development and Cultural Change, 23, 3, April 1975, pp. 391-420. See also Dudley Kirk, "A New Demographic Transition?," in Rapid Population Growth, National Academy of Sciences and the Johns Hopkins University Press, Baltimore, 1971.

[59]Jose Encarnacion, "Fertility and labor force participation: Philippines 1968," Population and Employment Working Paper No. 2, Geneva, International Labor Office, World Employment Program, 1974, and Agustin Kintanar, ed., Studies in Philippine Economic-Demographic Relationships, Manila, University of the Philippines, 1974. United Nations, Determinants and Consequences of Population Trends, 1973, pp. 58-60, reviews the earlier literature.

[60]The East West Population Institute centered its Seventh Summer Seminar on Population on the subject of the demographic transition in Asia. Among important papers presented there, not cited elsewhere in this paper are the following:

Iqbal Alam, "Fertility differentials in Pakistan: A preliminary analysis of 19 districts;"

Nibhon Debavalya, "Fertility transition in Thailand;"

Using techniques in some respects similar to those of Oeschli and Kirk, the United Nations Research Institute on Social Development (UNRISD) has constructed a system of correspondences between various fertility levels and associated variables (see Table 7). Such relationships can be used in a prospective forward look at time necessary to achieve lower birth rates given expected trends in corresponding variables. Alternatively, one must assess how closely locked these variables may be, i.e., whether progress on one front can be made without progress on another. Such analyses could help to pinpoint in any given country the bottlenecks to overall development (high infant mortality in one case, low agricultural productivity in another causing a retention of labor in farming) which could receive special public-sector attention. This type of exercise, however, is only as good as the data which feeds into the formulated correspondence system.[61]

Kazumasa Kobayashi, "Regional summary of demographic changes and socio-economic correlates in East Asia -- Hong Kong, Japan, Korea and Taiwan;"

Ernesto M. Pernia, "Urban transition in Southeast and East Asia;"

Robert D. Retherford, "Demographic transition theory reexamined." Thanks are due to Ms. Susan Palmore of the East West Population Institute for providing copies of these papers to me.

[61]For a comprehensive review of population research, see Bernard Berelson, "Social science research on population: A review," Population and Development Review II, 2, June 1976, pp. 219-66, which also includes suggestions for future research on the impact of population growth on families and nations; the 'third ways' between family planning only and compulsion, and the study of natural experiments (pp. 252-3).

Table 7

"Correspondences" between indicated CBR's and selected socio-economic factors, 1970 (adapted from UNRISD data)

	CBR 45	CBR 40	CBR 30	CBR 20
Health				
Infant mortality (rate)	137	86	50	30
Expectation of life (years)	47	58	66	70
Education				
Literacy (percent of population over 15 years of age)	37	60	82	94
Primary and secondary school enrollment (percent of population aged 5-19)	31	51	61	71
Economy				
GDP per capita ($s)	115	304	650	1199
Adult male labor in agriculture (percent of total male labor)	72	52	33	19

One issue is whether a government can initiate a transition which is not autochthonously generated within a society.[62] Studies of the impact of family planning programs in Korea and Taiwan show that the programs came into existence after fertility had already begun to decline.[63] The programs do appear to have accelerated the observed decline in fertility. Professor Kee's analysis leads him to conclude that investments in the Korean program yielded a benefit-to-cost ratio of at least 71, i.e., a better rate of return than virtually any other development program investment (Kee 1976, pp. 39-41). In other countries, however, including very large ones such as Pakistan and Bangladesh, family planning program activity has not been accompanied by a downturn in fertility. Some would argue that lack of commitment and administrative capacity are responsible for the failure of family planning to work more effectively in those countries. If, however, a significant degree of motivation in the populace at large is essential to the success of a family planning program (as demonstrated, for example, by

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[62]The long-term decline in nuptiality was shown by Fernando to be a significant cause of fertility decline in Sri Lanka: Percent married of age cohort 15-19 was 51.9 in 1901 and 10.5 in 1971; for the age cohort 20-24 the decline over the same years was from 79.0 to 46.9 percent. Dallas F. S. Fernando, "Changing nuptiality patterns in Sri Lanka, 1901-1971," Population Studies 29, 2, July 1975, pp. 179-190.

[63]Studies published in 1974 or before are reviewed in McGreevey and Birdsall, The Policy Relevance of Recent Social Research on Fertility, ICP Staff Monograph No. 2, Smithsonian Institution, Washington DC 1974, pp. 43-59; more recent papers include Albert I. Hermalin, "Spatial analysis of family planning program effects in Taiwan;" Kee Chun Han, "Cost-benefit analysis of family planning programs in Korea;" and Naohiro Ogawa and Robert D. Retherford, "Decomposition of the change in the total fertility rate in the Republic of Korea, 1966-70," Seventh Summer Seminar in Population, East-West Population Institute, Honolulu, June 1976.

an extant downward trend in fertility), it would be unwise to condition external assistance on the basis of observable fertility-reduction achievements. The sudden, precipitate and unpredictable nature of fertility decline once it begins all argue against withdrawal of support because such support may be critical at the moment that the demographic transition begins in a country. As Oeschli and Kirk conclude:[64]

> . . . the effect of a concerted family-planning campaign logically ought to be a function of the level of development of the country in which it is begun. This proposition remains to be tested with adequate evidence, but one can guess that the introduction of such a program tends to have the greatest impact at medium stages of development; at lower stages the motivation for smaller families, which is a consequence of development, is not great, and at later stages the natality decline will take place regardless of the program. In the middle ranges an active family planning program diffuses birth control more rapidly than otherwise would be the case.

That is not to say that no attention need be given to assuring program efficiency and administrative effectiveness in the poorest countries (these -- South Asia and Subsaharan Africa -- are after all the bulk of the population problem in the world); rather, the expectations of program success must perforce be more modest because other conditions are far from ideal for virtually any program -- including population planning -- designed to improve the quality of life.

There is a substantial lag between the application of family planning methods and an observed effect on the birth rate.[65] Consider that in a

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[64]Oeschli and Kirk, op. cit., pp. 416-417.

[65]Cf. Roberto Cuca and Caterine Pierce, Experimentation in family planning delivery systems," mimeo., Development Economics Department, World Bank, August 1976, pp. v-vi.

specific month a woman makes a conscious decision to use some method. Even if she would have gotten pregnant in that month, the birth would not have occurred until nine months thereafter. Suppose that she was interviewed a year after the start of family planning, then she would be recorded as a contraceptive user and not pregnant. In the normal course of events, the results of the survey would be available not sooner than a year after interviews were complete. Several more months might pass before relevant authorities would become cognizant of the data. Thus about two years would pass between a woman's decision and a government authority's awareness of it -- at a minimum. This long lag could lead to the anomalous situation of a program's funding being cut for failure at the very moment it is beginning to succeed!

These considerations suggest that approaches to data gathering must seek early-warning mechanisms to map out the temporal relationships between family decisions and their revelation in micro-survey and aggregate data. Family planning program administrators have developed complex techniques of relating acceptance of services to fertility impact. Unfortunately, these techniques have come into disrepute because of the alleged expansion of numbers of acceptors without a corresponding fertility decline being revealed by independent measurements of fertility via censuses and sample surveys.

In a field in which data are a subject of controversy, a considerable effort has to be made to effect a separation between those who desire the data to come out a certain way and those who in fact gather and analyze data. In the Philippines, for example, independent research institutions

gather and analyze sample survey data on the general population and specifically on family planning program acceptors. The National Census and Statistical Organization (NCSO) is yet another independent entity within the National Economic Development Authority (NEDA) without program responsibility. Finally, the Population Commission oversees operational programs of familiy planning. The separation of these entities tends to support the authenticity and credibility of population data reporting. Other countries are not always so fortunate. The information systems controlled by population program managers may be manipulated to produce data less factual than convenient.

Any consideration of data gathering in the future must give careful thought to this administrative dilemma: Program administrators are closest to the data and the operational problems and thus know what information is needed; but they are at the same time the group most likely to have a stake in altering the truth when it seems necessary to do so 'for the good of the program.' Perhaps a workable arrangement might be to have program managers feed questions into multi-purpose household surveys over which the managers would have no control, either as to sampling procedure or the disposition of the results of interviews.

D. Income distribution. 'Modern' interest in income distribution issues began in a controversy over data. The Brazilian 'miracle' of rapid economic growth since 1964 was assisted in substantial measure by World Bank and other international financing. Bank reports, drawing on data prepared by the Brazilian government, reflected an assumption that the

distribution of the benefits of growth was such that the poorest were, at the least, no worse off at the end of the 1960's than they had been before the miracle boom began. Independent data analysis, based on the census and a sample survey done in 1960 and 1969, showed that considerable numbers of Brazilians were not benefiting from growth.[66] That analysis came to the attention of the Bank's president who subsequently made income distribution a central theme of his annual address at the Bank/Fund joint meeting. The controversy about income distribution in Brazil subsided as Brazilian scholars began to publish information and analyses in a vein similar to those of foreign scholars.[67] But intellectual concern, once aroused in the development community, continued to concentrate on issues in the size distribution of income and policy approaches to achieving greater equity. A first-stage culmination came with publication of Redistribution with Growth, a semi-official World Bank policy statement.[68] As its title suggests, that book offers a strategy for assuring that gains from further economic development reach the poor. Much of the work of the Bank's Development Research Center has been directed to charting the condition of the poor in developing countries, to devising specific policies targeted to alleviation of poverty, and to

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[66]Albert Fishlow, "Brazilian size distribution of income," American Economic Review, May 1972.

[67]Carlos G. Langoni, Distribuçao da renda e desenvolvimento económico do Brasil, Rio de Janeiro, Editora Expressão e Cultura 1973.

[68]Hollis Chenery, Montek Ahluwalia, et. al., Redistribution with Growth, 1974. Chenery is a World Bank vice president in charge of the Development Policy Staff; many of the other authors are members of that staff.

planning a rationale for shaping Bank lending to achieve objectives of equity as well as of aggregate growth. As a consequence of this interest, the World Bank's Development Policy Staff is probably doing more to understand the size distribution of income in developing countries, its causes and consequences, than all other groups and individuals combined. It is perhaps worthwhile to remember that it was an issue of measurement of progress criteria that gave such a remarkable impetus to Bank research and action.[69]

1. Measurement and objective. John Rawls, A Theory of Justice (1971, pp. 258-332), reviews the arguments for equality, leading toward what some have called a maximind principle (maximize the minimum incomes among individuals) but emphasizing along the way the principle of equality of opportunity. The latter is a more limited objective than equality of outcome. Equal opportunity has virtually been built into the rhetoric of postindustrial societies, perhaps because of a belief that much of the inequality of observed incomes is justified by differences in natural endowments, effort, age, household structure, and non-economic compensation that is distributed differently from observed income. Elites in the United States do not favor equality of result although they overwhelmingly

[69]The World Bank is engaged in joint projects with the Economic Commission for Latin America (ECLA) and the Economic and Social Commission for Asia and the Pacific (ESCAP) on measurement and analysis of income distribution in Uruguay, Colombia, Panama, Chile, Venezuela, and Brazil (with ECLA), and Pakistan, Iran, India, Nepal, Thailand, Hong Kong, Sri Lanka, Malaysia and Taiwan (ESCAP).

do favor equality of opportunity.[70] If social policy is not in fact directed at equality of income, then measurement of gini coefficients may be quite irrelevant as data sources for policy purposes. Yet these coefficients have been the bread and butter of statistical analysis on income distribution over the past few years.

An awareness of the limits of the gini-coefficient approach shows up in the concern with poverty lines and the comparison across borders of absolute poverty. The deficiencies of data, combined with analytical problems associated with international comparisons (see the Kravis, et. al. study cited above) make the drawing of international absolute poverty lines a precarious occupation at best.[71] Even within individual countries it is far from easy to know how many poor there are, whether their numbers are growing, and whether they are becoming worse or better off. In a recent review of the data on India, Robert Cassen found that available data sources are subject to a variety of interpretations. The National Sample Surveys, for example, have problems with estimates of family size, income in kind, choice of price deflators over time, etc.[72] In his effort

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[70]Nine elite groups were asked about their choice between equality of opportunity and equality of results: "All the leadership groups overwhelmingly chose equality of opportunity. Feminist leaders and young people rejected equality of results by margins of 12 to 1; businessmen, farm leaders and the media by 90 to 1, the other groups by margins between those extremes" (Barry Sussman, "Elites in America: A Washington Post - Harvard Survey," The Washington Post, 26 Sep 76, p. A8).

[71]Some of the issues are discussed by Richard Webb, "On the statistical mapping of urban poverty and employment, " World Bank Staff Working Paper No. 227, Washington DC, January 1976.

[72]Robert Cassen, "Welfare and population: Notes on rural India since 1960," Population and Development Review 1, 1, September 1975, pp. 36-7.

to judge whether welfare has improved in India, he turned to two other sources of information. Mortality levels have not fallen, suggesting that welfare has not improved (Cassen, 1975, p. 56 for data); a study of food consumption by Michael Lipton and quoted by Cassen might suggest matters have worsened:

> "In India, from 1949-1950 to 1968-69, average daily calorie consumption rose from 1700 to 1940 -- by 14 percent, while income per person rose by about 40 percent. If the rise in income had been equally distributed (i.e., if all incomes had risen by 40 percent) a rise in food consumption of 32 percent could have been expected." . . . [This finding] adds crude support to our general belief that income distribution has not improved much, and may have worsened. It is unlikely that the huge increases in food prices in the last 15 years have been caused by increases in the incomes of the poor (Cassen 1975, p. 41).

In a country containing perhaps a third to a half of all the very poorest people in the world, it is not possible to offer a very satisfactory picture of their numbers, condition or progress. Only very indirect evidence seems able to encompass the general dimensions of poverty. The data situation is probably even worse in most of the other countries which are home to the very poor. If data on income and its distribution are not trustworthy, it will be impossible to judge whether governments are making progress toward greater equality.

However, the argument presented here is that the interest of policy-makers ought not to be directed to inequality of result, i.e., the observed distribution of income, but to inequality of opportunity, which is, after all, the first line of concern, and an issue on which most observers would

agree there is plenty of room for improvement.[73] Research might then temporize on measurement of income disparities in favor of concentration on measurement of opportunity disparities. . .and their elimination. This approach would lead to a search for different data. One area for study would be analysis of longitudinal changes in income distribution — an area of study still requiring substantial quantities of income data.

2. The constancy of poverty. Cross section income distribution data always show the bottom fractile of persons or households with the lowest share of income. A second cross section snapshot of income distribution taken some years later may or may not reveal a change in that fractile's income share. Virtually all long-term analyses of patterns of the size distribution of income examine just such data; an example is Gabriel Kolko's Wealth and Power in America: An Analysis of Social Class and Income Distribution (Praeger, New York 1962), which present such data over the years 1910-59. Such data do not, however, specify whether the same people

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[73] The opportunity vs. result argument in the United States has centered on the role of schooling. Jencks and Associates, Inequality, A Reassessment of the Effect of Family and Schooling in America (New York, Basic Books 1972) present arguments that inequality of income distribution cannot be eliminated by equality of opportunity for schooling. Various authors published in The Public Interest over the past several years, particularly Daniel Bell, have outlined the intellectual basis for a 'new conservatism' and a justification for continuing inequality. This debate may help to clarify attainable and desirable policy objectives in developing countries as well as in the United States since the motives of 'justice as fairness,' to use Rawls' term, are apparently shared by people on both sides of the debate. See also Daniel Bell, The Coming of Post-Industrial Society, A Venture in Social Forecasting, New York, Basic Books, pp. 408-56, and on the other side of the issue, Samuel Bowles and Herbert Gintis, Schooling in Capitalist America, 1976.

always remain at the bottom (top) of the scale. Without knowing whether there is a change in many people's position on the income ladder, one cannot be sure whether observed income difference is largely tautological (the lowest at the bottom, highest at the top, by definition), or whether there is a condition of poverty in which the poorest "seem to be in infernal destitution."[74]

Until recently, the observed income inequalities were compatible with two strikingly different dynamic interpretations: Shirtsleeves to shirtsleeves in three generations, and the poor ye shall always have with you. But a new source of longitudinal data on earnings of social security-covered workers goes some distance toward demonstrating how much change there is over time in the composition of the poor (and other income groups) in the United States.[75] It goes without saying that there seem to be no longitudinal data of similar nature for any developing countries.

Data from the Social Security Administration for the two years 1957 and 1971, produced a sample of 74,227 male workers age 30-34 who earned at least $1,000 in 1957 and were still working in 1971.[76] This data source

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[74]B. S. Minhas, "Rural poverty, land redistribution and development strategy," Indian Economic Review 5, 1, April 1970; cited in Robert Cassen, "Welfare and population. . . ," Population and Development Review 1, 1, September 1975, p. 37.

[75]There are serious methodological problems associated with longitudinal analysis. The Social Science Research Countil (New York) has convened three meetings in 1976 to discuss these issues. Economists James Heckman, Robert Willis and Jacob Mincer, all of whom are working on such data attended some of the meetings. For details, see Items published by SSRC, 30, 3, September 1976, p. 49.

[76]Bradley R. Schiller, "Equality, opportunity and the 'good job," The Public Interest 43, Spring 1976, pp. 111-20.

permits analysis of what percentage of all workers in a given cohort changed their relative position from the time they were 30 to 34 years of age to the time they were 44 to 48 years of age. These workers were placed in ventiles (20 equal groupings) at the two dates. As a rule of thumb, Schiller calls a worker mobile if between the two dates he moved at least two ventiles up or down the earnings distribution. "By this criterion, 71 percent of all the workers were in fact mobile, suggesting a tremendous amount of fluidity in the socioeconomic structure" (Schiller 1976, p. 115). In addition to a high percentage of workers experiencing mobility (as so defined), the extent of many individual's earnings mobility was substantial:

> Indeed, the <u>average</u> move is 4.22 ventiles (21 percentiles) up or down the earnings distribution, or over one fifth of the way from one end of the distribution to the other. Hence, mobility of relative status not only is a common experience, but also involves very large movements (Schiller 1976, p. 115).

Thus these data seem to support a shirtsleeves-to-shirtsleeves version of observed, cross-sectional income inequality. Using the same data, however, another analyst, concentrating on year-to-year fluctuations in earnings rank over roughly the same period, emphasized income disparities between blacks and whites and the greater tendency of the former to get stuck at the bottom of the income distribution.[77] Certainly such data sources will not resolve all arguments about trends in income distribution

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[77] John J. McCall, <u>Income Mobility, Racial Discrimination and Economic Growth</u>, Lexington Books, New York, A Rand Corporation Study, 1973, 212 p. "Sustained economic growth is not sufficient for the elimination of low earnings. Alternative programs are needed -- either an income maintenance program or one that invests in human capital (such as health and training programs), p. 51.

over time; at the moment, however, there is not even the possibility of formulating data-related, rejectable hypotheses on this aspect of inequality and poverty in the developing countries. Consequently, some search for relevant data ought to be undertaken. At the same time, attention must be given to methodological problems with cohort analysis, a technique which further research on this subject will require.[78]

3. Policies for Opportunity. Once the income distribution is viewed from an opportunity perspective, one can concentrate on instances of inequality of opportunity and consider measures to eliminate them. Rawls expresses the view in A Theory of Justice that the family as an institution is a major source of unjust or unfair inequality; the manifestation of unfairness among the very poor is in the extreme protein-calorie malnutrition of infants, particularly in very large families.[79] The earliest, and still virtually unmatched, studies of infant malnutrition in a developing country were done by Joe D. Wray and associates; they demonstrate the serious losses and unequal start that blocks poor children from equal chances with the more advantaged.[80] More recently,

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[78]See Norman B. Ryder, "Cohort analysis," International Encyclopedia of the Social Sciences, David L. Sills, ed., New York, Macmillan 1968. pp. 546-550; and Karen O. Mason et. al., "Some methodological issues in cohort analysis of archival data," American Sociological Review 38, 1973, pp. 242-58.

[79]Elizabeth B. Connell, "Health implications of family planning: Documentation and data," Foreign Assistance Authorization, GPO, Washington DC 1975, pp. 664-708, contains a wealth of data on family size, welfare and nutrition.

[80]Joe D. Wray, "Population pressure on families: Family size and child spacing," Rapid Population Growth, National Academy of Sciences, Johns Hopkins Univ. Press, 1971, pp. 403-61; and Joe D. Wray and A. Aguirre, Protein-calorie malnutrition in Candelaria, Colombia," Journal of Tropical Paediatrics 15, 1969, p. 92.

a few far-sighted economists, approaching nutrition from a human-capital perspective, have pointed out the extent of the losses from not eliminating malnutrition. "The most practical remedy for infant malnutrition is a redistribution of income toward the infant and his family; the cost of not undertaking this redistribution now is massive disinvestment in early human capital formation and, perhaps, greatly increased distributional problems with a low-income, low-productivity segment of the population in the future.[81] Redistributing income in aggregate would probably be a much more costly program, and less likely to achieve an equality goal at some future specified date, than would programs targeted specifically to malnourished infants.[82] Because the family as a unit will tend to redistribute intra familius, one of the few means of reaching the infant is with special foods -- including programs to reverse the growing tendency to give up breast feeding[83] and special weaning foods that could improve infant nutrition during the critical months six to twenty-four.[84]

Differential access to education is another source of inequality -- one so costly that correcting it is beyond the resources of most governments in

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[81]Marcelo Selowsky and Lance Taylor, "The economics of malnourished children: An example of disinvestment in human capital," Economic Development and Cultural Change 22, 1, October 1973, p. 30; see also Selowsky, "A note on preschool-age investment in human capital in developing countries," ED&CC 24, 4, July 1976, pp. 707-20.

[82]World Bank Staff Paper No. 202 on malnutrition and poverty.

[83]Allen Berg, The Nutrition Factor (1973) deplores the decline of breast feeding.

[84]The draft Fifth Plan of the Government of Pakistan expressed special concern with weaning and called for a special weaning-foods program.

developing countries. The same may be said for other publicly-supplied services: Access by the poor and the rural is more limited than for the well-to-do and urban. Studies of public utilities services (water, electricity, sewerage) in Colombia and Malaysia bear out this generalization.[85] Given so much inequality of opportunity, policy decisions must be made as to which sources of inequality should receive priority attention.

4. Does money buy happiness? This question informed an investigation by Richard Easterlin of whether persons and societies experienced greater real welfare as a result of increases in income.[86] He finds that those of higher status and income are, across nations, happier (or more exactly, few of them answer that they are not very happy) than those of low status and income (see Tables on following page). Easterlin poses the question,

> Why do national comparisons among countries and over time show an association between income and happiness which is so much weaker than, if not inconsistent with, that shown by within-country comparisons? (Easterlin 1974, p. 111)

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[85]Marcelo Selowsky, "The distribution of public services by income groups, a case study of Colombia," mimeo., World Bank, 17 August 1976; and Jacob Meerman, "The distribution of public services in Malaysia;" education and health services are broadly available in Malaysia.

[86]The fuller statement of his results appears in "Does economic growth improve the human lot? Some empirical evidence," Paul David and Melvin Reder, ed., Nations and Households in Economic Growth, Academic Press, New York 1974, pp. 89-125. A popular summary is R. A. Easterlin, "Does money buy happiness?" The Public Interest 30, 1973, pp. 3-10. Some corroborating evidence to the Easterlin hypothesis of relative incomes appears in Otis Dudley Duncan, "Does money buy satisfaction?" Social Indicators Research 2, 3, December 1975, pp. 267-74.

Table 8

PERCENTAGE NOT VERY HAPPY IN LOWEST AND HIGHEST STATUS GROUPS, SEVEN COUNTRIES, 1965[a]

Country	Number of groups	Lowest status group		Highest status group		
		Designation	NVH[b] (%)	Designation	NVH[b] (%)	N
Great Britain	3	Very poor	19	Upper, upper middle, middle	4	1179
West Germany	3	Lower middle, lower	19	Upper, upper middle	7	1255
Thailand	2	Lower/middle	15	Middle upper	6	500
Philippines	2	Lower middle, lower	15	Upper, upper middle	5	500
Malaysia	2	Lower/middle	20	Middle upper	10	502
France	3	Lower	27	Upper	6	1228
Italy	3	Lower middle, lower	42	Upper, upper middle	10	1166

[a] Data from World Survey III, 1965.
[b] Not very happy.

Source: Easterlin (1974) p. 101

Table 9

PERSONAL HAPPINESS RATING AND REAL GNP PER HEAD, FOURTEEN COUNTRIES, CA. 1960[a] [b]

Country	Period of survey	(1) Rating of personal happiness (min: 0; max: 10)	(2) Real GNP per head 1961 (U.S. $.)
United States	Aug. 1959	6.6	2790
Cuba	Apr.-May 1960	6.4	516
Egypt	Fall 1960	5.5	225
Israel	Nov. 1961-June 1962	5.3	1027
West Germany	Sept. 1957	5.3	1360
Japan	Fall 1962	5.2	613
Yugoslavia	Spring 1962	5.0	489
Philippines	Spring 1959	4.9	282
Panama	Jan.-Mar. 1962	4.8	371
Nigeria	Sept. 1962-spring 1963	4.8	134
Brazil	Late 1960-early 1961	4.6	375
Poland	Spring 1962	4.4	702
India	Summer 1962	3.7	140
Dominican Republic	Apr. 1962	1.6	313
Average		5.0	

[a] Data in column (1) from Cantril, 1965, p. 184; data in column (2), except for West Germany, from Rosenstein-Rodan, 1961, pp. 118, 126, 127; data in column (2) for West Germany from Table 7.
[b] For sample sizes see Table 5.

Source: Easterlin (1974) 105

The answer, of course, turns on relative income. The better-offness people feel is partly a phenomenon of absolute well-being (as measured by adequate food, housing, leisure time, satisfactory work, etc.) and partly related to how well off one is with respect to others. Measurement of income distribution must take this phenomenon into account. Duncan found in a study of Michigan residents over time that "increasing the standard of living in 'real' terms does not lead to a subjective increase in the standard of living for the population as a whole" (Duncan 1975, p. 270). This observation, one should immediately note, is based on an ultra-high-income group within the total global population; however, relative-income effects may be important at low income levels as well. If real aggregate satisfaction is to be increased, a development model will have to be devised in which satisfaction is derived from absolute improvements in welfare rather than from getting ahead of one's reference group. Such a change might require more substantive social changes than are normally contemplated as aspects of the development process. On the side of data gathering, some considerations must be given to acquiring information on subjective evaluations of welfare in addition to the objective measures of consumption and income. The social indicators project in the Philippines did gather data on perceived social mobility, which may be related to the relative income approach.[87] Support to country projects for gathering income and 'happiness' data might well be coordinated internationally to yield the most satisfactory and internationally comparable results.

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[87]Development Academy of the Philippines, Measuring the Quality of Life: Philippine Social Indicators, Manila 1975, p. 28.

E. Unemployment and Underemployment. Just as human capital theory produced a 'new home economics' it has apparently produced a 'new labor economics.' The two principal changes wrought by the new labor economics in the understanding of development issues might be described as follows: (1) Disguished underemployment in LDC agriculture, if it exists at all, had been vastly overstated prior to the publication of T. W. Schultz's Transforming Traditional Agriculture (1964); (2) unemployment can be effectively analyzed as a form of leisure and hence a use of time that the more advantaged rather than the less advantaged residents of poor countries can be found to be 'consuming.' There are many other findings of the new labor economics that, if not outrageous, are at the least unexpected if one approaches employment issues from the perspective of conventional wisdom founded on observations of cyclical problems of high, capitalistic development.[88]

In a recent comprehensive review of labor markets in developing countries, Berry and Sabot reported a number of findings, some of which may be stated here briefly, without the details of their sources or analysis:[89]

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[88]A very different perspective on unemployment was introduced recently by A. K. Sen, Employment, Technology and Development, Oxford, Clarendon Press 1975, by recognizing income, production and 'recognition' aspects of unemployment. He offered estimates for India in Dimensions of Unemployment in India (Calcutta 1973), which shows high rates of underemployment. These data are reviewed along with many other studies by Robert Cassen, "Welfare and population: Notes on rural India since 1960," Population and Development Review 1, 1, September 1975, pp. 33-70.

[89]A. Berry and R. H. Sabot, "Labor market performance in developing countries: A survey," mimeo., Employment and Rural Development Division, Development Economics Department, World Bank, June 1976. Subsequent references are to page numbers in this draft, which is currently being reviewed.

* In Asian and Latin American countries where calculations have been effected, the [rural-urban] income differentials are more or less in line with those observed in developed countries (p. 26);

* Open unemployment is relatively unimportant in the poorest societies, where self-employment predominates; in developing countries as a group, the rate of unemployment has been increasing together with national income (p. 33);

* Higher unemployment rates among educated than uneducated workers are found throughout the developing world. School-leavers are faced with the choice of 'queuing' for a job in the preferred occupation or of accepting a less-preferred (lower wage) job. For some workers expected income will be higher in unemployment than in relatively low wage employment (p. 52);

* Resource costs of maintaining a pool of openly unemployed are not likely to be very high: The output that would result from their employment is unlikely to add more than one or two percent to national income (p. 57);

* Being without work is a luxury that only a small proportion of labor force members can afford for longer than several months at a time (p. 62);

* Loss associated with imperfect labor allocation could range between 5 and 12 percent of national income; such output gains

correspond to a few years normal growth of per capita income (p. 117).

A general conclusion is that labor markets work reasonably well in developing countries.[90] Specific policies designed to make them work better require data at once more detailed than and different from those usually encountered in wage and employment surveys. It is not clear what policy actions are implied by observations of alternative open unemployment rates of the kind presented in Table 10; much more detail on the structure of the labor force is needed. One interesting feature is the participation of women in the labor force, a more variable statistic than that of male participation. For example, the Philippines female labor force participation rate, measured twice each year in labor force sample surveys, has varied between 30 and 50 percent over the last two decades.[91] In international comparisons, the Philippines has the highest rate of female labor force participation in one compilation,[92] with women constituting 43.9 percent of the nonagricultural labor force. At the bottom of the Berry-Sabot list is Algeria where women account for but 7.7 percent of the nonagricultural labor force.

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[90]For another recent review of this topic see Gary Fields, "Rural-urban migration, urban unemployment and underemployment and job-search activity in LDCs," Journal of Development Economics, 1975, pp. 165-87.

[91]Mahar Mangahas and Teresa Jayme-Ho, "Income and labor force participation rates of women in the Philippines," Discussion Paper No. 76-3, University of the Philippines School of Economics, Institute of Economic Development and Research, January 1976, p. 69.

[92]A. Berry and R. H. Sabot, "Labor market performances in developing countries" (1976), p. 10.

Table 10

RECENT MEASUREMENTS OF OPEN UNEMPLOYMENT RATES, VARIOUS COUNTRIES

Asia				Africa				Latin America			
		Open Unemployment Rate				Open Unemployment Rate				Open Unemployment Rate	
Country	Year	Urban	Total	Country	Year	Urban	Total	Country	Year	Urban	Total
India	1971	3.	3.9	Ghana	1970		6.0	Bolivia	1974		9.7
Indonesia	1971	4.8	2.2	Tanzania	1971		10.0	Colombia	1974	10.0	
Malaysia	1967/68	9.9	6.8	Egypt	1971		1.5	Panama	1973		6.5
Pakistan	1972		2.0					Trinidad-Tobago	1973		14.0
Sri Lanka	1969/70	16.9	13.2					Uruguay	1973	8.9	
Thailand	1969	1.3	0.2					Venezuela	1971	6.0	
Turkey	1969	4.9						Peru	1974	6.5	
Korea	1974		5.4					Brazil	1970		2.0-2.4
Philippines	1971	11.0	5.3					El Salvador	1975	4.9-8.6	5.2
Syria	1973		4.5					Honduras	1972		8.0
Taiwan	1972		1.5					Mexico	1970		3.7
Average Asia a/	1975	6.9	3.9	Average Africa				Average Latin America			
(ILO estimate)	1975	6.9	3.9	(ILO estimate)	1975	10.8	7.1	(ILO estimate)	1975	6.5	5.1

a/ Excluding China and other centrally planned Asian economies.

Source: ILO Yearbook of Labor Statistics (various years); country census and labor force survey statistics; IBRD country economic reports.

Source: Berry & Sabot, "Labor Market Performance," World Bank 1976, p. 40.

Female labor force participation, as noted above in discussions of nutrition and infant mortality, interacts with those variables to produce a number of implications for the achievement of development objectives. Concentration only on working women, as is typical of employment surveys, misses the possibility for study of alternative uses of household time and their implications for production of aggregate well-being.[93] The entry of a woman into the labor force may raise family income now but depress it later -- via lower nutritional status of infants and poorer feeding habits of older children. Only a comprehensive study of time use could capture the implications of these alternative effects.[94]

High unemployment rates among men have been cited as reasons why public-sector programs cannot be directed to providing work opportunities for women in developing countries. If, however, observed high unemployment is based on male queuing for specific jobs rather than an absolute dearth of employment opportunities, that argument against female employment evaporates.[95]

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[93]See James L. McCabe and Mark R. Rosenzweig, "Female labor-force participation, occupational choice, and fertility in developing countries," Journal of Development Economics 3, 1976, pp. 141-160.

[94]Popkin (1976) found poorer nutritional status among children of working mothers, despite the somewhat higher family income that the mother's work produced. In part this effect grew out of parental failure to enforce good diet: Children of working mothers did not eat their vegetables and hence had somewhat greater incidence of Vitamin A deficiencies leading to limited acuity of vision.

[95]Nothing is said here about the fertility effects of female employment because of a growing uncertainty among analysts about the causal links that run between the two variables. "Women's employment per se only depresses fertility under very special circumstances -- for women in

The utility of employment surveys would be enhanced if they were conceived to include the use of time in market work, work at home and leisure. As Mangahas and Jayme-Ho remark in their review of female labor force participation in the Philippines, "The data gathering institutions, primarily governmental, appear to have been guided by an implicit analytical framework which has failed, among other things, to take proper account of women's economic contributions within the home."[96]

It is the aggregate temporal resources of individuals and households which must be the focus of attention for analysis. Thus the question, "Are you looking for work but unable to find it?" must give way to, "How did you spend your time?" That question might then be followed with the more tentative, "How would you like to have spent your time?" A valuable source of information on households is contained in answers from school children in a recent ECIEL study which inquires as to the use of out-of school time, distinguishing study time, leisure and work.[97] Time use may be an important practical guide to investments which individuals are making in their own human capital. Past surveys have picked out only

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the urban sector, modern labor force. . . . Policies to promote women's employment are interesting theoretically as a depressant to fertility but not widely applicable. Job creation is not nearly so manipulatable a variable as policymakers wishing to reduce fertility had hoped (Nancy Birdsall, "Women and population studies," Signs, Journal of Women in Culture and Society 1, 3, spring 1976, p. 707.

[96]Mangahas and Jayme-Ho, op. cit., p. 148.

[97]ECIEL Education and Development Project, CEDE, Universidad de los Andes, Bogota. Details on the survey questionnaire from Rodrigo Parra and Jose Alzate.

that piece of 'market' time and ignored the rest: Developments in human capital theory and the potential applications to policy are now such that a change in data gathering is a propos.[98]

An alternative approach for Southeast Asian countries was proposed by Dr. Mitsuo Ono after a period of close collaboration with NCSO in Manila; he called his alternative the 'labor utilization' or 'Manila' approach.[99] The alternative approach was necessary because of the prevalence of data-gathering techniques inapplicable to Southeast Asian country settings:

> . . . All agencies visited used the labor force approach in compiling employment, underemployment and unemployment statistics. Because of the overlapping and irregular work patterns typically found in these countries, it became apparent that the use of the labor force approach designed for application primarily in the more developed countries produced data which did not reflect realistically the complex labor utilization situation in LDCs (Ono 1973, p. 3).

The Manila approach focuses on measuring the weighted volume of labor input (e.g., hours worked multiplied by prospective earnings rates) in the production process; it uses a flow accounting concept as opposed to the stock accounting concept used under the labor force approach (Ono 1973, pp.

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[98]For a recent review of human capital theory, see Mark Blaug, "The empirical status of human capital theory: A slightly jaundiced survey," The Journal of Economic Literature, 14, 3, September 1976, pp. 827-55.

[99]Mitsuo Ono, "A feasible method for collecting labor utilization, earnings and other social and economic data in Southeast Asian countries," mimeo. unpub. report to AID/PPC, July 1973; "Follow-up report on developing a feasible method for collecting labor utilization, earnings and other social and economic data in Southeast Asian countries," mimeo. unpub. report to AID/PPC, November 1975, and "A proposal for a quarterly multi-purpose household sample survey in Pakistan," mimeo. unpub. report to AID/PPC, July 1975.

11-12). Labor agents are then classified by the manner in which their stream of labor energy is utilized as inputs into different work or non-work activities; consequently, there must be a more detailed time disposition questionnaire schedule. Ono discusses this aspect of the questionnaire in some detail but cautions that its specific application and experience with it are needed before its utility can be properly judged. Nonetheless, he argues,

> As opposed to the labor force approach, the Manila approach has a distinct theoretical orientation in the compilation of labor utilization data, that is, to measure the weighted volume of labor energy utilized in different activities in terms of time, end-use of activity and prospective and actual remunerations received. . . .[It] sharpens the compilation of household activity information used in making policies on employment creation and labor utilization, income distribution, and growth of GNP. Another advantage is that it provides a better orientation on compiling data on human capital formation (Ono 1973, p. 23).

In his follow-up report (1975), Ono writes that in the Philippines, "The statistical office is making a strong effort toward developing a national system of quarterly multi-purpose household sample surveys. In this endeavor, they will be formulating and using questions on labor utilization supplementing their regular questions on labor force status" (Ono, Nov 1975, p. 35). Two years passed between the first field visit (ending in March 1973) and the follow-up (June 1975) with little progress in data gathering. The host government and sources of external technical assistance should perhaps exert greater energy to implement what appear to be extraordinarily useful recommendations. Perhaps the lack of follow-up on one of Dr. Ono's four key recommendations was responsible for much of the delay:

> Statistical personnel contacted by this writer were knowledgeable and experienced in household survey operations and technology. Many of them expressed needs to exchange ideas and to discuss mutual problems on planning and conducting multipurpose household surveys including ways to find new methods to collect more meaningful information for use by analysts and planners (Ono 1973, p. 4).

His follow-up report returns to that problem but with an emphasis on the demand for information among planners and policymakers, a theme to be discussed below.

Finally, in discussing unemployment and underemployment issues, it may be useful to provide in appendix 1 a listing of studies recently completed or currently underway in Asia, many of them sponsored and supported by the Council on Asian Manpower Studies (CAMS). That list offers some clues as to the concerns of data analysts in the labor field. Much attention has been given to relationships between employment and income distribution, appropriate technology, interactions between migration and labor force adjustment and certain macro-economic impacts on employment -- trade policies, public-sector investments in education and choice of technology. A useful exercise would be to compare the results of the many research projects listed in the appendix with the presumed needs of policymakers and the general research prospect set out in somewhat different ways by Berry and Sabot (study of the labor-market-adjustment process) and Ono (study of labor utilization and household use of time). Such a comparison might help indicate whether research efforts are on the right track.

IV. What Can Be Done? This section reviews a number of options in information gathering that will improve the picture of current knowledge about the poor and what can be done through development assistance to improve knowledge about them and their plight. There has been no special effort to assign priorities as that would require a more systematic review of the extant information and theoretical structures discussed in this paper. One function of a high-level technical meeting of data producers and data users would be to set such priorities.

A. Assembly of existing secondary data. The World Bank is soon to publish a 1976 edition of its World Tables. That publication will include many data series that are pertinent to the five progress criteria discussed above. It may prove worthwhile to schedule a series of seminars or meetings to discuss the 'social' series in the World Tables. A similar seminar was held by the SSRC Center for Coordination of Social Indicator Research after publication of the US OMB Social Indicators 1973. One objective would be to encourage local institutions in the developing countries to supplement the World Bank publication with greater detail as appropriate for each country within a format that would extend the possibilities of international comparative study.

B. Coordination of existing micro-data. The many household, labor force, fertility, morbidity, income and expenditure, farm, and multi-purpose surveys which have been conducted in developing countries probably could not be brought together for comparability in the same way that aggregate, country-wide indicators might be developed. However, there are probably

many questions raised in the foregoing pages of this paper to which some answers for some countries or regional groupings could be given with ready access to existing micro-data. In fact, however, such data areoften treated as private rather than public property; is unknown with respect to details of questionnaires and response, sampling error, etc., so that independent investigators cannot easily use it; is rarely exploited fully for its analytical potential. An exception that would seem to prove the rule is the 1968 National Demographic Survey carried out in the Philippines: Many analysts have had access to the data and have published papers among the most important empirical analyses of fertility behavior; there are no indications that anyone has been harmed by the openness with which the data have been treated. Donor institutions could strike a blow for progress by insisting upon more open availability of micro-data sets. If, further, those institutions facilitated access by means of expanding data-bank facilities, the aggregate understanding of poverty and development might increase quite a lot.

C. Longitudinal Micro-data. Many analyses and measures of development depend on cross sections in a slice of time and consequent assumptions about behavior through time. The understanding (or misunderstanding) of behavior over time of fertility, income and its distribution, and occupational experience draws heavily on assumptions of structural regularities between components of cross sections. Yet in fact there may be so much oscillation and variability over time of some of these social characteristics that findings based on cross sections will be entirely misleading. The

experience of individuals and families over time would yield a vital new perspective on many of the issues surrounding the progress criteria discussed here.

In a recently-published simulation study Ruprecht and Jewett analyzed the state of family welfare through the family life cycle and how welfare varied with the number of children, spacing of births and age at which marriage commenced.[100] Their family simulations indicate extraordinary variability in family welfare with differences in numbers of children. However, they could not take into account all the possible responses which real families make to relative deprivation -- working children, work by the mother, extra adults in the household, etc. These matters can only be investigated empirically through longitudinal studies of real family situations. Many fertility surveys ask retrospective questions that can be used to construct fertility or pregnancy histories which substitute in part for longitudinal data. As analysts have discovered, however, births ten years back can only be related to occupation, income, residence and other characteristics that pertain now. Full retrospective data would probably be impossible to construct in interview situations. One factor that could be added, and generally has not been, to fertility surveys, is information on the family of orientation of interviewees, since it is important to know whether family size norms are transmitted between generations.

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[100] Theodore K. Ruprecht and Frank I. Jewett, The Micro-Economic of Demographic Change: Family Planning and Economic Well-being, Praeger, New York 1975.

It could prove worthwhile to institute an informal search through the developing world for existing longitudinal micro-data. Yale University's Human Relations Area File records immense amounts of anthropological data, some of which covers significant time periods and is relevant to the five progress criteria discussed here. Some anthropologists have been collecting information on specific villages for decades and make little use of those data outside brief publications. Such sources could prove enormously informative. Village micro-data would be particularly useful in those areas in which significant external assistance projects have been instituted. Such data, if it covers the before and after conditions of the village, would contribute to assessment of project impact.

Some national surveys may be done in such manner as to permit longitudinal treatment. The Indian National Center for Applied Economic Research is said to have data over time on a sample of Indian farm households which includes farm input-output data, time use and demographic data over several years.[101] Panel data of a somewhat similar kind is available in a series of studies of rural communities and urban barrios in Colombian cities between 1963 and 1975. Staff of the University of Wisconsin Land Tenure Center have published some results, although the possibilities are far from having been exploited.[102]

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[101] Collection of this data was inspired by Dr. Ronald Ridker who at the time of initiation of the project was working with US AID in New Delhi. Analysis of this data was at one time contemplated as part of a research project at Yale University's Economic Growth Center.

[102] A. Eugene Havens and William Flinn, Internal Colonialism and Structural Change in Colombia (Praeger, New York 1968). Professor Flinn, now at Ohio State University, Columbus, continues to work on those data.

There are probably some national surveys taken over time with repeated households in some of the developing countries. Whether such materials could be examined depends much on the confidentiality provisions which surround data gathering. A procedure for finding out what is possible might be the conducting of a seminar on this topic as part of the periodic conferences held by statisticians in developing countries through the auspices of the regional economic and social commissions.

D. New Data from Multipurpose Surveys. For some purposes, the specific surveys of labor force, fertility, morbidity, nutritional status, income and expenditures could successfully be replaced with a centralized system of multipurpose surveys. Dr. Ono wrote in 1973:

> Observations of multipurpose household sample survey operations conducted in Sri Lanka, Malaysia, and in the Philippines clearly indicated that the extension of such surveys not only reduces the costs of duplicative and expensive ad-hoc household sample surveys but also produces more accurate and relevant information for use by policymakers. This also calls for more research on formulating theories of household production behavior in LDCs so that various types of household data can be integrated into an analytical framework (Ono 1973, p. 4).

When he returned to Southeast Asia two years later, Dr. Ono was able to specify his recommendations somewhat better since he became aware not only of the prospects for better data systems but also of the need to generate interest in and use of the data collected. Thus he developed three criteria for the decision whether or not to include a given question in a multipurpose household survey: "Additional information to be collected on a topic depends upon (1) its economic impact or weight; (2) the

variability in the characteristics under study, and (3) costs of collecting additional information."[103] He also expressed the view that "developing the demand side, especially with respect to its administrative considerations, was more important and of higher priority than augmenting the supply side" (Ono 1975, p. 4). Decisions on data collections can involve substantial sums of money over which the policymakers maintain control. Thus any proposed changes in data collection procedures must be defended to those who will pay for them.[104]

A necessary activity is determination of what information can successfully be obtained through multipurpose household surveys and what must be obtained by other means. For many purposes, small samples are satisfactory (very detailed household budget and time use data, for example) and might be handled in a sub-sample of a much larger national sample. At the other extreme data on mortality and fertility, because of the infrequency of occurrence of events may have to be gathered from very large samples. Some information would be valuable to have from the same families over time (income, labor force or occupational experience, residence, education, health, fertility and mortality) so that a picture of interactions between variables over time could gradually be painted in by data

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[103] Mitsuo Ono, "Follow-up report on developing a feasible method for collecting labor utilization, earnings, and other social and economic data in Southeastern Asian countries, mimeo, National Center for Social Statistics, US HEW, November 1975, p. 4.

[104] For a listing of sample survey projects carried out in the ESCAP region reported to that international organization see UN ESCAP, Sample Surveys in the ESCAP Region, Twelfth Report (Jan-Dec 1974), Bangkok, July 1975, 176 p. This report does not appear to be very complete.

accretion.[105] The costs of following movers, the difficulty of respondent boredom and contamination by the act of interviewing would all have to be taken into account in the design of data-gathering procedures. Despite the problems, however, survey research seems to be a relatively low-cost and effective means of learning more about the poor and the way in which policy and programs may affect them.

A potentially useful innovation in social research would be to combine the product of multipurpose household surveys with the results of participant observation, a method developed and used successfully by anthropologists. The combination would add depth to the survey data and breadth to the participant-observer data. Some advance on this front was made by the Laguna rural survey project in which observers clocked the daily activities minute by minute of all members of a dozen rural households. These data could then be used as estimators of other, similar households in the larger sample of 571 households.[106] This technique could be extended to other sample surveys.

E. Interrelationships between Variables. The scholarly community evinces considerable interest in the interrelationships between indicators of development. That interest comes, on the part of some, from a concern

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[105] Analysis would have to take into account and deal with age, cohort and period effects which would be linked together with a given sample.

[106] See Elizabeth King, "Time allocation in Philippine rural households," Discussion Paper No. 76-20, University of the Philippines Institute of Economic Development and Research, School of Economics, August 1976.

with thresholds which must be passed on one variable before another can begin to move in the desired direction. Thus fertility may tend to go up with income and schooling attainment at the bottom range, suggesting that redistribution of income and opportunity may lead to higher fertility.[107] The distribution of income and earnings is believed to worsen as income rises from very low to moderate levels.[108] All these thresholds and non-linearities are meat for scholarly theorizing, but they may also hold opportunities for policymakers.

Correspondances between levels of variables are not immutable. Policymakers may be able to identify ranges in which change on a particular variable (fertility, for example) is relatively low in cost because some other variable (infant mortality) lies within a threshold range.

There must also be considered the possibility of efficient paths toward achievement of target values on variables at a future date. An immediate income redistribution may be less costly (in all the economic, political and social meanings that cost can have) than nutrition and schooling programs which tend to equalize human endowments over time and hence the future distribution of income. The futurologist perspectives

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[107]For a recent international cross-sectional study see A. K. Bhattacharyya, "Income inequality and fertility: A comparative view," Population Studies 29, 1, March 1975, pp. 5-20.

[108]Employment and income distribution issues are explored in the CAMS seminar papers, Jose Encarnacion, ed., Income Distribution, Employment and Economic Development in Southeast and South Asia, The Japan Economic Research Center, Tokyo, and Council for Asian Manpower Studies, Manila, July 1975.

implied in analyzing such tradeoffs should not be allowed to obscure the more immediate objectives of foreign assistance: to relieve as well as eventually eliminate poverty.

F. Non-Quantitative Aspects of Welfare. Once the study of criteria of progress has passed so far from debt service-export ratios and two-gap models, it should be incumbent on analysts to confront those welfare issues in which the assumption of correspondence between measurable material improvement and 'happiness' or welfare in toto is not likely to be valid. For example, the higher agricultural productivity of Green Revolution hybrid seeds is achieved at the riskiness of crop destruction because of the narrow genetic range of those seeds. Infant mortality can be reduced substantially by extending use of potable water; but unless piped water access is extended lower infant risk is bought at the cost of long walks to pure sources of water. Extension of irrigation systems which raise incomes often bring schystosomiasis along and thus worsen health conditions. These are cases, in the economist's lexicon, of technological external diseconomies. The costs of progress ought to be at least in the back of some minds as the benefits are being measured.

Appendix 1

List of Studies Sponsored by CAMS or Presented at Seminar on Labor Supply and Education, Makati, June 1976

Name & Institutional Affiliation, When Known	Title
Committee I, Labor Supply	
H. J. Bang	Growth of Labor Supply and Its Utilization in Korea
Chow Kit Boey	Labor utilization in Singapore, 1974-1975
Bryan Boulier, Princeton Univ. & UPSE, Diliman, Q.C, Philippines	The influence of children on household economic activity in rural Philippines
Gelia T. Castillo	The Filipino woman as manpower: The image and the empirical reality
Pei-Chi Chang	Taiwan's labor force structure, mobility, and utilization
Suvanee Chitranukroh	Female labor force participation in Thailand
Nibhon Debavalya	A study of female labor force participation and fertility in Thailand
Cecilia Florencio & Robert E. Evenson, UP Los Baños, Phil.	Economic, demographic health and nutritional factors in rural household behavior
Alejandro Herrin, RIMCU Xavier University Cagayan de Oro, Philippines	The employment effect of rural electrification in western Misamis Oriental
Khoo Teik Huat and Kwok Kwan Kit	The pattern of labor utilization in peninsular Malaysia.

Table , continued. . . .

Robert Hannenberg & Keramit Dhanaskdi	Labor utilization in Thailand
Joseph Y. K. Lee	Labor utilization in Hong Kong: Retabulation of census data
Brigida Jayme	Family role and fertility behavior of the upper class urban married Filipina
Mahar Mangahas & Teresa Jayme-Ho UP School of Economics Diliman, QC, Philippines	Income and labor for participation rates of women in the Philippines
Barry Popkin UP School of Economics Diliman, QC, Philippines	The production of child welfare in rural Filipino households: The impact of changes in the role of the mother
Hananto Sigit & Sam Suharto	Pilot labor force sample survey in Indonesia: Preliminary report
Peter C. Smith & Lita Domingo East West Center, Honolulu	Determinants of the underutilization of labor in the Philippines
Kyle Spoelstra & Chirayu Isarangkun	Labor absorption in Thailand
Committee II, Employment & Income Distribution	
Syed Waseem Ahmad University of Malaysia, K. L.	Urbanization in peninsular Malaysia, 1911-1970
Savitri Garnjana-Goonchorn	Internal migration into the Bangkok metropolitan area
Hidayat	Growth and utilization of manpower in Indonesia
Paul K.C. Liu & Alden Speare, jr.	Migration to Taipei City
Suresh Narayanan	Urban in-migration and urban labor absorption: Evidence from metropolitan urban Selangor, Malaysia
Aurora Perez	Interregional population movements in the Philippines

Table , continued. . . .

Suwanlee Piampiti	Effects of migration on urban development in the souther region of Thailand
Alden Spear, jr.	Labor utilization among recent urban migrants in Indonesia
Suharso	Migration and education in Jakarta
Soetjipto Wirosardjono	Employment dilemma in Indonesia's major cities
Soon Lee Ying	Migration, rural development and urban unemployment in West Malaysia
Hui-Young Yu	Growth and development of Seoul metropolitan region

Committee III, Education & Manpower Development

Ruperto P. Alonzo UP School of Economics Diliman, Q.C., Philippines	Employment and earnings among college graduates
Gelia T. Castillo, Dionisia Arboleda, Lorna P. Domingo, & Virginia M. Lasap	Alternatives for rural youth: Three village level case studies in the Philippines
Pichai Charnsupharindr	Investment in Thai education
Pang Eng Fong	Education, earnings and occupational mobility in Singapore
Edita A. Tan	Media for skills formation
Vicente Quiton & Boworn Kuangsuwan	In-service training needs of vocational agricultural teachers in agricultural colleges in Thailand

CAMS Research Projects Status, July 1976 (Projects not listed above)

Anuri Wanglee	Labor utilization in Thailand

Table , continued. . . .

JoséEncarnacion, jr. UP School of Economics Diliman, Q.C. Philippines	Sectoral employment projections from a macro-model with an input-output structure
Sung Hwan Ban	New community movement in Korea
Harry T. Oshima & Osman Rani Hassan	Manufacturing industries and employment in peninsular Malaysia: An empirical analysis of interregional variations
Neville Karunatilake	Effects of price distortions on employment in Sri Lanka
Ronald Hsia	Sub-contracting and employment flexibility in Hong Kong
Toshiyuki Mizoguchi	Income and assets distribution in Japan and Korea
Gerard Rikken & Harry T. Oshima	An exploratory study of research papers and reports on rural development approaches in Southeast Asian countries
Apichai Puntasen	A study of employment aspects of vocational education in Thailand
Supachai Panitchpakdi	Education: A demand-oriented view
I. Lourdesamy	Retention of high level manpower in the public sector: A study of doctors who resigned from government service in West Malaysia
Kuo-shu Liang	Exports and employment in Taiwan
Narongchai Akrasanee	The structure of differential incentives and effects on industrialization and employment: A case study of Thailand
Ippei Yamazawa	Trade and employment in Japan's economic growth
Suharso & Prabowo	Migration and labor supply in Greater Bandung Indonesia

Table , continued . . . .

José Encarnacion jr. & Dante Canlas	Income, education, fertility and labor force participation: Philippines, 1973
Oey Meesook	Income distribution in Thailand
Chirayu Isarangkun	Employment generation effects through multiple cropping: The case of Thailand
Shirley W. Kuo	Labor absorption, intensity and productivity in Taiwan industry, 1954-1971
Ace Partadiredja	Impact of village subsidy program upon development and income outside Java
Manu Seetisarn	Impact of multiple cropping in the Chiang Mai valley
L. J. Fredericks & B. W. Dissanayake	Impact of rural development on labor utilization and income distribution in Tanjong Karang, West Malaysia
Elizabeth Bahena & Harry T. Oshima	Income, expenditure and employment in rural Philippines
Bruno Barros & Harry T. Oshima	Rural employment and income distribution: The Taiwan case
Sayuti Hasibuan	Population growth, employment and income distribution
Noel D. Vasquez	Rural mobilization and migration
Luis Pascual & M.M. Jamaluddin	Systems study of the technological practices of agri-machine manufacturers in the Philippines
Josefina Salvaña & Emerlinda Roman	In-depth study of the management practices of agricultural machinery manufacturing firms in relation to technological change
Konosuke Odaka	Joint comparative research on ancillary firm development in Asian countries

Table , continued. . . .

Narciso Deomampo & D.B. Antiporta	Employment impact of mechanization of rice production processes
Yujiro Hayami & Ngo Quoc Trung	Choice of land infrastructure projects in Thailand with reference to labor utilization implications
Fred Avestruz & Harry T. Oshima	Determinants and economic effects of the choice of technology in the sugar milling sector of some South-east Asian countries
Boonkong Hunchangsith	Thailand's export incentives and employment
Wontack Hong	Government trade ars subsidy policies and employment growth in Korea
Narongchai Akrasanee	Trade strategies and employment growth in Thailand
Tzong biau-Lin	Employment implications of export: A case study of Hong Kong
Kuo Shu Liang	Employment and distribution implications of export expansion in Taiwan
Laurence Chau	Income distribution of Hong Kong
Terry Y. H. Yu	Farm family income distribution by region in Taiwan
Ragavah Haji Mat Zin	Income distribution and employment in urban and rural areas: The case of Malaysia
Pirom Chantaworn	Factors responsible for changes in inequality, Thailand 1962/3 to 1968/9
V.V. Bhanoji Rao & M. K. Ramakrishnan	Income distribution in Singapore

Source: Documents provided by Dr. Harry T. Oshima including list of CAMS projects and seminar participants. This list does not include five studies on ancillary firm development.

Appendix 2

Chronological Listing of Persons Interviewed
in connection with Asia Society Project on Progress Criteria

William Paul McGreevey
Consulting Economist
1115 24th St. NW
Wash DC 20037

21 Octo 76

Date	Person, Title, Address	Remarks
2 Aug	Mr. Herbert Spivack Asia Society 112 E. 64th St. New York NY	First discussions of project
3 Aug	Mr. James Brown AID/PPC/PDA	Discussed objectives of grant
	Dr. John Erricson AID/PPC/PDA	
6 Aug	Mr. Ronald Rikker, Director, Population Program Resources for the Future Washington DC	
10 Aug	Mr. Robert Bordonaro Asia Society - SEADAG	Prepared grant proposal
11 Aug	Mr. Douglas Adkins (on leave) New York University General Accounting Office International Program	
	Mr. Peter Thorman AID/PPC/PDA	Discussed upcoming CAMS meeting in Singapore
12 Aug	Dr. Calman J. Cohen Census Bureau	Asst. Ed. of StatUS, monthly on social and economic indicators.
19 Aug	Mr. Lenni Kangas Asst. Dir., Health, Population and Nutrition AID/Manila	
	Mr. Donald Dembowski Program Economist US AID/Manila	
	Ms. Zynia Rionda Asst. Program Officer US AID/Manila	

List of Persons Interviewed -- 2

19 Aug	Mr. Garnett Zimmerly, Director US AID/Manila	
20 Aug	Professor Harry Oshima Rockefeller Foundation & University of the Philippines School of Economics Diliman Campus, Quezon City	Was Exec. Secretary of CAMS, directing several studies of employment and Income Distribution.
	Dr. Barry Popkin (same as Oshima)	Did Laguna Survey of rural households.
	Professor Jose Encarnacion Dean, School of Economics University of the Philippines Diliman, Quezon City	Directed conference on employment and income distribution in Asia sponsored by CAMS
	Professor Mahar Mangahas (same as Encarnacion)	Directed social indicators project for Development Academy of the Philippines.
	Professor Vicente Paqueo (same as Encarnacion and Advisor, Population Center Foundation)	
	Dr. Conrado Lorenzo, Exec. Secy. Population Center Foundation South Superhighway Makati, Rizal	
	Ms. Aurora Go Director of Projects, PCF (same as Lorenzo)	Developing cooperative research projects on population and related variables.
	Dr. Rafael Esmundo, Exec. Secy. Population Commission South Superhighway Makati, Rizal	Executive officer in charge of population matters for Government of Philippines.
21 Aug	Professor Peter Smith East West Population Inst. Honolulu, Hawaii	Conducting population/mortality research in Philippines
	Dr. Robert Hackenberg Dr. Beverly Hackenberg University of Colorado Boulder, Colorado	Conducting survey research in Davao City, Mindinao, Philippines
	Professor James Palmore East West Population Inst. Honolulu, Hawaii	Supervising survey research in the Philippines, Korea, other countries.

List of Persons Interviewed -- 3

22 Aug	Mr. William McIntyre, Asst. Dir. Population Health and Nutrition US AID/Islamabad, Pakistan	Discussed Progress criteria issues with AID mission personnel in Pakistan before attending Murree SEADAG meeting.
	Dr. Steven W. Sinding (same as McIntyre)	
27 Aug	Mr. M. Latif Qu reshi, Director Pakistan Institute of Development Economics Islamabad, Pakistan	
	Dr. Dennis De Tray, Advisor PIDE (Same as Qureshi)	
	Ms. Molly Mayo, Consultant on Women's Affairs Ford Foundation Islamabad, Pakistan	
	Dr. Jawaid Azfar, Chief Planning Commission Government of Pakistan Islamabad Pakistan	Discussed potential utility of seminar from perspective of Planning Commission needs.
	Dr. M. S. Jillani, Advisor Ministry of Finance Government of Pakistan Islamabad Pakistan	Discussed data developed in Pakistan Economic Survey, 1975-76, prepared by Dr. Jillani.
28 Aug	Mr. M. Nizamuddin, Director of Research Training, Research and Evaluation Council Lahore Pakistan	
2 Sep	Mr. Luigi Laurenti, Advisor World Bank Mission to India New Delhi India	
	Ms. Susan Steiner, Treasury Attaché US Embassy New Delhi India	
8 Sep	Mr. Timothy King, Chief Mr. Roberto Cuca Mr. Ricardo Koran Mr. Dov Chernichovsky Population and Human Resources Div. Development Economics Department Development Policy Staff World Bank 1818 H St. NW, Washington 20423	

List of Persons Interviewed -- 4

9 Sep	Mr. Richard Webb Mr. Richard Sabot Employment and Rural Development Division Development Economics Department World Bank	
10 Sep	Mr. Mitsuo Ono, Director National Center for Social Statistics Dept. of Health, Education & Welfare U. S. Government Washington DC	Meeting arranged by James Brown just prior to Dr. Ono's trip to Japan and Indonesia to prepare for multi-purpose household survey applications.
13 Sep	Mr. William G. Duncan U.S. Census Bureau Rosslynn, VA	Discussed report on Thailand data.
14 Sep	Mr. David Holmes, Economist AID/PHA/POP/PPD Rosslynn, VA	Meeting With Douglas Adkins on applications of progress criteria.
	Mr. Robert Parke, Director SSRC Center for the Study of Social Indicators Washington DC	
	Professor Conrad Taeuber Kennedy Professor of Demography Center for Population Research Georgetown University Washington DC 20007	
15 Sep	Mr. Robert McPheeters, Adviser for Data and Systems Development Economic Analysis and Projections Department The World Bank 1818 H St. NW, Wash DC 20433	Data development activities in UN related agencies, including UN Statistical Office, UNRISD, Geneva, ILO and World Bank.
	Mr. Shahid Javed Burki, Chief Policy Planning Development Policy Staff World Bank	
	Mr. George Zeidenstein, President The Population Council 245 Park Avenue New York NY 10022	Data development and research activities planned by Population Council in South and Southeast Asia. (dinner, Hays-Adams Hotel, Wash DC)

List of Persons Interviewed -- 5

16 Sep	Professor Alan Udall Department of Economics University of Delaware Dover Delaware	Informal discussions with international economists on progress criteria and curren research.
	Professor Howard Pack Department of Economics Swarthmore College Philadelphia, PA	
	Professor Evsy Domar Department of Economics Mass. Inst. of Technology Cambridge MASS	
	Professor David Kendrick Department of Economics University of Texas Austin Texas	
20 Sep	Professor. T. Paul Schultz Economic Growth Center Yale University New Haven CN	Current research on interrelationships between fertility and mortality.
	Professor James McCabe Economic Growth Center Yale University New Haven CN	Research on Income Distribution.
	Professor Richard M. Morse, Dir. Latin American Studies Yale University New Haven CN	
24 Sep	Mr. George B. Baldwin, Deputy Dir. Population Projects Department Central Projects Staff The World Bank	
	Mr. Charles Frank, Asst. to Underseoretary for Economic Affairs Department of State Washington DC 20523	Research on income distribution, Korean development.
27 Sep	Dr. Connie Freeman, Staff Person Subcommittee on Foreign Assistance, Committee on Foreign Relations U. S. Senate Washington DC	Origins of legislation on progress criteria; field trips to Pakistan and Philippines to review foreign assistance.

List of Persons Interviewed -- 6

29 Sep	Dr. Anders S. Lunde, Director Office of International Statistics National Center for Health Statistics US Public Health Service 5600 Fishers Lane Rockville MD 20852	Luncheon with Professor Taeuber, Mr. Brown and Mr. Parke, to discuss current work on progress criteria.
30 Sep	Dr. Gary Merritt AID/PHA/POP/Research Rosslynn VA	Research on Population
	Dr. Mayra Buvinić, Director Dr. Irene Tinker, Advisor International Center for Women 2000 P St. NW Washington DC 20037	
1 Oct	Dr. Mary Kritz, Asst. Director for Social Sciences The Rockefeller Foundation 1133 Ave. of the Americas New York NY 10036	Techniques for research on natural experiments; new grants program planned for LDCs.
	Mr. Joseph Black, Director Mr. R. Kirby Davidson, Deputy Director for Social Sciences Rockefeller (as above)	
	Mr. Robert Muscat, Director Program Policy Division United Nations Development Program One UN Plaza New York, NY 10017	
4 Oct	Professor David Apter Dept. of Political Science Yale University New Haven CN	
5 Oct	Mr. Robert Evenson, Advisor Agricultural Development Council University of the Philippines Los Baños Laguna Philippines	Research results of the Laguna survey; possible extensions.
7 Oct	Dr. Michael Micklin Center for Population Research Battelle Memorial Institute - Northwest Seattle Washington	

List of Persons Interviewed -- 7

12 Oct	Dr. R. T. Ravenholt, Director Mr. William Bair, Chief, Latin America Division Mr. Carl Hemmer, Chief, Population Policy Division Mr. Duff Gillespie, Deputy Chief Research Division AID/PHA/POP/	Data needs for population programs.
13 Oct	Mr. Ronald Ridker Resources for the Future 1755 Mass. Avenue NW Washington DC 20036	Results of evaluation of Tea Estates Incentive Scheme.
15 Oct	Dr. Peter Freeman, Director Threshold - Environmental Consultants 1785 Mass. Ave. NW Washington DC 20036	Current research on ecosystem of Mekong delta, river systems in Southeast Asia.
18 Oct	Professor Carlos Diaz-Alejandro Department of Economics Yale University New Haven CN	Research on trade and development indicators.
	Professor Gary Fields Economic Growth Center Yale University New Haven CN	Working on income distribution review for AID/PPC
19 Oct	Mr. Ponciano Intal (on leave) Department of Economics University of the Philippines Los Baños Laguna	
	Ms. Elena Jaramillo Economic Growth Center Yale University New Haven CN	
20 Oct	Mr. Paul Demeny, Director Center for Policy Research Mr. Charles Lininger The Population Council 245 Park Avenue New York NY 10022	Current data needs for population in Asia and Latin America.
	Ms. Wendy Dobson (on leave) Assistant to the Director International Development Research Center P O Box 8500 Ottawa Canada K1G 3H9	Doing research on evaluation of natural experiments, Office of Population Research, Princeton University

List of Persons --

22 October	Mr. M. Alauddin, Joint Secretary Population Planning Division Ministry of Health & Pop. Planning Government of Pakistan (on leave to World Bank, Pop. Proj.)	
	Dr. James Brackett, Chief Demographic Data AID/PHA/POP	Data problems in Pakistan with World Fertility Survey
25 Oct	Mr. Marcelo Selowsky Development Research Center World Bank	Co-author of Malnutrition and Poverty, World Bank Staff Paper
28 Oct	Mr. Roberto Cuca PHRD, World Bank	Update on data situation in Pakistan from which he just returned.
29 Oct	Mr. Jacob Meerman Agricultural Research World Bank	Malaysia public services study
	Ms. Carmel Ullman Chiswick DRC/World Bank	Thailand survey data
	Mr. John English Urban Research/World Bank	Current poverty measures
	Mr. Henry David, Private Consultant, Population	Current population research