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GROWTH, EMPLOYMENT, AND THE SIZE DISTRIBUTION
OF INCOME: A PROGRESS REPORT

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I. Introduction

This paper reports on the work conducted by Professors Gustav Ranis, John Fei, and Gary Fields during the first year of a project on "Growth, Employment, and the Size Distribution of Income" sponsored by IBRD under RPO/284. Three papers have been prepared thus far under this project: "On Inequality Comparisons" by Fei and Fields; "The Indexability of Ordinal Measures of Inequality," also by Fei and Fields; and "Income Inequality by Additive Factor Components," by Fei and Ranis. In this report, we summarize our research activities during the first year and outline our plans for future activity.

The fundamental question to be addressed in this project is whether greater equality in the size distribution of income necessarily conflicts with other economic objectives, most importantly, the rate of growth of output. The working assumption is that such conflicts are not inevitable. The goal, then, is to learn more about the determinants of income distribution in less developed countries based on their typology and stage of development, and to relate these in turn to market imperfections and distortions, the distribution of assets and wealth, and the economic policies of LDC governments and donors. We see such prior understanding as an essential input into the intelligent formation of public policy in these areas.

Until recently, most planners, policy-makers, and development economists would probably have said that the economic well-being of a society is primarily (or even exclusively) a function of the level of its national income. For reasons which we need not belabor here, there exists now, however, a widespread realization that the distribution of

the gains of development among individuals or families is of crucial importance to any such assessment.

Concern with the distribution of income has manifested itself in two ways. Most of the literature has focused on the question of the degree of inequality which prevails at a point in time whether there exists some sort of statistical relationship between the degree of inequality in a country and the level or growth of national income, either in a cross sectional context or over time. An issue which has received somewhat less attention is the question of inter-temporal mobility in either an inter-generational or intra-life cycle context.

Our first concern has been with some very practical questions concerning the types of measures to use in linking the size distribution of income in less developed countries to their growth experience. Which income measure is most appropriate -- total family income or income per capita, income before or after taxes and transfers, annual income versus life cycle income, etc? How do we measure inter-temporal mobility -- by examining relative class positions of selected sub-groups of the population, deriving some sort of index of opportunity for movement up the economic ladder, or in some other way analyzing the transition probabilities between classes? And how should we assess inequality at a point in time -- by a Lorenz curve, fractile shares, or an inequality index? If we utilize an inequality index, which one should we use?

In brief, our tentative pragmatic conclusions are as follows. The selection of an income measure can obviously be determined only by a compromise between the dictates of the questions one is interested in answering and by the availability of data. If we were interested in making inter-country comparisons, for example, we would have to make

do for now with published figures on the size distribution of household incomes before taxes and transfers. In any case, it became clear to us that the choice of an income concept can be made independently of the choice of the specific measure of inequality to be used. We therefore quickly directed our attention to inequality concepts.

On the question of inequality in opportunities for class or income mobility over time, we found the state of the arts rather unsettled. Recent studies by McCall (1973) for the United States and Dobell and Wolfson (1972) for Canada have sought to formalize some of the issues involved and apply them to their respective countries. In the context of the less developed countries, however, the data requirements seemed so formidable as to render research in this area infeasible over the horizon of our project.

We next directed our attention to the problem of measuring inequality at a point in time. This turned out to be the main focus of our work to date.

Section II of this report explores the nature of the measurement problem. We then proceed to a summary of the results of the project to date under two general headings: guidelines for comparisons of income inequality (Section III) and disaggregation of inequality by factors and sectors (Section IV). The report concludes by outlining likely directions for the next phases of the work.

In reading through this report, it may be helpful to bear in mind three general areas of inquiry: the selection and possible design of measures of inequality which are relevant to economic development, the construction of a positive theory of the determination

of the size distribution of income as it relates to the development process, and empirical applications to a number of specific countries.

II. The Nature of the Measurement Problem

To introduce the nature of the measurement problem, let us raise the easiest question that could be asked of two alternative income distributions, namely, whether one distribution is more or less equal than another. Whichever way one chooses to measure income inequality, the ranking of distributions is the minimum starting point. In addition, we frequently want to go further and determine how much more equal one distribution is than the other. Despite the seeming straightforwardness of these questions, there exists a great deal of controversy on the appropriate procedure for answering them. The papers prepared under the first phase of the project are aimed at clarifying these problems.

We would emphasize that our interest is not measurement for measurement's sake. In fact, our objection to most of the existing literature on income distribution is that it amounts to "measurement without theory." Rather our concern is with the selection and development of a measurement methodology which will facilitate our inquiry into the basic economic forces which underlie both income distribution and growth. In short, our research on measurement seeks to provide direction to our subsequent work on modeling and the gathering of evidence on the determinants of the size distribution of income.

The problem of ranking income distribution patterns according to their degree of equality or inequality can be handled in one of three ways:

- (1) The parametric approach. If we somehow knew that the distribu-

tion of income had a particular functional form (e.g., that incomes are log-normally distributed), we could compare the parameters of the distributions in various countries and thereby determine which is the more equal. But if we found or had reason to believe that the distributions did not necessarily have this particular functional form, a more general approach which does not rely for its validity on the actual pattern of income distribution would be in order. In the absence of empirical or theoretical support for a particular distribution pattern in LDC's, we will be agnostic on this subject and limit our attention to non-parametric approaches.

(2) The cardinal approach. The usual way of comparing the inequality of one income distribution with another is to construct a numerical index of inequality. This approach has a long history dating back at least to 1905 and the classic work of Lorenz and Gini. There are many inequality indices now in common use including the Gini coefficient, coefficient of variation, variance of logarithms, Theil index, Atkinson index, Kuznets ratio, inter-quartile range, and others.

Most economists have asked the question which of these indices to use, and there has been considerable argument on this issue. In our research, we have asked a different question, namely, whether or not to use a cardinal index. The alternative is:

(3) An ordinal approach. Since often the problem at hand is which of two distributions is more equal, why not be satisfied with an ordinal answer? Putting the matter somewhat differently, an ordinal approach would posit a relatively simple and less controversial criterion for determining when one distribution is more or less equal than another.

In light of these issues, we have in our papers addressed four sets of questions:

(1) Ordinal vs. Cardinal Approach. How far can we get with an ordinal approach to inequality comparisons and what do we sacrifice if we were to use one? When (if at all) is it necessary to turn to a cardinal approach?

(2) Desirable Properties. What properties should a "good" index of inequality have? Which of the measures in common use have these properties and which do not? What other classes of inequality indices also fulfill these conditions?

(3) Choice of Index. After we are familiar with the properties of various "good" inequality measures, how do we choose from among them? How is our choice of a measure dependent on our knowledge about the sources of growth? If existing measures are inadequate, how do we go about looking for better ones?

(4) Guidance for Economic Research. Having provisionally selected one or more inequality measures, what guidance does this index give us in theoretical modeling and in the collection and analysis of empirical data? In other words, once we have an index, what economic factors should we look at in order to understand the determinants of (a) the size distribution of income at a point in time, and (b) changes in the size distribution of income over time?

Our findings on these questions are presented below.

III. Guidelines for Inequality Comparisons

The first two issues -- ordinal vs. cardinal measurement and the specification of reasonable properties for inequality measures -- are

dealt with in the papers by Fei and Fields. In reviewing the major points of those two papers, let us begin by briefly considering the possible criteria for ordinal rankings.

The ordinal criterion that probably comes quickest to mind is the Pareto criterion, according to which a higher level of social well-being is said to result if someone is made better off with no one else being made worse off. Upon brief reflection, the inapplicability of this criterion to questions of income distribution should be apparent, for the essential issue here is whether a given amount of income, if taken from some and given to others, improves the condition of society on balance. In short, in a real distributional context, somebody must be made worse off.

A more appropriate and familiar criterion for comparing income distributions is the Lorenz criterion. By this standard, one distribution is more equal (strictly dominates the other) if its Lorenz curve (the cumulative income of the lowest x% of the population plotted against the population percentage) lies wholly above the Lorenz curve of the other distribution (see Figure 1). Why should we regard the distribution with the higher Lorenz curve as the more equal one? It is probably because we would consider situation A in which the lower income people have a larger share of the total income as "more equal" than situation B. Conversely, it can be shown (see "On Inequality Comparisons," pp. 12-17) that if income is taken from the relatively rich individuals or families in situation A and transferred to the relatively poor families, then distribution B can be realized, and we would be inclined to regard such transfers as equalizing the distribution of income in

society.

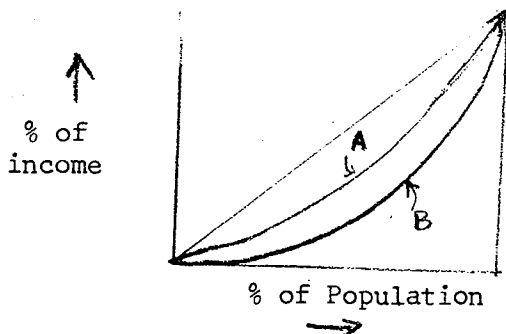


Figure 1

One convenient result of our work to date is the following simple procedure for telling if Lorenz curves cross. Suppose grouped data are available in the form shown in Table 1. (These are the actual data from Kuznets' (1963) classic study.) The rule is simply to compare the differences in income shares between the first group and the last group to see if they have the same sign; if they do, the Lorenz curves necessarily cross. For example, the difference in income shares between India and Ceylon for the lowest quintile is +2.7%, and +2.4% for the top 5%. The Lorenz curves must therefore cross somewhere in between. If differences between the first and last group have opposite sign, the Lorenz curves may not intersect at all or they may intersect an even number of times. Of the 66 pairs from the Kuznets data, the differences are of the same sign 48 times, opposite signs the other 18. (see Table 2 -- the pairs with the same sign are underlined.) In 16 of the 18 opposite-signed cases, one Lorenz curve lies wholly above the other; however, in the other two (Puerto Rico-West Germany and Puerto Rico-Netherlands), the Lorenz curves intersect twice.

For purposes of ranking the inequality of alternative distributions, what should be done in cases where Lorenz curves intersect? Atkinson (1970), for instance, has suggested postulating a social welfare function which

Table 1

Fractional Income Shares in Twelve Countries

		<u>0-20%</u>	<u>21-40%</u>	<u>41-60%</u>	<u>61-80%</u>	<u>81-90%</u>	<u>91-95%</u>	<u>TOP 5 %</u>
India	1950	7.8%	9.2%	11.4%	16.0%	12.4%	9.6%	33.4%
Ceylon	1952-53	5.1	9.3	13.3	18.4	13.3	9.6	31.0
Mexico	1957	4.4	6.9	9.9	17.4	14.7	9.7	37.0
Barbados	1951-52	3.6	9.3	14.2	21.3	17.4	11.9	22.3
Puerto Rico	1953	5.6	9.8	14.9	19.9	16.9	9.5	23.4
Italy	1948	6.1	10.5	14.6	20.4	14.4	10.0	24.1
Great Britain	1951-52	5.4	11.3	16.6	22.2	14.3	9.3	20.9
West Germany	1950	4.0	8.5	16.5	23.0	14.0	10.4	23.6
Netherlands	1950	4.2	9.6	15.7	21.5	14.0	10.4	24.6
Denmark	1952	3.4	10.3	15.8	23.5	16.3	10.6	20.1
Sweden	1948	3.2	9.6	16.3	24.3	16.3	10.2	20.1
U.S.	1950	4.8	11.0	16.2	22.3	15.4	9.9	20.4

[Source: Kuznets (1963)]

Table 2

Pairwise Differences Between the Lowest 20% and Top 5%

	IND	CEY	MEX	BARB	P.R.	I	G.B.	W.G.	N	D	S	U.S.
India		<u>++</u>	+-	<u>++</u>	<u>++</u>	<u>++</u>	<u>++</u>	<u>++</u>	+-	<u>++</u>	<u>++</u>	<u>++</u>
Ceylon			+-	<u>++</u>	-+	-+	-+	<u>++</u>	<u>++</u>	<u>++</u>	<u>++</u>	<u>++</u>
Mexico				<u>++</u>	-+	-+	-+	<u>++</u>	<u>++</u>	<u>++</u>	<u>++</u>	-+
Barbados					--	--	-+	--	--	<u>++</u>	<u>++</u>	-+
Puerto Rico						--	<u>++</u>	+-	+-	<u>++</u>	<u>++</u>	<u>++</u>
Italy							<u>++</u>	<u>++</u>	+-	<u>++</u>	<u>++</u>	<u>++</u>
Great Britain								+-	+-	<u>++</u>	<u>++</u>	<u>++</u>
West Germany									--	<u>++</u>	<u>++</u>	-+
Netherlands										<u>++</u>	<u>++</u>	-+
Denmark											<u>++</u>	--
Sweden												--
U.S.												--

[First number in each pair is lower quintile difference, second is upper 5% difference]

[Source: Calculated from Table 1]

includes as a variable parameter the weight given to incomes accruing to families at different positions in the income distribution. He then presented results on the Kuznets data for alternative values of this parameter. If, however, the imposition of a social welfare function seems unappealing or inappropriate what then? Either we content ourselves with the ability to make comparisons in only a fraction of the cases, we use one or more of the presently available inequality indices, or we specify our preferences explicitly and see what follows from it.

The typical procedure in economic studies is to adopt a particular inequality index for use, with the choice apparently often being determined on the basis of convenience and computational ease. It should be understood that such a procedure has the effect of assigning specific numerical weights to an additional dollar of income received by families at different positions in the income hierarchy. The various inequality measures differ in the weights they assign, and therefore partition the income distribution space differently. Thus, if Lorenz curves cross, one index might show greater equality in A as compared with B, while another another measure shows the opposite. This has been found in studies by Ranadive (1965) and Weisskoff (1970). Generally speaking, it is probably fair to say that the choice of an inequality index more often than not is made on the basis of convenience and without a careful examination of its properties. Only occasionally does one find a justification for the particular inequality measure chosen.

In our own research, we reverse the customary procedure. Instead of examining existing inequality indices to determine their properties, we have set forth a small number of desirable properties and then ask

which indices satisfy these properties.

We postulate as axioms (propositions to be accepted without proof) four principles for inequality comparisons which any approach (cardinal or ordinal) should satisfy. The first three have substantive economic content, while the fourth is to ensure desirable mathematical properties.

A1. Axiom of Scale Irrelevance. If one distribution is a scalar multiple of another (i.e., everyone's income in the first case is $x\%$ of their income in the second), then the two distributions have the same degree of inequality. Put somewhat differently, the degree of inequality in the distribution of income is measured independently of the level of income.

A2 Axiom of Symmetry. If two income distributions are identical except that different families receive the income in the two cases, then the two distributions have the same degree of inequality. This follows from the principle of treating all individuals and families alike with regard to income distribution.

A3. Axiom of Rank-Preserving Equalization. If one distribution is obtained from another by the transfer of a positive amount of income from a relatively rich family to a relatively poor one while preserving their relative rank in the distribution, then the new distribution is more equal than the old. (While few persons are likely to quarrel with this axiom, it should be noted that some additional, non-trivial assumptions about the nature of judgments of social well-being are necessary to guarantee that a "more equal" distribution is always regarded as "better.")

A4. Axiom of Continuity. The degree of equality is reduced continuously for alternative distributions lying further along a ray which emanates from the ideal point of the income distribution space or

subspace. Essentially, this guarantees that the inequality index will be a continuous function.

Fei and Fields investigate several of the conventionally used indices of inequality. They find that four of the indices (the Gini coefficient, coefficient of variation, Atkinson index, and Theil index) do satisfy these four axioms but that other indices (the variance, Kuznets ratio, and fractile ranges) do not meet these conditions and are therefore eliminated from further consideration. Of particular importance in a development context is the (perhaps surprising) failure of the Kuznets ratio to meet these properties, and the nature of the difficulty is illustrated geometrically (see "On Inequality Comparisons," p. 33).

Having determined that there are still many actual and potential indices which meet the desirable conditions, how should we go about making a final choice? At this point, our papers diverge. The Fei-Fields papers move in the direction of examining the weights we wish to assign to incomes accruing to individuals at different positions in the income distribution, while the Fei-Ranis paper looks at the more practical concerns of disaggregation by factor component and linkages to underlying economic factors.

An important conclusion of the Fei-Fields papers is that the conventional "objective" measures, by making implicit welfare judgments about the value of income received by different individuals, are no less arbitrary in this respect than any alternative approach in which value judgments are made explicit. They urge researchers who adopt one of the conventional measures to examine its properties and state in axiomatic terms their reasons for using it for a particular purpose.

The second of the Fei-Fields papers goes one step further and provides a rather general technical guide to those who might seek to build

their own value judgments into some new index of inequality. The major result is that a set of value judgments which satisfy the conditions of the four axioms presented above can be represented by an inequality index which is a continuous function. This permits ordinal rankings of inequality to be represented by a continuous real-valued indexing function looking just like a cardinal function but having its origins in the ordinal approach. The paper concludes with a discussion of the advantages of a continuous indexing function in relation to the processing of empirical data, the construction of a positive theory of the determination of the distribution of income, the integration of inequality considerations into models of optimal growth, and the design of better inequality indices.

IV. Disaggregation of Inequality by Factors and Sectors.

The main theme of the Fei-Ranis paper is to begin to link the theory of growth and that of income distribution so that the factors investigated in growth theory can become relevant to the explanation of how income inequality is determined. The conceptual framework is facilitated through the analysis of the Gini coefficient as the measurement of income distribution inequality. It should be stated that the use of the Gini coefficient does not necessarily imply an endorsement of the value judgments implicit in that index; rather, the use of a specific, concrete inequality measure may help illustrate the types of analytical procedures and results which may be obtained whatever index is ultimately chosen.

Our starting point is the basic notion that the determination of income distribution can best be studied by disaggregation with reference to a relatively small number of income sources (e.g., wage, property,

or transfer income) or sectors (agriculture), non-agriculture). The presumption is that a certain set of economic forces explain the amount and distribution of a particular type of income (e.g., the distribution of wage income being determined by the distribution of labor force participants, unemployment, wages, education and skills, experience, union membership, etc.), but different forces may contribute differentially to the different types of income (e.g., the political power of the poor may be very important in explaining transfer income, less important for wage income, and unimportant for property income.) What we are attempting is to provide a growth-relevant framework for disaggregating the distribution of income within and among the various income types (and sectors) of an economy according to changes in that country's economic structure and its course of economic development.

For purposes of discussion, let us suppose there are three income sources -- wage income, property income, and transfer income -- and that the sum of these is the total income for each family and for the economy as a whole. (In other words, wage and property income are net of taxes.) Using the Gini coefficient as our measure of inequality, it might be thought that the overall Gini (for the economy as whole) would be a weighted average of the Ginis for the individual components, the weights being given by the factor share of that income in the total. This is, however, incorrect, because the Gini coefficient requires the households to be ranked in increasing order of income and the different component incomes (wage, property, transfer) may not be monotonically related to one another or to the total. To indicate the correct relationship, suppose we order the families according to total income and neglect the ordering of their factor incomes. Let us define a

pseudo-Gini coefficient as the number that would be obtained if households in that sector were not ordered with their incomes monotonically increasing. Then Fei and Ranis show that the overall Gini for the economy (G) is a weighted average of the pseudo-Ginis for the i 'th income source (\bar{G}_i) with the weights given by the factor share of that income source (ϕ_i):

$$(1) \quad G = \bar{G}_1 \phi_1 + \bar{G}_2 \phi_2 + \bar{G}_3 \phi_3.$$

They then show that the pseudo-Gini for the i 'th source (\bar{G}_i) is approximately equal to the product of the true Gini for that source (G_i) and the rank correlation between income from that source and total income (R'_i):

$$(2) \quad \bar{G}_i \approx G_i \cdot R'_i.$$

Substituting (2) into (1), we have:

$$(3) \quad G \approx G_1 R'_1 \phi_1 + R'_2 \phi_2 + G_3 R'_3 \phi_3$$

from which we see that overall inequality in an economy depends on the degree of inequality of each income source, the extent of correlation between income from that source and total income, and the importance of that income source in the total.

The extension of this basic framework has high priority and substantial promise for our future research. We foresee extensions in at least two possible directions. One type of extension will be to look behind each of the G_i , R'_i , and ϕ_i for their basic economic determinants. The inequality of wage income, for example, is attributable in part to variation across families in the number of wage earners, the wages paid when they are working, and their unemployment rate. Each of these in

turn depends on a wide variety of underlying growth-related conditions of the economy. More generally, the forces determining inequality may be summarized under three general headings: determinants of factor ownership, of factor prices, and of factor shares. The use of such general terminology should not obscure the elementary fact that factors are heterogeneous and it is this heterogeneity which is in large part responsible for differences in income, wealth, and other economic magnitudes.

The other way of extending the basic framework is to make it explicitly dynamic and look for determinants of changes (or lack of change) in the size distribution of income over time. This is easily accomplished by taking the time derivative of (3):

$$(4) \quad \frac{dG}{dt} = G_1 R_1' \frac{d\phi_1}{dt} + G_1 \phi_1 \frac{dR_1'}{dt} + R_1' \phi_1 \frac{dG_1}{dt} \\ + G_2 R_2' \frac{d\phi_2}{dt} + G_2 \phi_2 \frac{dR_2'}{dt} + R_2' \phi_2 \frac{dG_2}{dt} \\ + G_3 R_3' \frac{d\phi_3}{dt} + G_3 \phi_3 \frac{dR_3'}{dt} + R_3' \phi_3 \frac{dG_3}{dt}$$

(For changes over long periods of time, we could instead take the first difference of (3); the result would be qualitatively equivalent to (4).) What we see here is that changes in inequality can be related to changes in factor ownership, factor prices, and factor shares.

In both cases, knowledge about a country's economic development would be expected to contain some important clues about the nature of its income distribution. The answers to why these things are what they

are (the static question) and why they have changed in the ways they have (the dynamic question) are likely to be found by analyzing a country's economic typology, the stage of its economic development, its institutions and its policies. In short, to understand income distribution in less developed countries, whole sets of multi-faceted and growth-relevant explanations are needed. The framework developed here suggests where to look and, once the results of the parts are in, how to put them together.

In preparation for such future studies, Fei and Ranis have attempted to illustrate the methodology, one by using actual Taiwanese data, the other by designing a hypothetical case to illustrate alternative possibilities. Considering Taiwan first, data taken from the 1972 Report on the Survey of Family Income and Expenditure. [See Table 3]. Five income sources are considered: wage, mixed, property, gifts, and other. The overall Gini coefficient is .28, which is among the lowest of all countries in the world. [See Paukert (1973) for Gini coefficients for 56 countries.] Nevertheless, we wish to know which income source contributes the most to the overall Gini. The logical place to start is by looking at the Gini coefficients of the individual income sources in Row 1 of the table. We find that property and gift income have the highest factor Ginis and therefore are least equally distributed, "mixed" and "other" are in an intermediate position, while wage income is most equally distributed. From this, we might be inclined to conclude that property and gift income contribute the most to overall inequality. However, this is mistaken, because we need to

Table 3

Decomposition of Inequality in Taiwan, 1972

	<u>Wage</u>	<u>Mixed</u>	<u>Property</u>	<u>Gifts</u>	<u>Other</u>	<u>Total</u>
(1) Factor Gini	.2518	.2968	.4020	.3965	.2925	
(2) Factor Share	.582	.275	.093	.046	.004	1.000
(3) Factor Inequality Weight	.5187	.2882	.1322	.0584	.0024	1.000
(4) Rank Correlation Between Factor Income and Total Income	.9987	.9953	.9996	.6803	.3159	

Table 4

Decomposition of Inequality for a Hypothetical Economy with a
a Negative Correlation Between Transfer Income and Total Income

	<u>Wage</u>	<u>Property</u>	<u>Transfer</u>	<u>Total</u>
(1) Factor Gini	.3912	.6628	.6400	
(2) Factor Share	.4500	.3500	.2000	1.000
(3) Factor Inequality Weight	.4640	1.0362	-.5002	1.000
(4) Rank Correlation Between Factor Income and Total Income	.5000	1.0000	-.8240	

consider two other things, namely, (1) the factor shares, which tell us the importance of that factor in total income, and (2) the correlation between factor income and total income, which tells us whether that factor contributes to inequality or offsets the inequality attributable to other sources.

The factor shares are shown in Row 2. Wage income is by far the most important source of income, and property and gift income are relatively unimportant. Total inequality is a weighted average of inequality of the individual factor incomes. What we have here therefore is wage income (which is relatively equally distributed but has the largest factor share), property and gift income (relatively unequally distributed, small factor shares), and "other" sources contributing to total inequality. A set of "Factor Inequality Weights," designed by Fei and Ranis to show the contribution of each factor to total inequality, are presented in Row 3. We see that wage income is in fact the source of more than half of total inequality, while property and gifts combined contribute less than 20%. Thus, the intuitive prior notion that the most unequal factors contribute the most to total inequality is found to be false in this case, though they do contribute more to inequality than their respective factor shares. In the Taiwanese data, each income source contributes positively to inequality. This is because each of the factor incomes is positively correlated with the total income as can be seen from Row 4. However, this is not necessarily the case for other countries. In the United States, for example, it has been found that transfer income is negatively correlated with total income and therefore lessens total inequality by offsetting inequality in the distribution of wage and property income.

Fei and Ranis also present the results of a hypothetical exercise within the disaggregative framework described above which is constructed so that transfer income is negatively correlated with total income. [See Table 4.] From this negative correlation, we would expect that transfer income would contribute to equality rather than to inequality. That this is so can be seen from the Factor Inequality Weights in Row 3, where transfer income has a negative weight.

These examples yield insights into the sources of inequality at any given point in time. The obvious next step is to gather data for two points in time and analyze changes in overall inequality in terms of changes in the components. It should be noted that the distributions of income in some factors or sectors may be getting more equal and some less equal as a result of the development process, and it may well be that the overall Gini changes much less (or not at all).

V. The Next Phases of the Research

The next phases of our research will alter the emphasis of our work thus far. Primary attention will be given to theoretical development and empirical analysis with less stress on measurement problems. Our present intentions concerning this phase of the research are described below.

On the theoretical side, we intend to begin where the Fei-Ranis paper left off. Attention will be given to the types of extensions of the disaggregative framework described in the previous section, i.e., integrating more fully into the analysis the economic determinants of factor ownership, factor prices, and factor shares and changes in these variables in the course of development.

In our original project proposal, we spoke of the need for approaching income distribution in a typologically-relevant framework. The first phase of our research reaffirms this conviction. We are convinced of the need for a disaggregated framework, since aggregate figures conceal the varied sources of inequality. Building on this framework which helps to illuminate the relative importance of different income sources in contributing to income inequality at any point in time, we must now push the analysis backward onto the underlying reasons to be found in the very nature of the country's economy and growth path, i.e., its level of development, resource endowment, size, sectoral distribution, market imperfections, and other public policies. Since countries differ in all these respects, there can be no one answer or set of answers for the less developed countries taken as a whole. But there can be, and what we hope to develop, is a series of answers contingent on the type of economy under consideration and the phase of development it has reached.

We have started laying the groundwork for our empirical work on three typologically different less developed countries: Taiwan, a representative of the labor surplus, natural resources poor, open dualistic economy; the Philippines, a natural resource rich, open dualistic economy; and Colombia, a labor surplus, natural resource rich, open, Latin American economy. Besides affording the possibility of comparative research on these different types of economies, each of them has research organizations and individual researchers with whom the Economic Growth Center has strong ties. Below is an outline of the contacts we have made and our plans for the empirical phase of the research.

Taiwan and the Philippines will be studied by John Fei and Gustav Ranis. Contact has been established with Mr. Kuo, Vice Chairman of the Taiwan Planning Council, who has agreed to cooperate fully with our research efforts. This summer, Fei who is a member of the Academia Sinica, is planning to spend six weeks in Taiwan looking for suitable data to decompose changes in aggregate income into changes in factor shares, factor inequality weights, and the income correlation effects. He will begin by analyzing published data contained in the annual Surveys of Family Income and Expenditure. If these do not contain suitable tabulations, an attempt will be made to secure the underlying microeconomic data for analysis. Ranis intends to visit Taiwan briefly this summer to negotiate the nature of collaborative activities with the Taiwan Planning Council. Specifically, Fei and Ranis will explore with the Planning Council the possibility of conducting a special survey to generate new data in light of the theoretical concepts which we have reported on.

The procedure to be followed in the Philippines is virtually identical. Ranis has headed up the ILO Employment Mission to that country, and will draw on previous contacts developed through that mission. This summer, Ranis will visit the University of the Philippines to nail down the nature of the collaborative interest on the part of MOLOR MARGONG and others at the university. His plan is to make use of data from the family income and household surveys for 1965 and 1971. Colombia will be studied by Gary Fields. He plans to make a short trip to Bogota shortly to discuss with interested Colombians the issues they think are of greatest importance, to explore possibilities for collaborative research with the Centro de Estudios Sobre Desarrollo Economico at the Universidad de Los Andes, and look into possible data sources.

for implementing a microeconomic approach to income distribution. The most likely starting point for Fields' research will be an analysis of the determinants of labor earnings. Fields is planning to spend January to August, 1975, in Colombia on field work.

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