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by

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CHAPTER ONE
INTRODUCTION

INTRODUCTION

This volume contains Checchi and Company's "Summary Issues Paper" submitted to AID for the Administrators' Review of Foreign Assistance and Rural Poverty under Contract Number AID/CM/otr-C-73-199 (Work Order No. 7).

The purpose of this paper is to examine major variables or indicators, and to identify policy issues emerging from an analysis of the conditions of the rural poor in Brazil and Tanzania. Its contents represent the second or "evaluation task" of an multi-task assignment which Checchi undertook for AID in December of 1974. A prior submission described economic and social conditions in Brazil and Tanzania. A paper recommending policy and program guidance and/or recommendations for future research will be submitted following the Administrators' Evaluative Review in March.

The analysis presented in this paper rests on the interaction between two research methodologies:

- record research, which was used to summarize and analyze materials in AID's files, and to provide individual project evaluations.
- systems research, which was directed toward obtaining a more comprehensive understanding of phenomenon affecting the condition of the rural poor.

Chapter Two of this paper summarizes the methods we used to examine, condense, and interpret information on projects contained in AID's files. Chapter Three briefly describes the system's research framework we employed to provide a more comprehensive analysis of effectiveness of AID programs in reaching the rural poor.

Chapter Four of this paper deals with AID impacts and income trends. The Chapter first summarizes and categorizes AID inputs in

each of the two countries. It then analyzes the contents and impact of pertinent AID programs. The final section of the Chapter examines income growth trends and migration effects in the two countries.

In order to understand the economic and policy implications of the AID impacts and income trends examined in Chapter Four, it is necessary to seek out fundamental causal relationship. Chapter Five employs Lorenz curves and associated techniques to interrelate information with respect to income distribution, employment, productivity and technology. The Chapter also deals with fundamental constraints affecting the circumstances of the rural poor.

Chapter Six examines the subject of rural welfare from two viewpoints. It first presents a brief discussion of AID programs which we have classified under the urban and rural welfare. It then examines progress and problems in program and systemic contexts.

Chapter Seven discusses rural development, organizing the rural sector in both general and specific program terms.

Chapter Eight summarizes the findings of this report.

CHAPTER TWO

RECORD RESEARCH METHODOLOGY

RECORD RESEARCH METHODOLOGY

This brief description of research methodology will indicate the sources and scheme used to accumulate data and thus determine the magnitude and design of AID effort in Brazil and Tanzania over the period covered.

Project and loan data accumulation began with an investigation of retired AID files, located in Suitland, Maryland at the National Records Center. A comprehensive list of possibly relevant file boxes was developed thru the analysis of file box titles yielding 424 boxes pertinent to Brazil and 101 for Tanzania. From this obviously unwieldy number of file boxes to be reviewed (contained in 525 feet of files), 60 boxes were selected to be examined in detail. The information found to be contained within the retired files fell into two broad categories: correspondence and project data. After a thorough examination of file boxes, it became clear that the material was not organized in any useful fashion and that the mass of files could not be effectively used for the project. Further, it was realized that project data and correspondence in the files consistently referred to information in the official Country Assistance Program submissions prepared annually by the AID mission. Thus, on the basis of two considerations-the time element involved in conducting an in-depth review of 525 file boxes, and the apparent filed duplication of material already contained within the official CAPs -information gathering proceeded to a review of the CAP submissions on a year-by-year basis.

Contained within the majority of the CAPs is a narrative summary of sector goal plans followed by specific project data summaries, both narrative and financial. A typical project narrative includes a statement of project goal and specific objectives, the proposed or operative course of action, the means or cooperating host agency, and a statement...

of progress to date including various qualitative and quantitative inputs and outputs. While the CAPs afforded basic project data, answers to many questions regarding project implementation progress were not provided.

Further sources were obviously needed. In the file boxes, we had come across a very few Audit Reports and Project Appraisal Reports (PARs), as well as one or two end of tour reports. These clearly were a potential source of implementation information, but, since the mass of the files were not organized, the file boxes were not an acceptable source, within the time constraints, for these supplemental documents. Fortunately, the Brazil and Tanzania Desks were able to provide, sometimes with considerable effort, with a good selection of audit reports and PARs. Even the Desks were not able to come up with end of tour reports in any significant number, so this source was not effectively used.

It might be noted at this point that our review of CAPs, and later audits and PARs revealed an obvious difference in the measurements of project outputs and thus progress toward purposes and goals. Perhaps this inconsistency, which will be discussed at the seminar in the section on AID Programs and outputs, originates from the lack of agreed-upon output indicators in the initial project planning phase or becomes manifest in the process of evaluation conducted by a review team functionally distinct from the planning team.

A financial statement of AID input costs, obligated and disbursed for the actual, operational, and budget years accompanies the CAP project narrative. It is from these expenditure statements that the magnitude of AID project input over the period reviewed was determined. Finally, as loan disbursement information was found to be incomplete in

the CAPs, Checchi utilized fiscal year Financial Loan Status Reports (available at the Desks) to complete the necessary data regarding the annual disbursement of sector, project and program loans.

Narrative information was recorded on a data sheet the form of which resembles closely the AID Logical Framework Matrix. Four major headings comprise the format: Goal, Purpose, Outputs, and Inputs. Key words were used to capsule stated project goals and purposes and achievement indicators were recorded when available. Project inputs and outputs were also monitored on an annual basis.

In the AID pamphlet entitled PROJECT EVALUATION GUIDELINES, 1973, following statement appears on page 4:

"The logical framework is not normally used as an evaluation device; rather, it sets the stage for evaluation."

Implicit in this statement is the need for distinction between mere implementation monitoring and evaluation. Checchi, too, in the early stages of research perceived this necessary distinction and used the logical framework not as an evaluation technique but rather as a tool for organizing data in a fashion that was consistent for each project and was readily applicable to AID project design. While the project implementation monitoring phase was crucial to the understanding of AID effort at the project level, the actual evaluation of project impact upon the specific concern of the rural poor must transcend the project level and take into consideration the national process and its outputs. Thus, in light of this systems approach to analysis which is presented in detail in the following Section, AID programs and projects, their goals, purposes, direct outputs, and inputs are meaningful as a single input factor to the larger national process.

The financial data sheet maintained for each project in conjunction with the above described narrative sheet consisted of 4 columns in which Personnel, Participant, Commodity and Other Costs, estimated and actual (both AID and local) were recorded annually.

To summarize, five basic steps in Checchi's project-level research methodology: (1) Review of sample boxes of AID's retired files, (2) consultation of CAPs, PARs and Audits, (3) recording information on data sheets and grouping into large folders, (4) preparation of project evaluation and sector summaries (technical code, goals and fundings) and finally (5) program evaluation resulting in a final table of Input Summary of loans and projects divided into urban and rural sections. Over 600 data sheets contained in two thick books represent the researchers' attempt to achieve a complete record of AID effort, by design and financial magnitude in Brazil and Tanzania. From this fundamental project-level understanding, we must proceed to the analytical methodology which provides a context in which AIDs impact upon the rural poor may be assessed.

CHAPTER THREE
SYSTEM RESEARCH METHODOLOGY

SYSTEM RESEARCH METHODOLOGY

The previous section describes in some detail the methodology developed in this study for handling and providing basic analysis on the mass of data which had to be dealt with. This was only the first step. The main objective of the effort in this study, as we saw it, was to provide a comprehensive analysis of the effectiveness of programs in reaching the rural poor and, incidently, to provide AID with analytical tools for further analysis. For this, a methodology was needed and was worked out with great difficulty over the course of the study. A brief description of the main elements of the methodology developed and used follows.

A. The Need for a Systems Approach

AID programs and projects are a part of the larger national process in which they are located. These national processes are dynamic and in a continuous state of change, often unexpected, both internally and externally with the rest of the world.

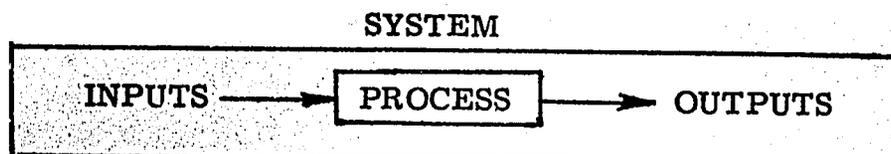
Outputs from such complex systems can seldom be predicted on the basis of summing the inputs and parts. Most often the results are greater or less than such combinations. In these cases, it is easily recognized that the national process and its leadership control tend to treat and transform similar inputs into widely varying outputs.

In recognition of this problem, Checchi has opted to employ in this analysis an analytical systems approach, because of the proven ability of this approach to cope with large, complex and man-made conditions of this kind. That is to say, we have chosen a methodology capable of handling the systems factors - inputs, process, outputs, and structure - as well as one that can also express the relationship among these various factors.

A methodology designed to deal with complex problems must in itself be fairly complex and we believe a brief description is needed, as follows

B. The National System

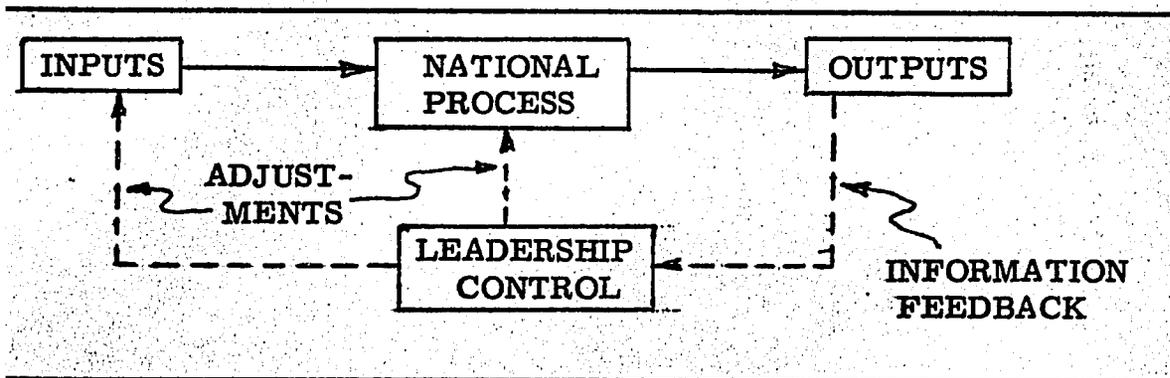
The systems approach can be most easily illustrated starting with its basic diagram using the first three factors and their relationships.



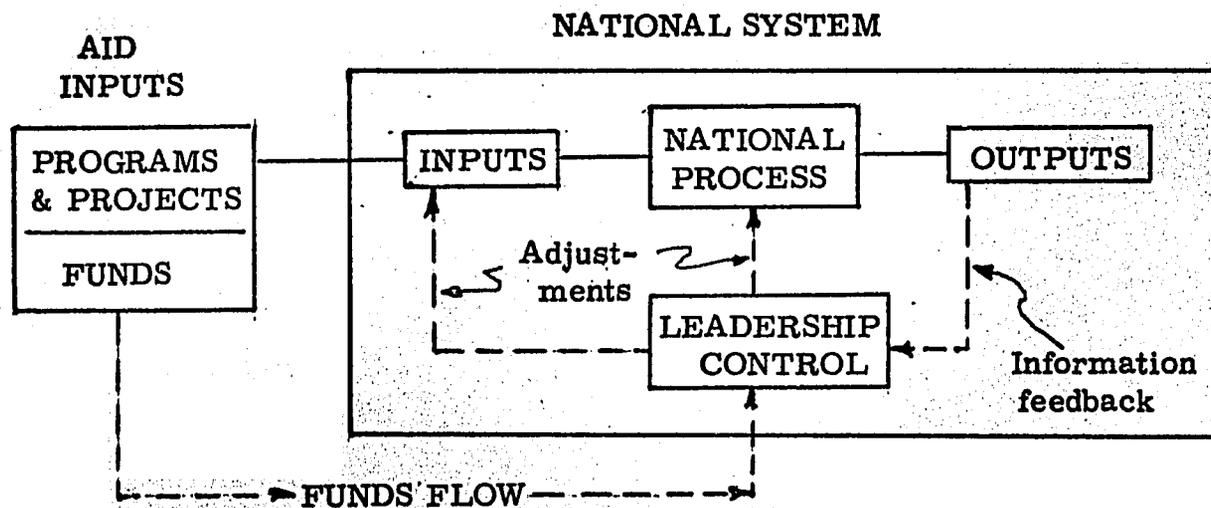
In this rather simple system, inputs that can be measured are shown as entering the process (which is too complex to be comprehended in all of its details and ramifications) where they are transformed into existing outputs that can also be measured.

In order to apply this concept to a broader national system, we need to include monitoring of the outputs as information feedback to the leadership control which has the power of adjustment or modification to the inputs and the national process in conformance with adopted national policy, as shown below.

NATIONAL SYSTEM



To this diagram, we now must add AID inputs from outside the national system. We could also add the rest of the world and its relationships but it is not necessary for our method of analysis. We merely assume that it is there and thus keep the diagram as simple as possible.



It is important to note that AID inputs enter the national system as programs and projects at the process level as well as funds at the level of leadership control. The repayment process is not indicated for purposes of simplicity but is assumed to be there.

Even more important is the fact that leadership control is free to either suppose, reduce or not support the effectiveness of AID inputs into the national process, either deliberately or inadvertently, through innumerable policy measures: national funding, fiscal, pricing, regulations, competing programs, and so on.

Because the AID funds flow moves independently of process inputs and AID does not vary funds according to the process outputs, the leadership control runs little risk of constraining the AID funds flow when anticipated outputs are not achieved. Thus leadership control is also free to pursue its own goals and purposes even when they are different from those of AID. In general, such differences may be quite subtle and hard to assess or oppose, particularly when the leadership control recognizes that AID is desirous of maintaining its mission and programs.

At this point in describing our methodology, we can summarize our handling of the three factors in the national system as follows:

- Inputs - analysis of AID programs and projects by their goals, purposes, direct outputs, and inputs.
- Process - analysis of the material process by selected policy factors and optional end-points in the spectrum of policy choices, which are considered in greater detail below.
- Outputs - analysis of national outputs in their many statistical forms involving growth and distribution of population, migration, aggregate and per capita incomes, etc.

C. The National Process

The question of compatibility between AID programs and projects with the national process and leadership control has been mentioned above.

Treatment of this problem depends on a somewhat arbitrary selection of process and control indicators. The following choice of indicators may require considerable modification by AID management, but whatever final choice is made, the concept of such an analytical tool is considered as essential to the methodology.

SELECTED INDICATORS

<u>Selected Policy Factors</u>		<u>Optional End-Points in Spectrum of Policy Choices</u>	
1.	Land	Ownership	- Tenancy
2.	Labor	Bargained	- Controlled
3.	Investment balance	Urban	- Rural
4.	Entrepreneurs	Private	- Public
5.	Market Intervention	Floors	- Ceilings
6.	Macro system	Pluralistic	- Unitary

Application of these indicators to AID program and project inputs provides a mean of analyzing them relative to the national process and outputs on the basis of reasonable expectations in addition to the normal analysis of comparative trends in outputs over time and between countries.

For example, when AID policy positions fall on one side of the spectrum of choices and the national policy positions fall on the same side, the AID inputs may be fairly expected to result in growing and beneficial outputs.

Alternatively, when AID and national policy positions fall on opposite sides of the indicator spectrum, it is unlikely that growth or benefits will reach expectations. A mixing of positions is also likely to result in poor output achievement.

Further, when policy positions are different or mixed, the AID and national processes lack compatibility and AID is placed in a position of just maintaining a presence in the country. In such cases, the typically grandiose goal statements observed during the study research can be quite misleading and should be scaled down to meet the reality of the prevailing situation and so avoid the unexplained surprise when outputs fall far short of goal expectations.

D. Structure - Urban and Rural

Here we introduce the fourth systems factor, structure, which is now essential to the methodology as a direct result of the study interest in the rural poor. In essence, the national process is no longer a unit in which a "trickle down" effect is expected to achieve AID's purposes.

Consequently, the national process becomes divided into two sectors, urban and rural, with responsibility to reach the rural sector and the rural poor in a more direct manner than formerly.

We are now face to face with the issue commonly found in rural development literature of whether or not there are structural differences between rural and urban areas that inhibit rural development or whether rural areas are but a sloping continuum from urban to rural in which similar projects may be expected to produce satisfactory results.

Our methodology has been designed to explore and analyze the possible structural differences important in evaluation the degree of assistance provided to the rural poor by past AID programs and projects in Brazil and Tanzania. It has also been designed in a manner compatible with computer application.

E. Definitional Problems

The term "rural" causes considerable analytical trouble even though it is commonly used and readily recognized conceptually. Webster's defines the concept as "living in country areas: engaged in agricultural pursuits: opposed to urban, as a densely populated area."

If we accept that to be rural is not to be urban, as logically we must, and if we define urban as densely populated areas with 2,500, 5,000 and 1,500 persons per square miles as we do in reference texts and data books, then rural has at best a "grey" definition and consequently urban and rural statistics have equally amorphous meanings and lack analytical utility.

In pursuit of a more useful definition of the term "rural," we must first face the issue common in the literature of whether rural

areas are a sloping continuum from urban centers or whether there is a structural discontinuity that makes rural problems and their potential solutions distinctly different from those applicable in urban areas.

First, we note the classical definition of a city as a place with a hinterland from which it draws more than it returns. The issue this poses leads to the second consideration: when does a village or a town cease to act as gathering and distribution function primarily serving and dependent on the agriculture sector and start to act as a city taking more from agriculture than it gives back?

It is possible to infer that towns and possibly villages are extended adjuncts of cities or urban centers, but this is not the same as saying that rural areas, which include agriculture as their dominant component, are a continuum of urban center activities unless agriculture can also be shown to be a continuum of the urban process.

Concepts of "poor" also raise questions of analytical definition when associated with wealth at the opposite end of a spectrum of capital, income and social well-being. More specifically, assistance to individuals or small groups and classes is generally quite different from assistance to aggregates such as a poor majority.

In any case, the rural poor must be located geographically as well as defined, if successful assistance programs and projects are to be designed to their benefit. In this regard, the methodology and study have been seriously handicapped by lack of information, data and statistics specifically related to the rural poor.

Early international assistance in developing precise rural definitions and data are of considerable urgency so that more effective programs and projects can be designed to deal with the aggregate problem of reaching the rural poor.

F. Summary

In summary, the analytical methodology is composed of the four principal factors:

- AID Inputs,
- National Process,
- National Output, and the
- Rural-Urban Structure

plus the relationship among them, which are applied in the following sections of the study and seminar.

CHAPTER FOUR
AID IMPACTS AND INCOME TRENDS

AID IMPACTS AND INCOME TRENDS

This chapter has three separate sections. Section A provides an overall summary of AID Inputs to Brazil and Tanzania over the period. Section B contains an analysis of pertinent AID programs in Brazil and Tanzania in two areas, economic development and productivity as related to the rural areas. The final section of the chapter (Section D) is devoted to an analysis of phenomena of income trends and the urban-rural duality. Section C also discusses the role of migration, since this is a very important factor in the two countries studied.

A Summary of AID Inputs: Brazil and Tanzania

The following two input tables present in summary our findings pertaining to AID effort in two countries: Brazil over the period 1960-1973 and Tanzania 1964-1971. The difference in time periods examined merely represents the availability of consistent and complete information regarding AID programs.

It will be noticed that the format of the tables has been designed in a manner that assists us in addressing the subject of AID impact upon the rural poor. The format was derived by first collecting data on every project and loan implemented over the periods reviewed. Next, the projects and loans were divided according to their stated goals into two broad categories, one representing intended impact upon the rural sector, and the other intended impact upon the urban sector.

Two other considerations led to the realization that such divisions were not entirely mutually exclusive and needed some modification. First, certain programs, particularly in the areas of health and education, did not specify in their goals an intended urban or rural benefit. As such, on the basis of further research, education was assigned a 20%-80% impact ratio for the rural and urban sectors respectively. And, health programs were assigned a 50%-50% impact ratio. Thus, the non-specific areas of health and education were distributed in both Sections I and II of the tables according to assigned percentages. The second consideration is the effect of migration. It was dealt with and is described in detail below

Three major sections of the tables summarize AID inputs:

- I AID project and loan inputs which, by stated design, intended to impact directly upon the rural sector.
- II AID inputs which, by intention, directly impacted upon the urban sector.

III The proportion of urban sector inputs which indirectly benefit rural to urban migrants who, owing to their transient status, may call for inclusion in a discussion of the rural poor.

As shown in Sections I and II of the tables, a determination of AID input entails a two-fold analysis: the narrative design or goals of intervention and the financial magnitude of intervention. Accordingly, using the project data sheets described in the research methodology section, goals were summarized briefly within each technical sector (agriculture, education, etc.) and figures summarize AID funds, both project and loan, actually disbursed. A more extensive presentation of program goals and project objectives will be offered at a subsequent point in this chapter.

The Brazilian table shows that \$77.3 million, or 6.8% of total AID inputs represent funding directed toward the rural sector. In contrast, \$1,056.6 million, or 93.2% of total funding, impacted primarily in the urban sector. Finally, as shown in Section III of the table, \$48.0 million, or 4.2% of the urban sector programs represent potential assistance to rural migrants to the cities. Obviously, the most striking characteristic of this table is the heavy "weighting" of AID effort in the direction of the urban sector of Brazil. As a footnote, we might add that the post 1973 era has witnessed a trend toward de-escalation of AID effort in Brazil.

We have also prepared, along with the two input tables, a graph showing the percentages of total resources devoted to the rural sector, as defined above, on an annual basis. The trend over the period covered appears clearly to be down.

Turning next to the table for Tanzania, we see that over the 1964-1971 period reviewed, \$6,344,000, or 26.2% of total AID funding was directed primarily at the rural sector. Impacting upon the urban sector was

\$17,835,000* , or 73.8% of total funding. Also 4.6% of urban sector funding represented potential assistance to the rural to urban migrants. Again, in terms of realized inputs, there is a noticeable weighting in favor of the urban sector. However, on the basis of sources consulted for the post 1971 period we note a situation in which the tendency has been toward increased emphasis on the rural sector, particularly in the crop and livestock concerns of the agricultural subsector.

Sources utilized to derive goal statements were the official program and project summaries found in the annual Country Assistance Program submissions, project Audit Reports, and Project Appraisal Reports. Project funding statistics were determined using the project financial statements in the CAP's and loan funding derived from the fiscal year Financial Loan Status Reports. At the end, the figures from the AID Controller's Office were checked to determine the global accuracy of the figures derived from these sources. It should be noted that considerable statistical inconsistency existed among the various documents reviewed and formats of the documents frequently changed over the period reviewed. Hence, the tables necessarily present a correlation of the sources which were available to the researchers.

The third and final section of the tables deserves some explanation regarding methodology. Migration has been assumed to result when the natural growth in the agricultural (rural) population is found to be greater than actual population in the agricultural sector. The difference between these two population figures represents net migration from rural to urban areas. This method of computation was then applied year by year to arrive at the figures in the penultimate row of the tables.

* The total excludes about \$20 million in loan disbursements during the period for the Tan Zam Highway. This was an Africa Regional Loan.

BRAZIL - AID INPUTS IN DOLLARS INCLUDING LOANS BY SECTOR BY PROGRAM CATEGORIES AND BY YEARS FY 1960 - 73

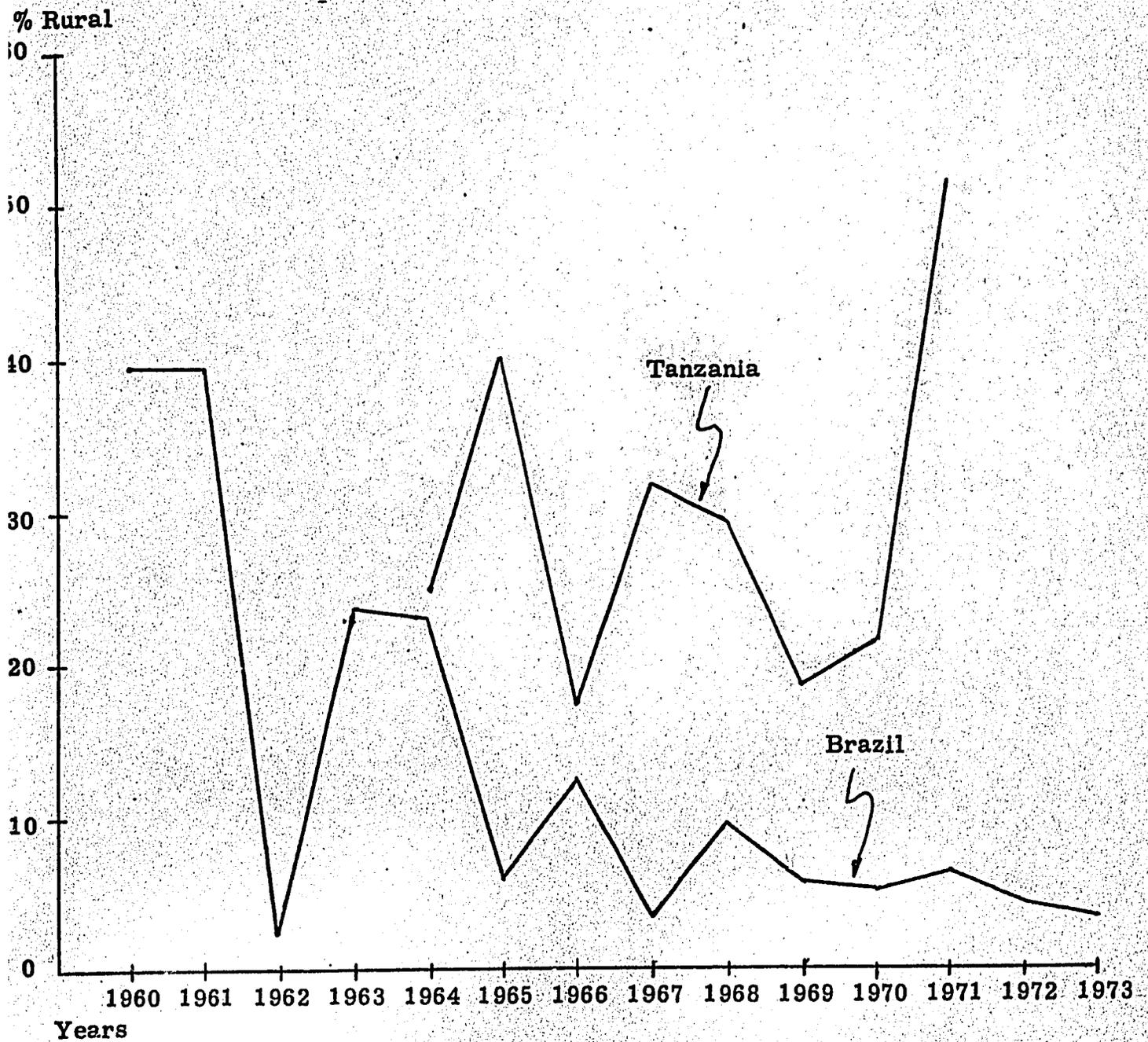
Code	Title	Principal Goals	FY 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	Total
(In millions of US dollars)																	
I. DIRECT RURAL SECTOR PROGRAMS																	
100	Agriculture	Education, productivity, income, marketing	2.2	2.0	1.1	1.3	1.9	7.7	12.8	7.7	7.5	4.4	4.1	4.5	3.1	2.5	62.8
200	Industry	Rural electrification	-	-	-	-	-	-	.1	-	-	-	-	-	-	.1	.1
300	Transport																
400	Labor																
500	Health	Malaria eradication (50%), Community health	.7	1.3	.5	1.4	1.1	.3	.3	.1	.8	.7	.4	.9	.1	-	8.8
600	Education	Elementary education, adult literacy: (20%)	-	-	.1	.1	.1	.2	.2	.2	.2	-	.1	.1	-	-	1.3
700	Pub. Admin.																
800	Community																
900	Enterprise	Rural industry	-	-	-	-	-	.8	.4	.4	-	-	-	-	-	-	1.8
960	Other	Food for work	-	-	-	-	.1	.4	.4	.4	.3	.2	.3	.4	.2	.1	2.8
Sub-totals			2.9	3.3	1.7	2.8	3.2	9.4	14.2	8.8	8.8	5.3	4.9	5.9	3.4	2.7	77.3
II. DIRECT URBAN SECTOR PROGRAMS																	
100	Resources	Natural resource development	-	-	-	-	-	-	1.2	1.0	-	12.0	-	-	-	4.1	18.3
200	Industry	Power - Telecommunications expansion, productivity	.3	.3	.4	.5	.1	9.1	18.7	37.1	31.9	26.5	19.7	20.1	11.9	18.1	194.7
300	Transport	Air, highway development and maintenance	.2	.1	.3	.3	.9	.5	3.2	19.0	10.2	7.5	5.4	7.1	1.7	1.6	58.0
400	Labor	Strengthen unions, Manpower planning	.1	.2	.1	.1	.1	.1	.4	.8	.7	.7	.8	.7	.6	-	5.4
500	Health	Develop urban - sewage systems, Health planning	-	1.7	.8	1.8	1.7	1.0	1.8	.9	3.1	4.1	2.7	6.9	7.5	5.6	39.6
600	Education	Industrial-vocational & University educ., teacher training	.8	.6	.9	1.1	1.9	2.7	2.3	2.3	2.7	1.5	2.6	6.2	10.4	8.2	44.2
700	Pub. Admin.	Public safety, Improve Public Admin. manpower, statistics	2.1	.8	1.7	1.7	1.2	1.3	1.8	1.6	1.9	1.2	1.9	1.9	1.5	.6	21.2
800	Community	Housing, Urban self-help, Orderly urban growth	.1	.1	-	-	.1	.1	.2	.5	.4	.4	.2	-	-	-	2.1
900	Enterprise	Credit expansion, Productivity, Investment, Capital Markets	-	-	-	1.5	1.2	2.7	7.0	7.2	2.2	.4	.2	.2	.1	-	22.5
960	Other	Technical Support, Food for Peace, Partners	.8	1.2	75.5	2.1	3.5	123.8	62.0	149.5	31.0	30.6	54.5	37.3	40.9	37.9	650.8
Sub-totals			4.4	5.0	79.7	9.1	10.7	141.3	98.6	219.9	84.1	84.9	88.0	80.4	74.4	76.1	1056.6
TOTAL AID INPUTS			7.3	8.3	81.4	11.9	13.9	150.7	112.8	228.7	92.9	90.2	92.9	86.3	77.8	78.8	1133.9
III. POTENTIAL MIGRANT PORTION IN URBAN PROGRAMS																	
Migrants (rural to urban) (est. in millions)			40	.45	.53	.65	.90	1.05	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50	14.58
Potential assistance (U.S. \$ in millions)			-	-	3.4	.1	.2	9.5	5.0	12.0	2.4	2.4	4.2	2.6	3.1	2.9	48.0

TANZANIA - AID INPUTS IN DOLLARS INCLUDING LOANS BY SECTOR, BY PROGRAM CATEGORIES AND BY YEARS

Code	Title	Principle Goals	FY	1964	1965	1966	1967	1968	1969	1970	1971	Total
(In thousands of U. S. dollars)												
I.	<u>DIRECT RURAL SECTOR PROGRAMS</u>											
100	Agriculture	Trained manpower, Productivity, Extension, Research, Credit		326	317	311	995	593	343	599	847	4331
200	Industry											
300	Transport											
400	Labor											
500	Health											
600	Education	Secondary vocational agricultural education		--	--	--	--	16	--	18	--	34
700	Public Admin.											
800	Community	Community development through self help approach		167	177	591	310	237	339	62	13	1896
900	Enterprise											
960	Other	Special rural projects assistance		--	--	--	18	39	24	--	2	83
	Subtotals			493	494	902	1323	885	706	679	862	6344
II.	<u>DIRECT URBAN SECTOR PROGRAMS</u>											
100	Resources											
200	Industry	Improve communications, Secondary industry development		54	--	--	--	--	--	--	--	54
300	Transport	Highway construction and maintenance		--	31	637	432	752	849	397	24	3122
400	Labor											
500	Health	Expand, Improve urban water supply		--	--	1665	771	173	239	89	9	2946
600	Education	Vocational, Technical, Secondary, Teacher training, Planning		161	254	1369	1004	497	731	1182	278	5478
700	Public Admin.	Public safety, Upgrade and Africanize public service, Youth training		40	163	239	262	212	558	444	245	2163
800	Community											
900	Enterprise											
960	Other	Technical support, Strengthen public works planning		1225	294	343	362	502	707	382	259	4074
	Subtotals			1480	742	4253	2849	2136	3084	2494	815	17835
TOTAL AID INPUTS				1973	1236	5155	4154	3021	3789	3173	1677	24179 *
III.	<u>POTENTIAL MIGRANT PORTION IN URBAN PROGRAMS</u>											
	Migrant (rural to urban) (est. in thousands)			96	39	31	22	18	10	9	14	237
	Potential assistance (U. S. \$ in thousands)			232	76	225	111	58	59	45	16	822

* Excludes about \$20 million loan disbursements for the Tan Zam Highway, which is an Africa Regional Project.

TRENDS IN RURAL SECTOR FUNDING
AS A PERCENTAGE OF
TOTAL AID INPUTS



Clearly, a rural to urban migrant does not indefinitely retain his rural status but rather eventually engages in urban activity, builds an urban home and, in effect, becomes a permanent urban sector member regardless of his socio-economic status. Based upon an extensive review of migration studies, a median urban absorption rate is assumed to be a three-year period. Thus, a running three-year sum of migration figures as a proportion of the total urban population was then applied to the Direct Urban Sector Program inputs to arrive at the potential migrant benefit from AID urban oriented programs. In conclusion, the final row of figures in the tables represents a potential effect upon the rural poor supplementary to the direct rural benefit shown in Section I.

The three sections of each table afford a summary analysis of AID effort both directly and indirectly impacting upon the rural sectors in Brazil and Tanzania. Whether or not this effort has reached the rural poor as a subcategory is a topic for further discussion and will be broached in later chapters.

B. AID Programs in Brazil and Tanzania

1. Brazil

a. Broad Urban-Rural Division

Turning first to Brazil, it will be noted from the AID input summary table in Section A above that 77.3 million dollars, or 6.8% of the total AID effort in Brazil over the period 1960 to 1973 was dedicated, according to our judgement and calculations, directly to the benefit of the rural sector. Of this total, 64.4 million dollars, a substantial majority, of the rural sector funding falls into the categories of agricultural and non-agricultural production and economic growth.

b. History of Agricultural Assistance in Brazil

Before focusing upon the goals of the agricultural sector programs, a brief historical sketch of US agricultural assistance to Brazil might prove valuable. The United States has provided agricultural assistance to Brazil since 1940. Until 1953, such assistance was provided via agreements related to specific problems or phases of agriculture. However, in 1963 the US Government and the Brazilian Government entered into the "Cooperative Program of Agriculture", the major feature of which was the creation of an autonomous entity within the Ministry of Agriculture called the Escritorio Tecnico de Agricultura. The main functions of this agency were to provide stability and continuity to agricultural development in Brazil and to work toward the integration of AID assisted projects into the Government of Brazil and Ministry of Agriculture budget financing.

Prior to 1963 Mission effort in agriculture was limited to a few productivity-oriented and higher level agricultural education projects. Since that time, however, a comprehensive agricultural program has been pursued, encompassing the four main concerns of production, marketing, education, and agrarian reform. In the peak year of activity, 1966, the

USAID MISSION operated 22 agricultural projects. While the multiplicity of active projects during this period indicates great ambition on the part of AID, it should be noted that management and coordination of so many projects proved difficult and resulted in irregular and haphazard project reviews. Due to the declining availability of dollar grant funds since 1968, the USAID Mission's technical assistance to agriculture has narrowed to a few selective projects and there has been a parallel emphasis toward loan funding. Thus, by 1971, the improved economic condition of Brazil in conjunction with the lack of AID dollar grant funds reduced the number of active agricultural projects to ten which, incidentally, also resulted in improved Mission management and evaluation of projects. *

c. Long Term Goals of AID Projects

The following presents a condensed list of long term goals and the contributory specific project objectives, which, in design form, intended to impact within the agricultural production and economic growth categories:

- (1) The general modernization of agriculture attained by the development of trained agricultural manpower. A subgoal of general modernization and manpower development was the professionalization of agriculture through the expansion of agricultural education at the university level.
- (2) The improvement of agricultural production, specifically a sustained increase in food production of approximately 6% per annum. The following project objectives contribute to this long-range goal:
 - (a) Increase in livestock production through the development of high protein corn for breeding programs.

* Source: "Report on the Examination of USAID/B Agricultural Sector Program for the Period January 1, 1963 through April 30, 1971." Audit Report #2-512-72-8, pages 2-3.

- (b) Relieve seed-related agricultural problems in N.E. Brazil through the development of the seed industry and seed technologists.
 - (c) Expansion of fertilizer use in the production of food products.
 - (d) Diversification of food production lessening dependence on coffee and developing additional export crops.
 - (e) Alleviation of drought conditions in the arid N.E. through the development of water resources for irrigation.
 - (f) Expansion of fish production in N.E. Brazil.
 - (g) Development of agricultural extension services, training and research.
 - (h) Improve and increase the production of protein foods of animal origin for human consumption.
 - (i) Development of a sound rural credit system.
 - (j) Expand the use of technological inputs to agriculture thereby raising the efficiency of agricultural output.
 - (k) Improvement of the economic status of the farmer.
- (3) The modernization of the agricultural marketing system to meet the domestic demand for agricultural goods and expand agricultural exports.

Subgoals include:

- (a) Increase marketing efficiency through the development of a national reporting service on wholesale prices for agricultural goods.

- (b) Increase minimum price levels for agricultural goods, thereby assuring farmers of a fair income.
 - (c) Reorientation from a consumer to a farmer-oriented marketing program.
 - (d) Development of farm service centers for the purpose of obtaining farm supplies, providing market outlets and storage facilities,
 - (e) Development of cooperatives to reduce agricultural marketing losses.
 - (f) Expansion and improvement of farm-to-market roads.
 - (g) Improvement of agricultural development planning and statistical analysis capability in the Ministry of Agriculture.
- (4) Achievement of agrarian reform.
- (a) Improvement of land tenure system.
 - (b) Encouragement of family-size farms.
 - (c) Development of interior Brazil through colonization and home-steading (See Chapter VII--Rural Development and Organization)
 - (d) Modernization of the sugar agro-industry and consequent establishment of family-size sugarcane farms.

The non-agricultural yet rural project objectives related to production and economic growth may be summarized in a single goal:

- (5) The industrial development of rural areas.
 - (a) Increase the number of small and medium locally-owned and operated industries in the rural areas.

- (b) Channeling of investment into the Northeast rural industrial sector.
- (c) Creation of a stable rural middle class capable of assuming a role in economic development.

AID effort was also directed at the rural labor movement, rural infrastructure development and rural welfare. These topics are reserved for later discussion in the welfare and rural development chapters.

d. Success or Failure of Selected Projects

Having listed in raw form the stated goals of AID intervention in the rural sector of Brazil, it is necessary to cite the progress of major projects in terms of their successes and failures with respect to goal achievement.

Based on a review of Audit Reports and PARS the number of partially or totally successful projects in Brazil during the period appear to outweigh those projects deemed unsuccessful by auditors and PAR teams. A particularly successful project beginning in 1964 was the Expansion and Improvement of Agricultural Credit Systems. By 1969 agricultural credit availability through established institutions increased from \$200 million in 1964 to \$1.4 billion in 1969. An additional 230 banks providing rural credit had been established yielding a 28% increase in farmer access to credit.

Equally impressive progress marked the project entitled Establishment of a National Market News Service. Prior to 1965 when the project agreement was signed, no marketing news service existed in Brazil. By 1972, however, a network of eight major marketing news areas had been created providing daily data on price fluctuations. Also, 24 of a targeted 36 radio stations and newspapers were carrying market news.

Significant progress had also been made in the training of participants who would become future functionaries of the Market News Service project. One other project in the agricultural marketing category, Improved Price Support and Food Stabilization, met with substantial success in its 1963-69 life span as evidenced by the training of the 17 planned participants and the establishment of a minimum price program in Brazil.

Satisfactory progress toward goal achievement was also noted in the Seed Industry Development project. Some significant project outputs over the 1964-1973 period include: the training of the targeted 88 seed technologists and in-country seed training of 2400 persons; the construction of 64 seed testing, processing and storage facilities and the passage of two pieces of seed legislation. While overall project progress is deemed successful in view of these outputs, the goal of increasing private sector involvement in the seed industry remained unrealized as evidenced by persistent and heavy governmental intervention in the industry.

Despite initial delays in the release of funds, slow recruitment of US technicians and lack of interest on the part of the Brazilian Government, the Agricultural Research and Extension project in its later stages boasted the training of 21 participants, establishment of 136 agricultural research projects and the conversion of 450,000 acres into arable land. Also successful was the Development of High Quality Protein Corn project which resulted in the production and marketing of synthetic opaque-2 corn to be used in government breeding programs.

The Ultrafertil fertilizer project which was loan funded over its 1966-1971 life span succeeded in modernizing the marketing structure for fertilizers, lowering fertilizer tariff barriers and thus prices, and focusing increased attention on the use of fertilizers evidenced by a 40% increase in the rate of demand for fertilizer. Six out of a planned seven

fertilizer plants were constructed and 14 distribution centers created. However, a lengthy delay in construction, the poor location of distribution centers and a 50% project cost overrun somewhat tainted the success of this project.

Two other agricultural projects may be included on the successful side of the ledger despite varying qualifications regarding actual goal achievement. The Feed Grains project, activated in 1963 and scheduled to terminate in 1975, had, by 1972, produced six of a planned 15 feed grain projects, provided 26,000 balanced rations to poultry and livestock, trained 60 participants, contributed to a 50% increase in the production and marketing of poultry and livestock, and improved the management and technical competence of farmers in livestock, poultry and grain production. Yet, project goal achievement was limited due to the fact that impact was primarily confined to six urban areas of the N. E. and local grain production had not been stimulated; rather grain importation from the prosperous South continued.

Finally, in a discussion of AID projects enjoying moderate or qualified success, we must look briefly at the four higher agricultural education projects which operated at the Federal Universities of Vicosa, Rio Grande do Sul, Ceará and the Superior School of Agriculture Luiz de Queiroz. Owing to differences in faculties, student bodies and curriculum emphasis, it is obvious that project progress varied from school to school. However, the attempt will be made to group these projects into a single category of higher agricultural education and to discuss overall outputs resulting from the projects. In the ten-year period 1963-73 several outputs are credited to these projects: 44 graduate agricultural science courses had been created, graduate enrollment in agricultural science programs had increased by 400 students or 800% over 1963 and undergraduates by 1529 students or 67%, 222 of a targeted 247 participants had been

trained, and 265 faculty members at the universities held advanced agricultural science degrees. While these achievements are noteworthy, they must be counterbalanced with the knowledge that agricultural extension and research in Brazil still lack qualified indigenous manpower and that despite the actual enrollment increase in university agricultural science programs, agricultural science enrollment is on the decline proportionate to other university disciplines. For example, in 1962 3.2% of the total university enrollment was in agricultural science, in 1971 that percentage had declined to 1.7. Further, with respect to the mechanics of project planning and evaluation, it appears that little attention was given in the planning stage to the ability of the universities to provide the necessary counterpart financial assistance and, in several instances, such assistance was clearly an impossibility. Contractor evaluation reports were irregular and lacking in substantive criticism resulting in the "drifting along of the projects, annual funding taken for granted".

We turn now to a brief discussion of certain projects which, by auditors, PAR teams, or on the basis of Checchi evaluation of project outputs as related to goal indications, have been relatively unsuccessful.

A project in the agricultural marketing category entitled Development of Distribution, Storage and Farm Service Centers fell far short of expectations over its life span 1963-69. Of the five Farm Service Centers planned, only one was constructed and equipped. Several problems have been cited as possible causes of project failure including: slow movement of equipment, delay in engineering plans and, most importantly, the lack of financial capacity on the part of agricultural cooperatives to finance the installation of AID grant equipment.

Another agricultural marketing project, Mogiana Agricultural

Diversification which began in 1967 experienced severe implementation difficulties. By 1971 none of the planned 15 Farm Service Centers had commenced construction although feasibility studies for 3 had been completed. The mission has attributed the construction delay to lack of interest and financial weakness on the part of the Mogiana Coffee Cooperative. As of 1971 there had been no significant progress toward the ultimate goal of diversification of production from coffee to basic food crops. Similar unsatisfactory progress characterized the Agricultural Economic Planning and Analysis project in the 1963 to 1969 period. Audit reports and PARS conducted on the project differed greatly in measurement of outputs, but both evaluation reports noted poor progress resulting in project termination, 1969. The main problem cited as causing project failure was the initial and persistent disinterest in agricultural marketing assistance on the part of the Brazilian government.

In the area of agricultural production, the Fish Production, Processing and Marketing project experienced little progress. While a 1972 PAR conducted on the project cited the training of participants and construction of laboratory facilities as noteworthy outputs and suggested that fish production had increased 334% over the 1965 base year, an audit report for the same period contradicted such success claiming an actual decline in fish production since 1965. Only 160 of a planned 2000 fishermen had joined cooperatives, improvement in fish cold storage and marketing was negligible, and fish crops continued to be unsanitary.

The Sugar Zone Modernization, Diversification and Reform project was ambitiously planned in terms of goals and output indicators; unfortunately in the 1965-1970 period none of the goals had been reached. Goal statements included: a 28% increase in sugar cane yields, a 12% increase in the industrial production of sugar, a 58% decrease in the manpower used to produce 1 ton of sugarcane, 30% decrease in harvest

season, the development of 14,500 family size sugarcane farms and 9,800 family size farms dedicated to diversified agricultural production, increasing agricultural raw materials for export, the development of rural human resources, land reform, and increasing rural employment. Juxtaposing this rather grandiose goal scheme to the recorded project outputs of thirty trained participants and the approval of 1 out of 10 proposed demonstration projects suggests unrealistic projections in the project planning phase. No land reform proposals in connection with this project had been formulated by 1971 and GERAN, the Special Group for Rationalizing the N.E. Sugar Agro-Industry, which the project had intended to fortify was abolished owing to institutional weakness.

One final project, the only non-agricultural rural project falling in the economic growth and production category, deserves mention. The Rural Industrial Technical Assistance project (RITA) experienced little success in its short 1965-1967 life span. Of the 7 proposed for participant training under this project only four received US training in industrial management, and upon return to Brazil refused to work with the project owing to the low salaries offered them. Two industrial plants had been formed in rural communities but information regarding their progress was not available. The planned establishment of a rural Industrial Development Institute never materialized and the project was prematurely terminated in 1967 owing to poor Brazilian participation, planning and budgeting.

2. Tanzania

a. Broad Urban-Rural Division

Focusing now upon AID intervention in Tanzania, approximately \$6,344,000 or 26.2 percent of the total project and loan funding in the 1964-71 period was, according to stated goals, intended to impact directly upon either the agricultural or non-agricultural subdivisions of the rural sector.

The majority of this funding, \$4,331,000, falls within the category presently under discussion, economic growth and productivity, and the remainder representing allocation to the categories we are calling Rural Welfare and Organizing the Rural Sector. During the period reviewed, there was no effort toward the development of rural industry or rural private enterprise signifying the total concentration of productivity, and growth effort in the realm of agriculture.

b. History of AID Assistance in Tanzania

United States assistance to Tanzania began in 1960 with a small technical assistance program under a bilateral agreement with the United Kingdom. In 1968, bilateral agreement between the United States and Tanzania came into existence. Prior to 1970, assistance was concentrated mainly in the areas of education, community development, transportation and water supply, consistent with the emphases of Tanzania's three-year (1960-1963) and five-year (1964-1969) development plans. Since 1970, U.S. technical assistance has focused on the agricultural sector, with road transportation as a supportive area of concern. By 1972 and 1973, the USAID program in Tanzania, in line with AID policy redirections, specialized in the two agricultural subsectors of food crops and livestock. Concurrent with this redirection was a trend toward increased loan funding in agriculture and the attempt to bring about interdependence between agricultural loans and projects.*

c. Long-term Goals of AID Projects

Having briefly sketched the history and trends of AID intervention in Tanzania, we will present, in condensed form, a grouped listing of long-term program goals and supplementary project objectives in the categories

* Source: "Report on Examination of the AID Program in Tanzania as of February 29, 1972." Audit Report # 3-621-72-16, pages 1-2.

or rural productivity and economic growth. Again, for clarification, all of the goal statements pertain to agriculture as rural entrepreneurial and industrial effort were absent over the period reviewed and rural welfare and organizational efforts will be discussed in a later Chapter.

- (1) Increase agricultural productivity.
 - (a) Increase cash crop production and decrease the subsistence agriculture contribution to agricultural production from 32 percent to 14 percent by 1980.
 - (b) Increase livestock productivity through the control of livestock disease, improvement of range water resources and the development of a comprehensive range management program.
 - (c) Implement a seed multiplication and distribution program for increased production and the diversification of farming through the development of new crop varieties.
 - (d) Develop sound land use practices and increase the supply of cultivable land.
 - (e) Carry modern agricultural technology to farmers.
 - (f) Encourage family-size farms and settlement farming.
- (2) Modernize the agricultural marketing system.
 - (a) Develop sound pricing policies for agricultural goods.
 - (b) Develop and upgrade farm-to-market roads to facilitate movement of goods from the rural areas for domestic use and export and reduce transport costs.
 - (c) Conduct marketing surveys and projects.
- (3) Increase peasant employment in the rural areas and increase the average family income from \$80 to \$500 per year by 1980.

- (4) Expand and improve the quality of services to the agricultural sector.
- (a) Increase agricultural extension services and research.
 - (b) Improve the quality of technical assistance and services to agriculture through strengthening the Ministry of Agriculture and establishing an agriculture planning unit in the Ministry.
 - (c) Provide training facilities (Farm Institutes) for farmers.
 - (d) Develop institutions and services which would meet the credit needs of farmers, generate rural savings to be utilized for rural development, and provide an escape from usury.
 - (e) Strengthen the cooperative movement. (To be discussed under organizing the rural areas).
- (5) Expand the contribution of education to agricultural development.
- (a) Develop local agricultural manpower resources and meet the demand for trained agriculturalists by expanding university level agricultural education.
 - (b) Stress the importance of agriculture in Tanzanian development, foster a positive perception of agriculture and provide a basic agricultural foundation for the college bound through the inclusion of agriculture vocational and agriculture science in secondary school curriculum. (To be discussed under rural welfare).

d. Success or Failure of Selected Projects.

Before embarking upon a highlighting of project achievement, it should be mentioned that assessment of projects was extremely difficult because: (1) Country Assistance Program submissions did not provide complete information regarding project outputs, (2) project PARs were conducted irregularly and appeared to be inconsistent in the measurement of outputs, and unlike in the case of Brazil, (3) project Audit Reports concerned themselves mainly with the operational aspects of project implementation.

rather than the substance of project achievement. Nevertheless, on the basis of the scant information available to the researcher, the attempt is made to assess the progress of selected projects in the 1964 to 1973 period.

In the area of agricultural education the grant funded project and contributory loans for the development of the Agricultural College at Morogoro achieved substantial progress over the period. The project, which began in 1960 under a contract with the University of West Virginia, sought, as a project purpose, the graduating of 70 diploma level agricultural students by 1968 and 50 per year in subsequent years, coupled with the development of an agriculture field officer corps to provide extension services, one field officer per 1,000 farmers. By 1967, the physical plant of the college had completed the construction of 29 buildings. By the next fiscal year, the project's participant training component had produced 66 trained participants and the college had exceeded its annual graduate rate of 50. Also, the college had an indigenous faculty of 20 agricultural science professors and an annual enrollment of approximately 150 students. In terms of its own output indicators, then, the project purposes were being achieved, but progress toward the larger goals of increased agricultural production and increased per capita farm income as a result of extension services and trained agricultural manpower was not recorded. As noted in the analysis, Section C, there is good reason for this.

Another project beginning in fiscal year 1962 was originally titled Agricultural Extension Services and later became Agricultural Improvement and Services. Over the six years reviewed of its life span two of a planned three farmer training centers had been constructed and were operating satisfactorily toward the goal of providing training in agricultural methods to some 1,800 farmers per year. Also, approximately 120 participant had been trained in the U.S. for eventual employment in

the Tanzanian Ministry of Agriculture or as field assistants.

The project entitled Agricultural Materials and Services, initiated in 1969, was short-lived owing to a necessary phase out consistent with AID policy redirection in 1972 and 1973. Strengthening the agricultural sector by improving Ministry level administration and management through the provision of OPEX personnel and the training of participants to replace them was the goal of this project. By the phase out period in 1973, eight OPEX personnel had been on board, 16 participants had completed training and were all employed within the Ministry of Agriculture and 16 more participants were undergoing training in the U.S.

Despite a full year's delay in construction the, Bunda-Nansio Road loan project begun in 1965 progressed satisfactorily in later years. The objective of this loan was to upgrade, widen, and weatherize an existing road for the purposes of improving the transport of cotton exports, and opening new lands for cultivation. Information more recent than 1968 was not available in the records; however, by that year 30 miles of the proposed 58 miles had been completed and were fully operative.

One final project deserves mention because of its achievements. Begun in 1970 and still active, the Masai Livestock and Range Management project was dedicated to the increasing of livestock productivity for domestic consumption and export through the development of a range management program, the improvement of range water resources, and the control of livestock diseases. Although serious personnel problems between technicians and their Tanzanian counterparts impaired progress in the 1970-1972 period, by 1973 the project had achieved moderate success in the areas of livestock marketing, water coverage of dry grazing areas, and the development of ranching associations. The increasing financial contribution by Masai ranchers to the project was also aiding the accomplishment of

project objectives.

All of the projects discussed above enjoyed good to moderate success in terms of progress toward stated goals. Owing to implementation difficulties, lack of support from the Tanzanian government, or failure to provide output indicators that would allow evaluation, three other projects must be deemed relatively unsuccessful.

The Agricultural Research project was proposed in 1970 and expected implementation by the following year. Although a five-man contract study team arrived in later 1971 to begin work, personnel problems caused implementation delay. As of 1973, no significant progress toward the goal of determining Tanzanian long-range agricultural research needs had been made, no Project Implementation Paper (PIP) had been prepared, and an attempt to establish quantitative project targets using the logical framework had not been effectively produced. The only in-process output recorded was the training of four participants.

An agreement signed in 1971, created a project entitled Agricultural Marketing Development which, over its 9-year expected life span, intended to improve agricultural marketing in Tanzania by strengthening the key areas of accounting, storage and pricing policies. Although the four OPEX technicians had arrived and begun work by 1973, a project evaluation report offered few substantive remarks regarding the measurement of progress owing to the failure of project designers to stipulate quantitative output indicators. Again, a PIP had not been prepared for the project.

Finally, the Seed Multiplication and Distribution project deserves discussion. Initiated in 1970, the project specified as its goals the following: preparation of a government "Seed Act", the evaluation of demand for and effective utilization of seed, the operation of three experimental seed farms, the establishment of a seed company and seed distribution system, and,

in general, the improvement and diversification of agricultural production by developing seeds for new crops. By 1972, 500 acres of new land were under cultivation for seed but progress toward other goals was impeded by contract personnel problems, lack of support from the Government of Tanzania, and poor project management. Inadequate harvesting equipment was being employed on the single experimental farm and there were no facilities provided for the drying of seeds. Post 1972, some corrective action had been taken yielding a turnover in contract personnel, the formation of a seed company, the preparation for participant training, and the deletion of the overly ambitious distribution function of the project. Despite these improvements, only 40 percent of the seed grown in the 1972-1973 period was considered seed-grade quality.

3. Conclusion

We have seen from the preceding discussion of rural productivity and economic growth projects in Brazil and Tanzania that no single statement can be proposed regarding the effectiveness of AID intervention in each country. Program and project goals were frequently overstated, but failure to reach over ambitious goals cannot automatically be considered failure of the project. Nor can we suggest that all projects achieved or failed to achieve their goals. Most projects enjoyed some degree of success which was counterbalanced by weaknesses stemming from internal AID problems related to implementation or resulting from conflict between AID policies and host country imperatives and thus the degree of true host country support for projects.

Having concluded an analysis of AID intervention at the project level it is now necessary to begin a more comprehensive analysis of the national economic systems in which the rural sectors in Brazil and Tanzania exist. It is hoped that such an analysis will shed some light on the inherent problems of providing assistance to the rural poor and lead to notions of approaches

which will offer greater chance for success, both on the project level and on the real impact level.

C. Income Growth Trends and Migration

This section on economic growth examines the effect of economic growth on the agricultural sector and the rural poor. In addition, rural to urban migration or rural mobility is considered as it effects sector income trends.

1. Income Trends

a. General

Graphs A and B illustrate the income trends per capita at constant prices for Brazil and Tanzania, respectively. Each graph shows the trend curve for the nation as a whole, which is bracketed by curves for the agriculture and non-agriculture sectors as surrogates for the rural and urban sectors. These curves were developed from the data in Tables 1-6.

Of primary interest to the rural poor and a cause of their poverty is that their sector progressively falls further behind that of their cousins in the urban sector as the economy grows.

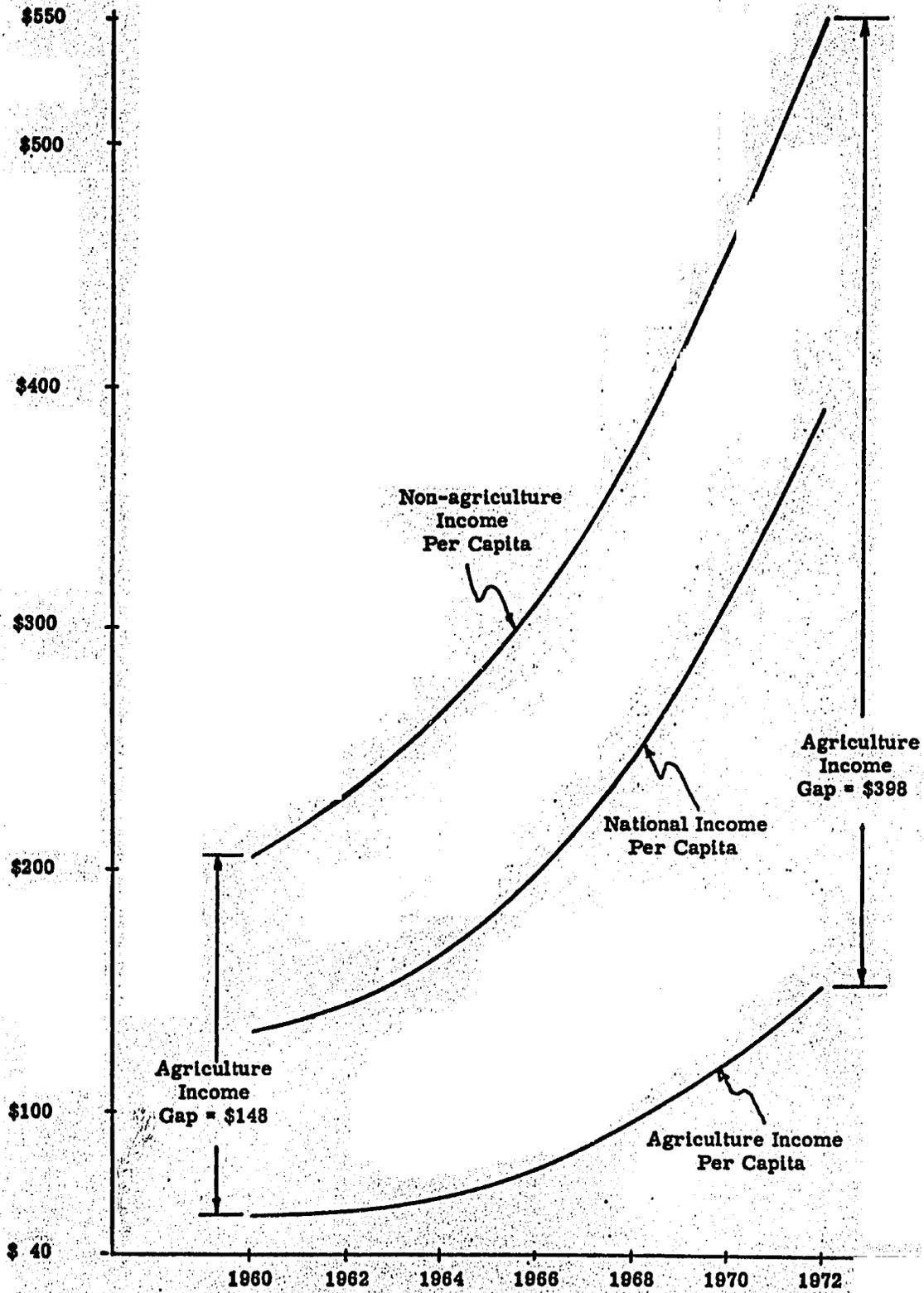
In Brazil this income "gap" increased over two and one-half times, in absolute dollars, during the twelve years from 1960 to 1972. In Tanzania this "gap" increased about one and one-half times in the ten-year span from 1962-1972.

Here we have what is perhaps the clearest indication of why there is a problem concerning the rural poor, and how the rural poor perceive themselves to be poor when their relative purchasing power is undergoing such rapid and adverse change.

This perception is true even in Brazil where real rural income also increased rapidly but failed completely to reduce the ever widening income

BRAZIL: INCOME TRENDS PER CAPITA
(Regression Curves in Constant U.S. Dollars)

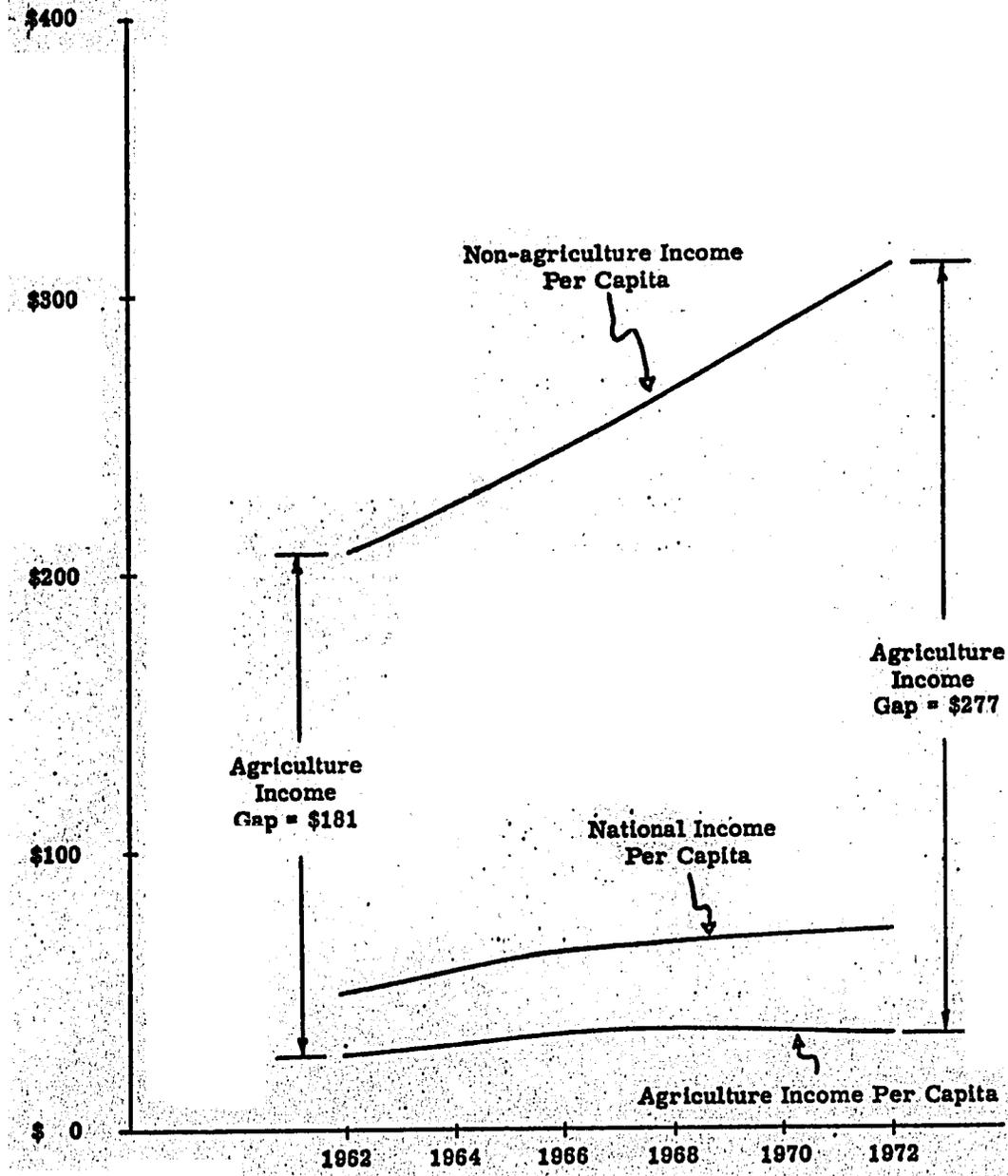
GRAPH A.



Source: Tables 1, 3, and 5

TANZANIA: INCOME TRENDS PER CAPITA
(Regression Curves in Constant U. S. Dollars)

GRAPH B.



Source: Tables 2, 4, and 6

"gap". In Tanzania the situation of the rural sector was much worse because there was no increase and even a slight decline in real per capita income.

This relative income deprivation appears sufficiently characteristic, in the two countries studied, to serve as part of any definition of "rural poor". That is to say, the rural poor are people who find themselves living in rural places and in a situation where there is an increasing income "gap" relative to people living in urban places.

The difference between income trends in Brazil and Tanzania is so marked that we must enquire into the probable causes. Our methodology requires that we examine the question in four categories according to inputs, process, outputs and structure.

b. Brazil and Tanzania

The effective income outputs have already been considered above and have demonstrated the need for further investigation. The basic agriculture inputs of soil, climate, practice, and fertilizer give quite different yields in the two countries as indicated below.

<u>Selected Crops</u>	<u>Average kilograms per hectare</u>	
	<u>Brazil</u>	<u>Tanzania</u>
Wheat	817	1,167
Rice, paddy	1,529	1,267
Corn	1,331	637
Beans, dry	650	481
Cassava	4,466	7,002
Peanuts, in shell	1,015	710
Seed Cotton	660	444

Source: "Production Yearbook 1973, FAO

Except for wheat, the yields of these crops in Brazil were considerably better than in Tanzania.

In Brazil AID inputs to agriculture included the introduction of high protein corn and pushed the use of fertilizer by assistance in developing the Ultrafertil Fertilizer Plant. These inputs encouraged better agriculture practices and must account for part of the higher yield picture in Brazil as compared with Tanzania. In dollar terms AID inputs to the Brazilian and Tanzanian rural sector were 77.3 and 6.3 million dollars respectively, over the periods studied and these differences may also help to explain the differences in yields.

The process and structure effecting agriculture and rural income levels involve migration and policies involving rural mobility. The effect of policies is discussed in the section on productivity, and migration itself is handled in the next section.

2. Rural to Urban Migration

Graph C illustrates the trends in migration for Brazil and Tanzania. Time series data on rural to urban migration was not found to be available during the study research period. Population data was available, however, and by interpolating annual population growth rates it was possible to roughly estimate the annual expected growth of the rural population and, by subtracting census data for the agriculture population, to arrive at an indicated yearly migration for each country.

Though such an approach includes specific errors, such errors are overwhelmed by the magnitudes involved so that the trends and their implications stand out in clear juxtaposition with one another as can be seen in the graph and in Tables 7 and 8.

Annual migration in Brazil is seen to rise at a rapid rate and in great numbers, on the order of 1.4 million persons in 1972. In Tanzania the rate declined and the numbers were relatively small, on the order of 15 thousand in 1972.

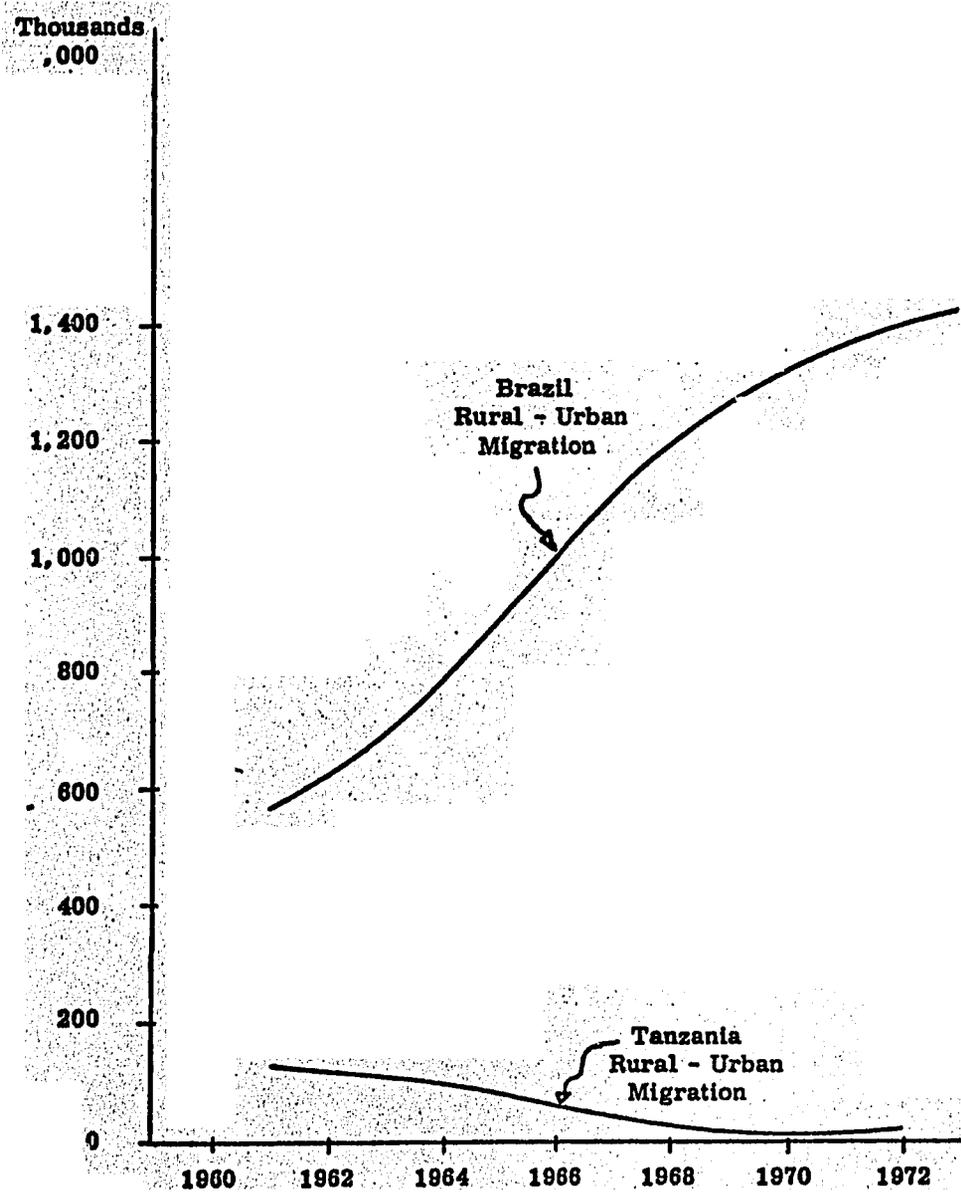
The heavy migration in Brazil kept the agricultural population almost steady over the period of the study. As a consequence the non-agricultural population grew at almost double the national rate.

As the total population increased, the demand for food and, in turn, the total income to the agricultural population increased proportionately. The agricultural population remained steady and thus agricultural income per agriculture capita also increased as we found in the earlier section on economic growth trends.

The agricultural sector in Brazil can thus be seen to have exported some of its rural poor to the urban centers where they act to effectively lower the average non-agriculture income per capita. In spite of this effect the income "gap" between the two sectors continued to increase as

RURAL TO URBAN MIGRATION
(Regression Curves in Thousands of Persons)

GRAPH C.



Source: Tables 7 and 8

we have already seen. Without the migration, the income "gap" would have increased even more rapidly.

In Tanzania the rural to urban migration took on a downward slope in contrast to Brazil where the slope was upward. The result, however related, was that the agricultural population and the agricultural income per capita was stagnant rather than rising as in Brazil.

The national process and leadership control in Brazil had a relatively open policy toward migration to the cities, while in Tanzania the stated policy was to restrain the rural to urban migration through the Ujamaa Village program of settling the rural population in villages where they would engage in communal farming on land held in common. This policy and the lack of migration more than likely had some causal effect on the stagnant per capita agricultural income level.

The difference in migration policy and its effect on the rural population may, if we wish to go so far, even have had a constraining influence on the rise of per capita incomes in the urban sector of Tanzania, as indicated by the more slowly increasing income "gap" in that country. However, in any case, the rural poor appear to have been denied any increase in income while the urban population benefitted quite noticeably.

Thus we can observe from the research findings that improved agriculture inputs and out migration can together help increase rural income levels while a no migration policy appears to stifle both the absorption of improved agriculture inputs and agriculture income levels.

The more important study finding in our two countries is that neither improved agriculture inputs or migration policy appears to have acted effectively in solving the aggregate problem of the rural poor, the ever increasing income "gap".

No "ready made" approach to solving this problem was discovered during the research or study. It does appear that further research and analysis is needed, particularly of the structural factors in the national process before we can, if possible, design programs and projects to deal successfully with the problem of the increasing income "gap".

In order to progress in this direction we examine income distribution and employment in the next section.

ANNEX - TABLES

TABLE 1

Brazil: National Income and Population Trends

<u>Year</u>	<u>National Income</u> (1960 US \$ in millions)	<u>National Population</u> (thousands)	<u>Per capita Income</u> (1960 US \$)
1960	9,283	70,967	131
1961	10,130	73,088	139
1962	11,232	75,271	149
1963	13,515	77,521	174
1964	11,713	78,809	149
1965	12,486	81,006	154
1966	15,879	83,343	190
1967	21,722	85,748	253
1968	20,730	88,222	235
1969	23,202	90,768	256
1970	30,343	93,204	325
1971	33,686	96,082	350
1972	38,788	98,854	392

Sources: Dollar amounts calculated by Checchi using "International Financial Statistics" IMF, 1975 and earlier; and "Statistical Abstract of the United States" USA, 1974 and earlier; Population from "Demographic Year Book 1973", UN and "Production Year Book" FAO, 1974.

TABLE 2

Tanzania: National Income and Population Trends

<u>Year</u>	<u>National Income</u> (1960 US \$ in millions)	<u>National Population</u> (thousands)	<u>Per capita Income</u> (1960 US \$)
1960	---	10,328	---
1961	---	10,580	---
1962	533	10,842	49
1963	588	11,112	53
1964	650	11,389	57
1965	713	11,674	61
1966	780	11,966	65
1967	847	12,267	69
1968	875	12,578	70
1969	887	12,900	69
1970	916	13,236	69
1971	938	13,585	69
1972	1,036	13,951	74

TABLE 3

Brazil: Agriculture Income and Population Trends

<u>Year</u>	<u>Agriculture Income</u> (1960 US \$ in millions)	<u>Agriculture Population</u> (thousands)	<u>Per capita Income</u> 1960 US \$)	<u>AID Inputs Per capita</u> 1960 US \$)
1960	2,110	35,155*	58	.80
1961	2,207	37,026	60	.88
1962	2,314	37,919	61	.44
1963	2,685	38,832	69	.70
1964	2,293	39,768	58	.76
1965	2,397	40,726*	59	2.15
1966	2,959	40,708	73	3.16
1967	3,977	40,690	98	1.90
1968	3,702	40,672	91	1.83
1969	3,983	40,654	98	1.05
1970	5,042	40,635*	124	.92
1971	5,419	40,623	133	1.06
1972	6,206	40,611	153	.59

Sources: Income extrapolated by Checchi and Company from data in, "Yearbook of National Accounts," UN, Feb. 1975 and earlier; Population,* "Production Yearbook" FAO, June 1974 and earlier, inter-quinary years intercalculated by Checchi and Company.

TABLE 4

Tanzania: Agriculture Income and Population Trends

<u>Year</u>	<u>Agriculture Income</u> (1960 US \$ in millions)	<u>Agriculture Population</u> (thousands)	<u>Per capita Income</u> (1960 US\$)	<u>AID Inputs Per capita</u> (1960 US \$)
1960	-	9,228*	-	-
1961	-	9,357	-	-
1962	259	9,498	27	-
1963	280	9,651	29	-
1964	303	9,815	31	.05
1965	318	9,994*	32	.05
1966	353	10,235	34	.08
1967	367	10,492	35	.11
1968	373	10,767	35	.07
1969	367	11,059	33	.05
1970	373	11,370*	33	.05
1971	391	11,695	33	.05
1972	410	12,030	34	-

Sources: - Income extrapolated by Checchi and Company from data in, "Yearbook of National Accounts," UN Feb. 1975 and earlier; Population, * "Production Yearbook," FAO, June 1974 and earlier, inter-quinary years intercalculated by Checchi and Company.

TABLE 5

Brazil: Non-Agriculture Income and Population Trends

<u>Year</u>	<u>Non-Agriculture Income</u> (1960 US \$ in thousands)	<u>Non-Agriculture Population</u> (thousands)	<u>Per capita Income</u> (1960 US \$)	<u>AID Inputs Per capita</u> (1960 US \$)
1960	7,173	34,812	206	1.26
1961	7,923	36,062	220	1.37
1962	8,918	37,352	239	20.79
1963	10,830	38,689	280	2.27
1964	9,420	39,041	241	2.60
1965	10,089	40,280	250	32.68
1966	12,920	42,635	303	20.96
1967	17,745	45,058	394	42.85
1968	17,028	47,550	358	14.94
1969	19,219	50,114	383	13.65
1970	25,301	52,569	481	12.82
1971	28,267	55,459	510	10.57
1972	32,582	58,243	559	9.03

Sources: Population and income by difference between national and agriculture data.

TABLE 6

Tanzania: Non-Agriculture Income and Population Trends

<u>Year</u>	<u>Non-Agriculture Income (1960 US \$ in millions)</u>	<u>Non-Agriculture Population (thousands)</u>	<u>Per capita Income (1960 US \$)</u>	<u>AID Inputs Per capita (1960 US \$)</u>
1960	---	1,100	---	---
1961	---	1,223	---	---
1962	274	1,344	204	---
1963	308	1,461	211	---
1964	347	1,574	220	.89
1965	395	1,680	235	.41
1966	427	1,731	247	2.23
1967	480	1,775	270	1.41
1968	502	1,811	277	1.00
1969	520	1,841	282	1.66
1970	543	1,866	291	1.02
1971	547	1,890	289	.31
1972	626	1,921	326	---

Sources: Population and income by difference between national and agriculture data.

TABLE 7

Brazil: Rural to Urban Migration

<u>Year</u>	<u>Attributed* Agriculture Population by Years (thousands)</u>	<u>Agriculture Population (thousands)</u>	<u>Indicated Migration by Years (thousands)</u>
1960	---	36,155	---
1961	37,601	37,026	575
1962	38,507	37,919	588
1963	39,436	38,832	604
1964	40,385	39,768	617
1965	41,358	40,726	632
1966	41,744	40,708	1,036
1967	41,807	40,690	1,117
1968	41,870	40,672	1,198
1969	41,932	40,654	1,279
1970	41,954	40,653	1,302
1971	41,994	40,623	1,371
1972	42,004	40,611	1,393
1973	42,032	40,600	1,432

* Based on national growth rates and reported migration of about 10 million during the decade 1960-1970, see page 31, "Summary of AID Inputs and Socio-Economic Conditions in Brazil and Tanzania", Checchi and Company, February 1975.

TABLE 8

Tanzania: Rural to Urban Migration

<u>Year</u>	<u>Attributed* Agriculture Population by Years (thousands)</u>	<u>Agriculture Population (thousands)</u>	<u>Indicated Migration by Years (thousands)</u>
1960	---	9,228	---
1961	9,480	9,357	123
1962	9,617	9,498	119
1963	9,763	9,651	112
1964	9,921	9,815	106
1965	10,090	9,994	96
1966	10,274	10,235	39
1967	10,523	10,492	31
1968	10,789	10,767	22
1969	11,075	11,059	16
1970	11,380	11,370	10
1971	11,707	11,695	12
1972	12,045	12,030	15

* Based on national growth rates.

CHAPTER FIVE
INCOME DISTRIBUTION, EMPLOYMENT, PRODUCTIVITY AND
TECHNOLOGY: SYSTEMIC RELATIONSHIPS

**INCOME DISTRIBUTION, EMPLOYMENT,
PRODUCTIVITY AND TECHNOLOGY
SYSTEMIC RELATIONSHIPS**

In order to understand the economic and policy significance of the aid impacts and income trends examined in the previous chapter, it is necessary to probe for fundamental explanations. This chapter employs Lorenz curves and associated techniques to interrelate data on income distribution, employment, productivity and technology. Fundamental system constraints affecting the circumstances of the rural poor are then identified.

A. Income Distribution and Employment

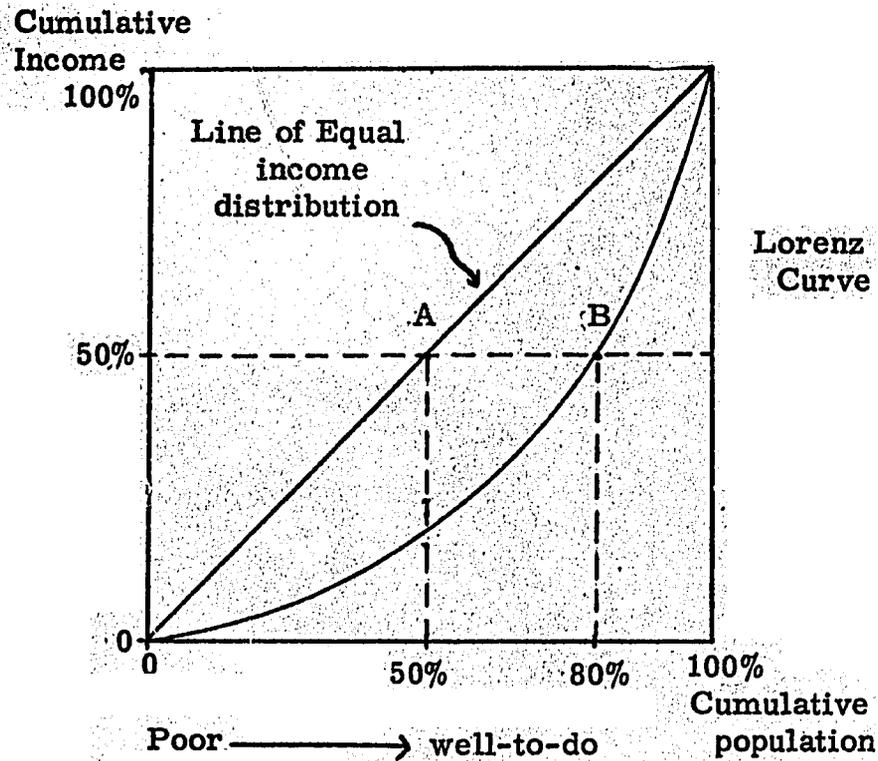
Certainly income distribution and the rural poor are interrelated and interacting subjects. That is to say, that inequality of income distribution is the phenomenon which makes the poor poor in a relative sense. Thus, it is remarkable how little knowledge of this ancient topic is assembled in a workable manner. For example, the UN publication list of some 1,200 titles includes only three titles specific to income distribution and one to mass poverty.

Thus, the issue to be faced in dealing effectively with the rural poor is likely to be one of developing a body of distributive knowledge before jumping ahead in a trial and error search for techniques that can be successfully applied. If the necessary knowledge is truly lacking, as our limited two-country research effort suggests, then we need develop analytical tools to improve our understanding of of underlying relationships.

For this purpose, Checchi has selected the Lorenz curve as its analytical tool because it illustrates in a most effective graphical manner the nature of any distribution problems, for example, social services, educational opportunities, wealth, income, and so on. It also serves to illustrate the process and structural relationships of the poor segment in any population.

When statistical data on any subject including those above is available, it can be handled statistically in the form of Lorenz coefficients or Gini indexes.

Very briefly, the Lorenz curve is derived by plotting the cumulative proportion of people (ranked from the poorest up) against the cumulative share of total benefits which they receive. In the illustration below, income has been used as the pertinent benefit.



Example: If we assume that the income distribution data develops a Lorenz curve as indicated above, we can then see along the horizontal broken line at the fifty percent income level two points of intersection, A and B.

In this coordinate box with equal sides of 100 percent each, a diagonal line representing equal income distribution is drawn from the lower left corner to the upper right one. Thus, point B intersects this line and shows that 50 percent of the population receives 50 percent of the income. This equality will be found to occur at every point along this diagonal line.

Point B intersects the Lorenz curve and shows that actual income distribution is such that it takes 80 percent of the population to cumulate 50 percent of the income. That is to say, everyone to the left of point B and its vertical broken line must receive less than the average income per capita and everyone to the right receives more.

Thus, the sag in the Lorenz curve is indicative of how unequally benefits are distributed and the ratio of the area between the diagonal line and the curve to the total triangular area under the diagonal represents the Lorenz coefficient and Gini index.

Only by collecting the necessary distributive data at the local level can comparative areas of poverty be located statistically so that assistance can be delivered to the rural poor in an effective aggregate manner.

1. Income Distribution in Brazil and Tanzania

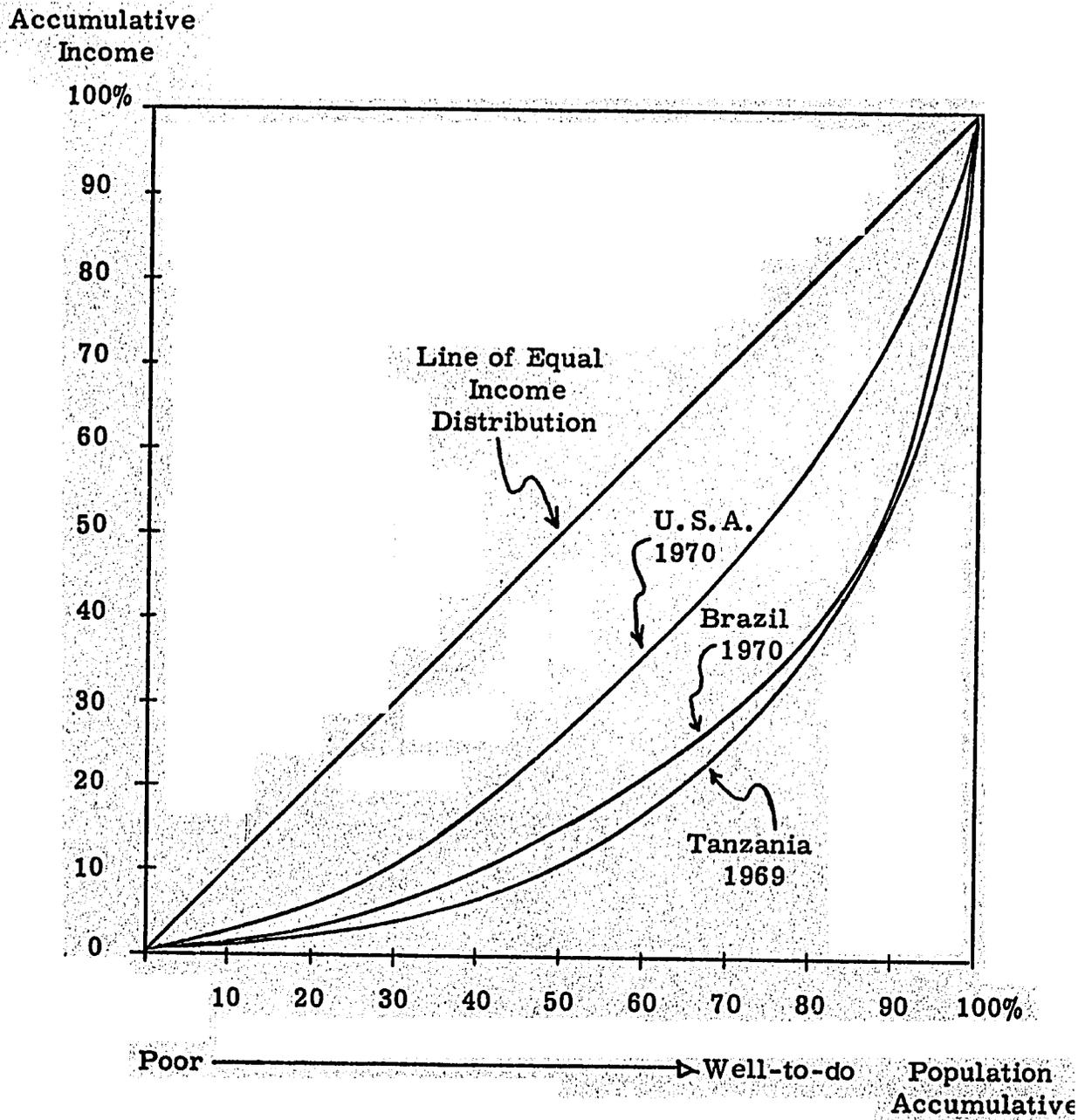
Graph D illustrates income distribution for the two countries Brazil and Tanzania, as well as for the United States which is included for purely comparative purposes.

The greater the sag in the curve, the more unequal is the distribution of income. Tanzania, where equality is a major tenant in its stated policy in a highly controlled system, shows the most unequal income distribution. On the hand, Brazil with a more open public policy shows a somewhat more equal distribution and the USA shows an even more equal income distribution.

The next Graph E for Brazil is of considerable interest because it shows that as development proceeded, the distribution of income became more unequal.

INCOME DISTRIBUTION BY PERCENTILES
OF POPULATION

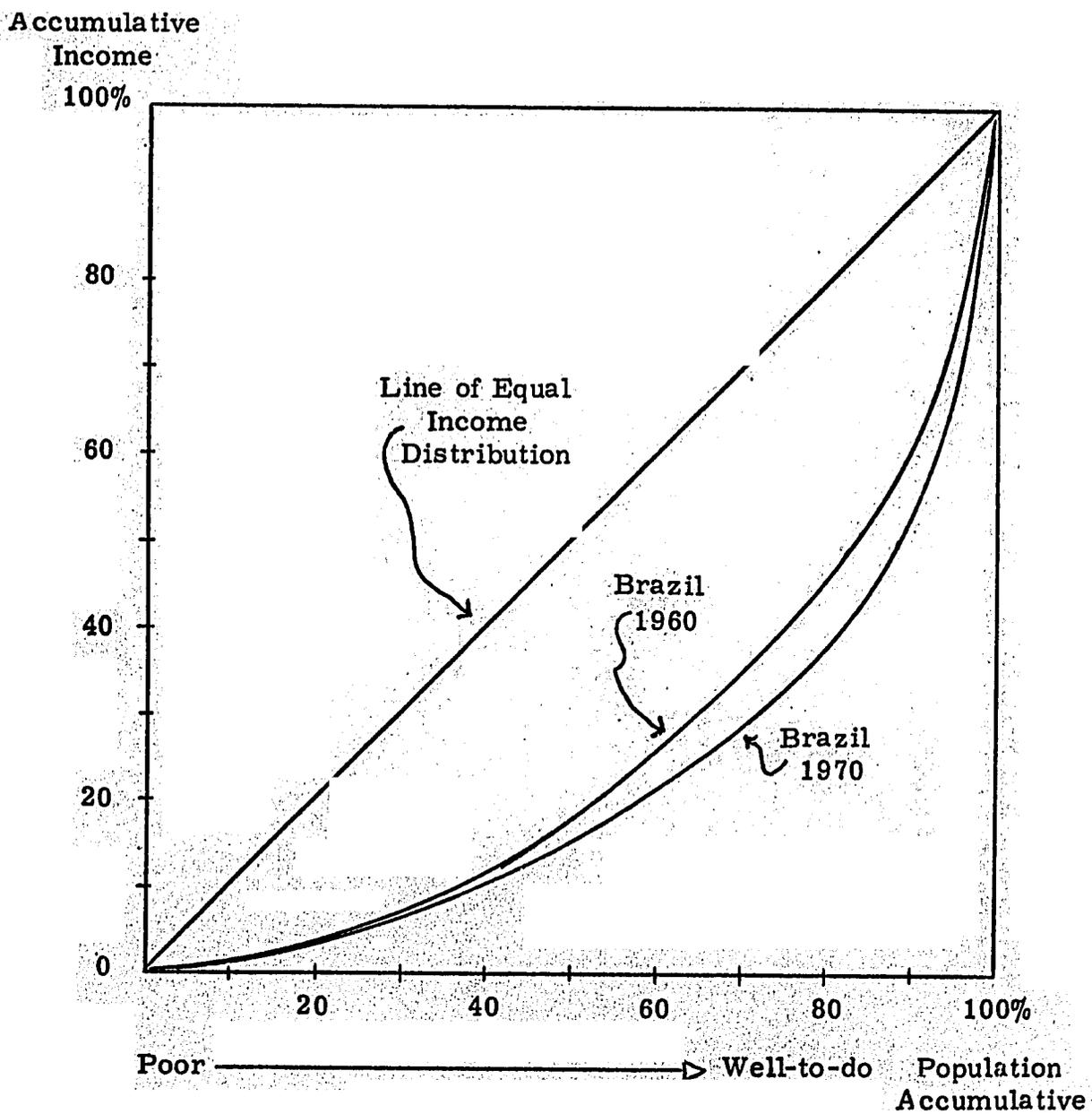
GRAPH D.



Source: Tables 9 and 10

BRAZIL: INCOME DISTRIBUTION BY
PERCENTILES OF POPULATION
1960 and 1970

GRAPH E.



Source: Table 9

This condition, which we initially observed as the increasing income "gap," is thus further confirmed. Comparable data was not found during the study period for Tanzania. This is unfortunate because a single example is a poor basis on which to confirm this apparent effect.

Graph G (rural) and Graph H (urban) include both countries and are of interest because they show that the rural and urban positions are reversed. That is, in Tanzania rural income was more unevenly distributed than in Brazil. In contrast, the urban income in Tanzania was more evenly distributed than in Brazil. In both cases, the average incomes in Brazil were higher than in Tanzania.

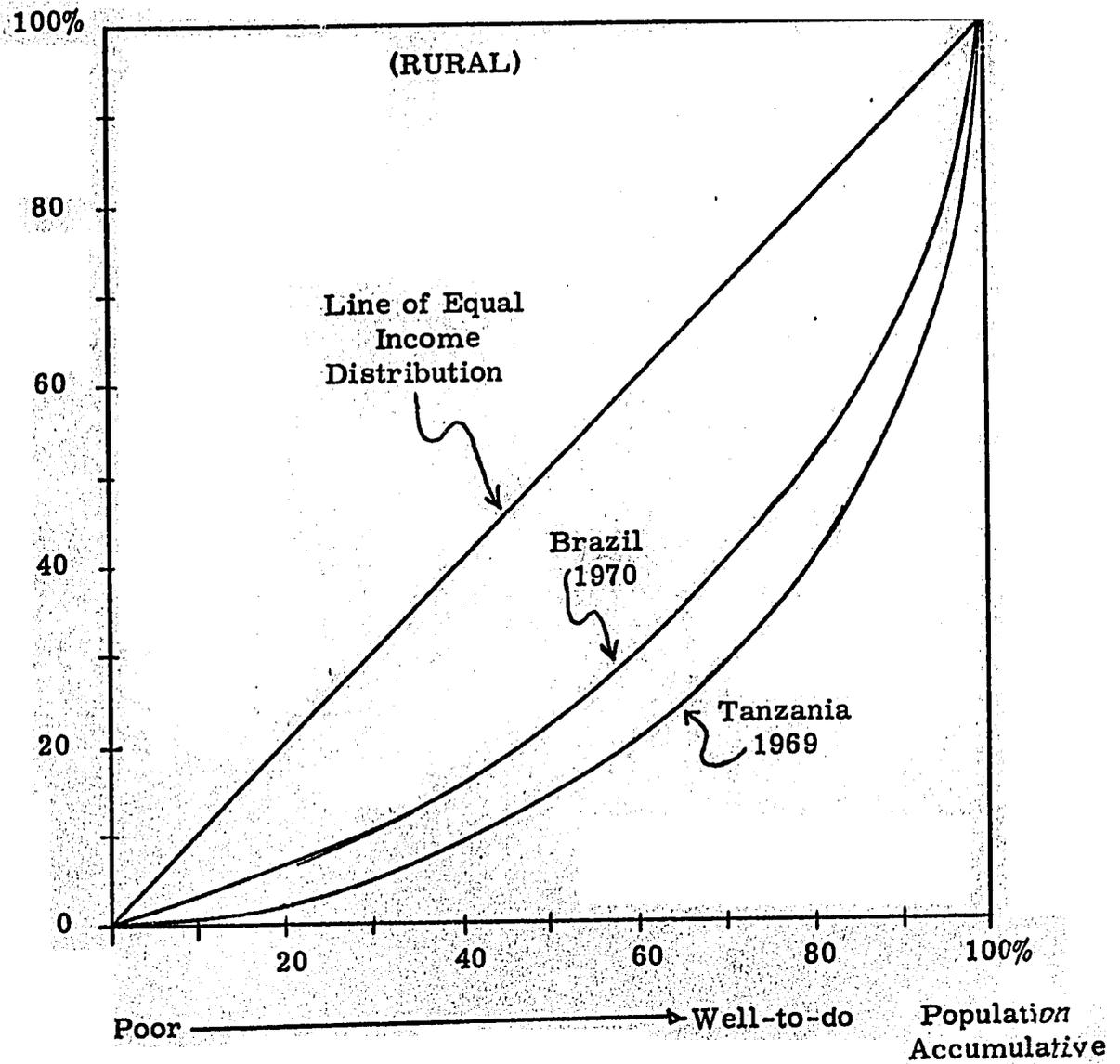
A possible explanation of this apparent anomaly may be found in the heavy migration in Brazil which increased the number of poor people in urban centers and thus helped to create more uneven income distribution in the urban sector, while the small migration in Tanzania kept the rural poor in place and thus tended to induce more uneven income distribution in the rural sector.

More important to the analysis and the problem of the rural poor is the fact that we are dealing with a systemic problem. Efforts that change conditions in one direction tend to cause opposite effects in the other direction. Thus, control policy when applied to the national process may prove incompatible so that the output results may be quite different from those expected.

AGRICULTURE (RURAL) INCOME
DISTRIBUTION BY POPULATION
PERCENTILES

GRAPH G.

Accumulative
Income

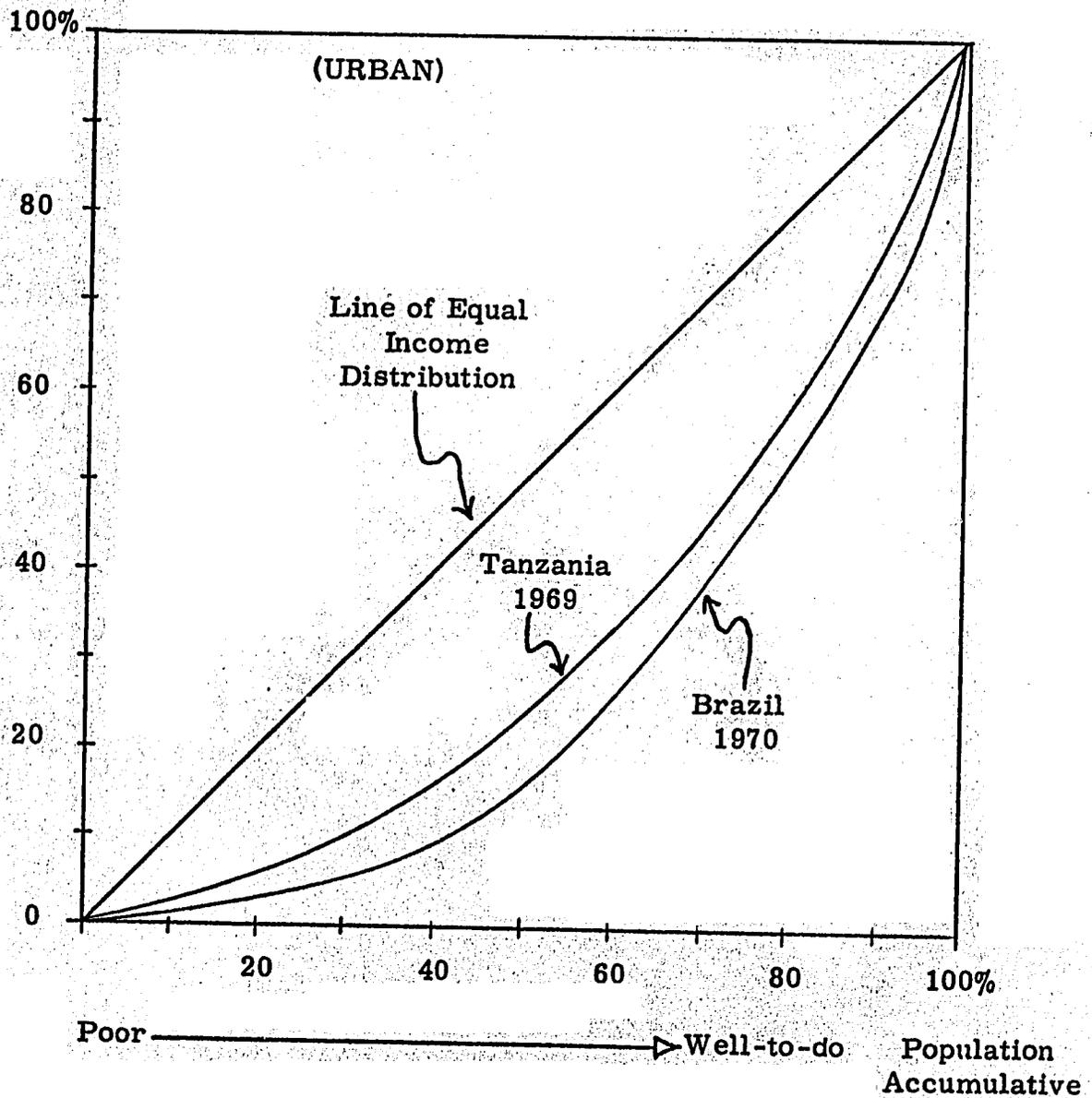


Source: Tables 9 and 10

NON-AGRICULTURE (URBAN) INCOME
DISTRIBUTION BY POPULATION
PERCENTILES

GRAPH H.

Accumulative
Income



Source: Tables 9 and 10

2. Employment in Brazil and Tanzania

The economically active population, fifteen years of age and older, in the two countries, Brazil and Tanzania, show contrasting differences of major proportions in the tabulation below.

BRAZIL: 1970

	<u>Economically Active Population</u>				<u>Ratio of ag. pop. to active population</u>
	<u>Total population (thousands)</u>	<u>Active percent</u>	<u>Non-Agricul. population (in thousands)</u>	<u>Agricul. population (in thousands)</u>	
Total	93,204	30.2	16,068	12,099	42.9%
Male	46,363	48.3	11,398	10,988	49.1%
Female	46,841	12.3	4,670	1,111	18.9%
Per cent of females in population	50.3%	20.5%	29.1%	9.2%	

Source: "Anuario Estatístico do Brazil 1973", IBGE-Departamento de Divulgacao Estatística.
(data for other years not available)

TANZANIA: 1967

	<u>Economically Active Population</u>				<u>Ratio of ag. pop. to active population</u>
	<u>Total population (thousands)</u>	<u>Active percent</u>	<u>Non-agricul. population (in thousands)</u>	<u>Agricul. population (in thousands)</u>	
Total	12,267	45.4	499	5,077	91.0%
Male	5,925	49.1	427	2,484	85.3%
Female	6,342	42.0	72	2,593	97.3%
Percent of females in population	51.7%	47.8%	14.4%	51.1%	

Source: "Demographic Yearbook 1973", U.N. (data for other years not available).

The obvious distinction to be drawn, which we have pointed out before is the very large active economic population in agriculture for Tanzania (91%) as compared to Brazil (43%) .

A particularly striking difference in the two tables above is that in Tanzania some 45% of the population was economically active, while in Brazil only 30% was so engaged. This variation is at least partially explained by the second major difference where 42% and 12% of the female population were actively engaged economically. In the agricultural sectors the female proportions were 51% and 9% respectively.

When the last two percentages are related to per capita agriculture we find the following:

	<u>Females Engaged</u>	<u>Per capita Income</u>
Brazil	9%	\$124
Tanzania	51%	\$ 33

There are undoubtedly many reasons for the difference in the proportion of females actively engaged in the agriculture sectors of the two countries and clearly one of them is income levels that necessitate women to work in helping to make ends meet. Conversely, we may speculate that in Tanzania women are expected to earn their own and the household's keep while in Brazil the ethic is that the men should provide for their families.

The economically active population can also be divided according to occupation as in the table below.

BRAZIL: 1970

<u>Occupation</u>	<u>Economically Active Population</u>	
	<u>Agriculture and ag. associated</u>	<u>Non-agriculture</u>
	(in thousands)	
Public administration	256	2,753
Professional: education, science, technology, etc.	13	1,385
Transportation, communica- tion, etc.	26	1,158
Commerce and trade	2	1,372
Industry and construction	26	4,426
Household services	25	2,280
Other	12	2,343
Agriculture	12,090	--
Total	12,450	15,717

Source: "Anuario Estatístico do Brazil 1973", IBGE-Departamento de Divulgação Estatística.
(data for other years not available)

To the extent that the occupations associated with agriculture represent the difference between the agriculture sector and the rural, we are addressing the issue in the Research Methodology chapter as to whether or not the rural sector is a sloping continuum from the urban center to the rural areas. In Brazil, at least, it appears that rural development that helps the off-farm rural sub-sector has small opportunity of closing the income "gap" that is one of the major causes of rural poverty and the rural poor as it developed in the analysis in the section on Income Distribution.

Comparable occupational data was not found available for Tanzania during the study period. It was possible, however, to estimate from the available data the off-farm rural populations for the two countries as shown in the following tabulation.

<u>Off-Farm Rural Populations</u>			
	<u>1960</u>	<u>1965</u> (in thousands)	<u>1970</u>
<u>Rural Populations</u>			
World total	1,999,598	2,132,307	2,280,840
Brazil	37,555	41,305	41,054
Tanzania	9,814	10,997	12,329
<u>Off-Farm Populations</u>			
World total	301,000	390,000	430,000
Brazil	1,400	579	419
Tanzania	586	1,003	959
<u>Off Farm Populations</u> <u>as % of Rural Population</u>			
World total	15.0%	18.3%	18.8%
Brazil	3.7%	1.4%	1.1%
Tanzania	6.0%	9.1%	7.8%

Source: "1972 Demographic Year Book," UN; "1972 Production Yearbook," FAO; "1966 Production Yearbook", FAO; and, "1973 Anuario Estatístico do Brasil", IBGE.

Here again there is evidence that the off-farm rural populations are relatively small percentages of the total rural populations. Even for the world as a whole including industrialized countries the proportion is less than twenty per cent. In Brazil the proportion is less than 5 percent and in Tanzania less than 10 per cent.

AID programs and projects directed to the off-farm rural sub-sector well need to be most effective multipliers if they are to impact on the rural poor including the agriculture poor. It seems to us analytically that viable solutions for relieving the rural poor must include programs and projects that raise agriculture prices and incomes even though they raise food prices and the cost of living in the urban sector. In face of natural urban resistance to such hurtful programs the task will not be easy and completely new and untried approaches may be needed.

B. Productivity Trends and Technology

Graph I illustrates the trends in agriculture productivity by both tons and US Dollar values per capita for Brazil and Tanzania over an eight-year period, 1964-1972, for which comparable data was found available.

It is conventional in agriculture studies to indicate changes in agriculture productivity by crop yields in quantity per unit area harvested. Such data does not sum readily into aggregate terms because tree crops (nuts, fruits, palm products, coconuts, copra, etc.) and livestock products (meat, hides, wool, etc.) are not determined on an area basis.

Nevertheless, such crops are most important in analysing agriculture productivity because they represent alternative uses of lands by which rising productivity for some crops often shifts land use so that productivity for other crops will actually decrease.

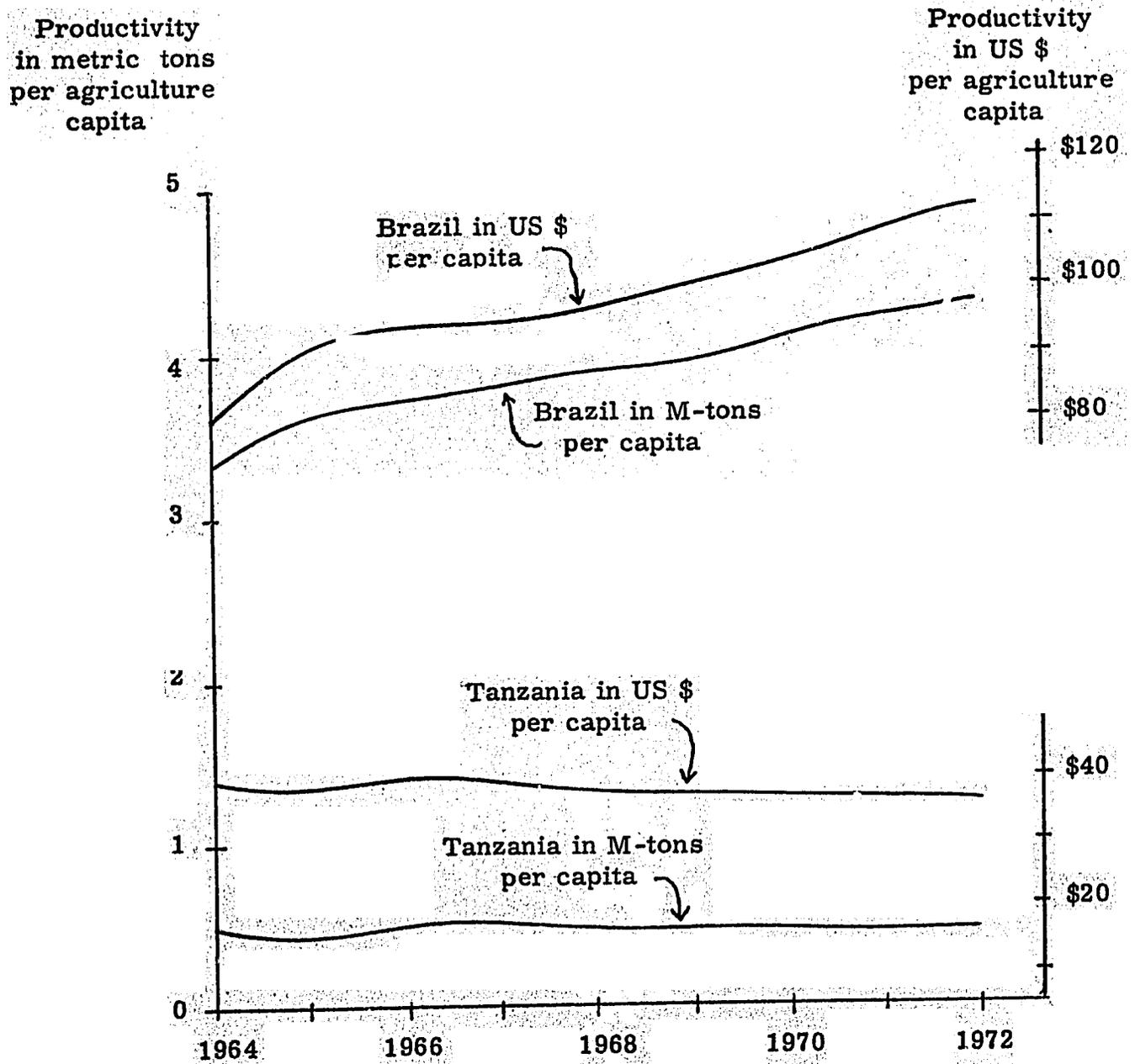
Tree crops and livestock are most vulnerable to this effect as pastures and orchards are converted to cultivated farm land and, if we do not include the effect of these changes in productivity because the area involved is not measured, we introduce an unacceptable bias into our analysis and the impact of AID programs and projects on agriculture and the rural poor.

Checchi has, therefore, elected to use tons and value at constant prices per capita, for which data is measured and available, as more representative of productivity trends than quantity yields per unit area.

In Brazil the productivity trends diverge slightly, which we interpret to indicate that better varieties and more valuable crops are being introduced by the agriculture sector with the attendant improvements in technology. The impact of AID inputs to the agriculture sector in Brazil (ranging from \$0.44 to \$3.16 per agriculture capita in different years, see Table 6 in the annex to Chapter Four) undoubtedly contributed to the improved

**AGRICULTURE PRODUCTIVITY TRENDS
BY TONS AND VALUE PER CAPITA
(Regression Curves)**

GRAPH 1.



Source: Tables 11-16

technologies used and the increase in productivity.

In Tanzania the productivity trends in tons per agriculture capita is effectively stagnant while the trend in value appears to decline. By inference there was a shift to lower valued, bulk crops that are easier to grow and require less advanced technology. The land tenure policy in Tanzania - putting farms on communal land in Ujamaa Villages - probably contributed to this trend as well as the policy of keeping food and farm prices low. Farmers typically react to such constraints by including roughage and not cleaning their products which add unusable bulk but no value so that their margins are partially protected.

The impact of AID inputs to agriculture in Tanzania (ranging from \$0.05 to \$0.11 per agriculture capita, see Table 4 in the annex to Chapter Four) were insufficient to improve technology or productivity.

The large rural to urban migration in Brazil and the small rural to urban migration in Tanzania acted to encourage better technology and increasing productivity in Brazil while in Tanzania it acted to constrain such improvements.

In the non-agriculture sectors productivity can only be measured in terms of value because services as an important component in the non-agriculture sector have no quantity measure. We, therefore, must use income per non-agriculture capita as an indicator of changing productivity and technology.

Here we find in both Brazil and Tanzania that the income per capita indicators of productivity and technology are rising rapidly and much faster than for the agriculture sectors (compare Graph I with Graphs A and B in Chapter Four).

The impact of AID inputs to the non-agriculture sector must be presumed

to have been much greater than in the case of the agriculture sector on the basis of their relative size if nothing else.

In Brazil the non-agriculture inputs ranged on a per non-agriculture capita basis from \$1.26 to \$42.85 and in Tanzania from \$0.31 to \$2.23. Compare these amounts with those above for the respective agriculture sectors.

It is hard to believe that this disparity in AID inputs between the agriculture and non-agriculture sectors was deliberate in view of the heavy emphasis on agriculture goals written into the CAP documents.

According to our research methodology, we are instructed that, when inputs and outputs act in such unpredictable ways, we must examine the national process for structural causes. There appears to be a biological-income constraint working in the process to hold back growth in agriculture so that incomes are low and many rural people are poor. We examine this problem in the following section.

C. Biological-Income Constraint on The Rural Poor

In order to illustrate the biological-income constraint on the growth of agriculture production and its effect on keeping the rural sector poor, we have adapted the income distribution curve for Brazil to our purpose by inserting a curve for the income distribution for food. See Graph J.

All that we are able to determine accurately with respect to this food curve is its end point showing 15% of cumulative income being spent on food produced within the country. The portion of national income received by the agriculture sector in 1970 for Brazil is 16.6% ($\$5,042\text{M} / \$30,343\text{M} = 16.6\%$, see Tables 1 and 3 in the annex to Chapter Four) of which the food proportion was 89% or 15% of the total income*.

The flatness of the imputed food curve in terms of probable, cumulative income spent on food is indicative of a structural problem in the society that is embedded in the national process itself.

The nature of this curve is based on the income elasticity of demand for food. That is to say, the change in quantity of food demanded that will result from a given change in income will be progressively less as incomes increase. Thus, it has been found that when an average income around \$100 (in 1963 dollars) per capita is received about 60% will be spent on food. It has also been found that of the next \$1 received in income only 80% as much, or 48 cents ($\$1 \times .6 \times .8 = \$.48$), will be spent on food. In high income countries with incomes averaging around \$2,000, the increase in food consumption in response to increases in income is near zero.

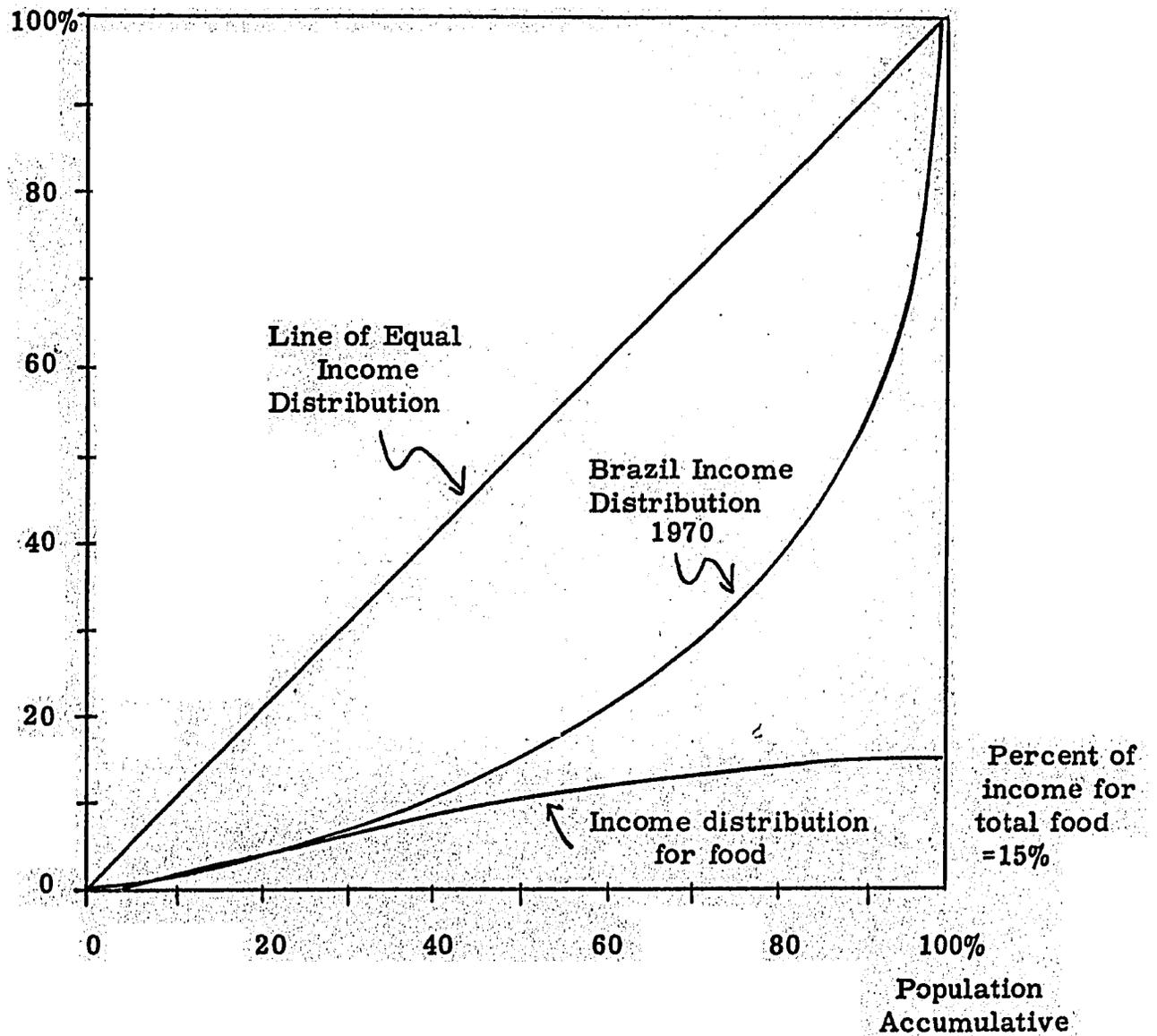
In order properly to understand the structural relationship between food production and hungry people we need to distinguish between those who

* "Agriculture Production for the Western Hemisphere"
Economic Research Service, US Department of Agriculture
May 1974.

INCOME ELASTICITY OF DEMAND FOR FOOD
OR THE
BIOLOGICAL CONSTRAINT ON GROWTH OF
AGRICULTURAL PRODUCTION AND EFFECTIVE
DEMAND FOR FOOD

GRAPH J.

Accumulative
Income



Source: Derived from Table 9

are hungry due to crop failures (draught, floods, etc.), which is a problem requiring study of creating suitable reserves and effective distribution to places where help is urgently needed, and the many more who are regularly hungry in a less dramatic fashion because they are living in poor countries with national processes and structures unable to solve their food problems.

The analytical problems are quite different between the two conditions and we direct our efforts toward the second group.

There are two powerful forces working together that prevent agriculture incomes from rising as fast as non-agriculture incomes so that the income "gap" is not closed or reduced. One, the biological need for more food is restricted to the population at the left hand end of the income distribution curve where we find the poor and where all income appears to go for food, except for rags and hovels to cope with the climate. To the right of the point that provides for the above three essentials, wherever it may be located on the curve (the necessary data is unavailable and is perhaps not even considered much less collected), represents those people who spend the discretionary portion of their income on non-food consumption, although if they chose to do so, they could spend more of it on food and so relieve any pressing hunger and biological need.

This is indeed a harsh statement to make but it is not by choice. After all the purpose of this study is to expose the circumstances of the rural poor as fully as it is possible analytically to do.

Two, when sector income is low, particularly on a per capita basis, the conditions above are intensified and then there are more rural poor who are caught in a vicious circle. The people with income for non-food consumption increase the demand for food slowly and the agriculture sector income can only rise slowly in proportion.

Thus, there is placed a biologic-income constraint on the rural sector, in contrast to the urban sector where this constraint is not operative, that the present assistance programs are unable to change. First, the propensity to consume food, by people with incomes sufficient for discretionary consumption, is not changed by programs but by changing habits and, second, as a consequence, programs and projects for improved agriculture inputs and technology do not increase the demand and consumption of food. They do, however, serve to shift part of the already low income from poor farmers to farmers with better production and market opportunities.

Production of non-food agriculture commodities is not trapped in this biologic-income squeeze. Such commodities are influenced by the discretionary income in the urban sector which rises rapidly with economic growth as has already been demonstrated. As a result, it may be presumed that the demand for non-food items may increase more rapidly than the demand for food and thus help to increase agriculture and rural incomes more rapidly also.

The on-farm effect can be several-fold. If part of a farmer's acreage is shifted to non-food crops his income can go up faster than when the same acreage is devoted entirely to food crops. The biologic-income constraint does not operate on the non-food crops.

The farmers' ability to increase yields and productivity is estimated in Tanzania, at least, to have a potential of 200-500% as is indicated in the tabulation below.

Estimates of Expected Change in Crop Yields in Tanzania over the Next 10 Years *

	Maize	Rice	Wheat	Sorghum	Millet	Soy-beans
<u>Yield per acre:</u>						
1. Current average, bags	5	6	6	4	4	3
2. Potential, bags	25	30	22	18	12	15
<u>Potential yield as a percentage of current:</u>						
3. Maximum potential, %	500	500	350	450	300	500
4. Reasonable expectation, %	200	200	200	200	200	200
<u>Changes in yield expected from:</u>						
5. Cultural practices, %	50	65	25	40	40	45
6. Expectations/year, %	5	5	10	5	5	5
7. Improved seed, %	30	10	15	15	20	30
8. Expectations/year%	10	5	10	5	5	10
9. Pesticides, %	10	20	25	40	40	20
10. Expectations/year, %	5	5	10	10	10	10
11. Fertilizer used, %	10	5	35	5	2	5
12. Expectations/year, %	1	1	5	1	1	1

Field tests in other countries tend to show similar potentials. Thus, the farmer and the society are not essentially threatened with less food but actually should experience an increase in incomes throughout the national system.

The development of non-food crops, first, requires programs and projects to encourage agronomists and scientists to improve varieties and yields of

* Agriculture Report, Tanzania (unsigned AID, 1974)

existing non-food crops as well as to discover entirely new crops and industrial uses for them. Second, there is a need to develop long term marketing arrangements by contract on which farmers can rely for undertaking the production of such crops with minimum risk and a fair portion of the final value or price.

ANNEX - TABLES

TABLE 9.

Brazil: Poverty and Wealth Indicators by Percentiles

<u>Year</u>	<u>Kind of Indicator</u>										
		<u>National Income Distribution</u>									
	Population-deciles:	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1960	Income %	1.2	2.3	3.4	4.6	6.2	7.7	9.4	10.8	14.7	39.7
1970	Income %	1.1	2.1	3.0	3.9	4.9	5.9	7.4	9.6	14.5	47.6
		<u>Agriculture Income Distribution</u>									
	Population-distribution:	Lowest 20%	Next 30%	Next 30%	Next 15%	Highest 5%					
1970	Income %	6.5	15.3	30.0	25.5	22.7					
		<u>Non-Agriculture Income Distribution</u>									
1970	Income %	3.0	11.8	22.2	22.8	40.2					
		<u>Health and Family Planning Distribution</u>									
		(Not available during time of study)									
		<u>Educators and Students Distribution</u>									
		(Not available during time of study)									
		<u>Farm to Market Roads Distribution</u>									
		(Not available during time of study)									

Note: Items not available during time of study may be partially available in country. Projects to develop such data on a regular basis and by data locations are needed, if rural poor are to be located and assisted.

Sources: National Income - Carlos Lamgoni, "Distribuicao da Renda e Desenvolvimento Economico do Brasil" (Rio de Janeiro: Editorial Expressao e Cultural, 1973).

Agriculture and Non-agriculture Income - "Income Distribution in Latin America, UN, 1971, New York, p.

TABLE 10

Tanzania: Poverty and Wealth Indicators by Perrentiles

<u>Year</u>	<u>Kind of Indicator</u>				
	<u>National Income Distribution</u>				
Population - distribution: 1969	Lowest 14%	next 21%	next 33%	next 21%	Highest 11%
Income %	.9	4.6	16.8	30.4	47.3
	<u>Rural Income Distribution</u>				
Population - distribution 1969	Lowest 17%	next 26%	next 26%	next 18%	Highest 13%
Income %	1.7	9.0	16.9	23.3	19.1
	<u>Urban Income Distribution</u>				
Population distribution 1969	Lowest 7%	next 13%	next 37%	next 24%	Highest 19%
Income %	1.0	4.2	23.9	29.9	41.0

Health and Family Planning Distribution

(not available during time of study)

Educators and Students Distribution

(not available during time of study)

Farm to Market Roads Distribution

(not available during time of study)

Note: Items not available during time of study may possibly be available in country. Such data as needed, if rural poor are to be assisted.

Source: Results of Household Sample Survey reported in IMF Report on Tanzanian Agriculture 1973.

TABLE 11

Brazil: Agriculture Production and Value Trends

<u>Year</u>	<u>Area Harvested</u> (hectares millions)	<u>Agriculture Production</u> (metric tons millions)	<u>Value of Production</u> (constant prices US \$ millions)
1964	75.0	131.9	3186.1
1965	---	150.3	4030.3
1966	---	147.3	3671.5
1967	---	155.6	3898.7
1968	---	157.6	3977.2
1969	---	158.9	4127.1
1970	92.5	166.9	4193.8
1971	94.7	169.8	4476.6
1972	95.9	176.2	4590.9

Sources: Area harvested, "Production Yearbook," FAO, June 1974.
Production and Value, "Agriculture Production," Economic Research
Service, US Department of Agriculture, May and June 1974.

TABLE 12

Tanzania: Agriculture Production and Value Trends

<u>Year</u>	<u>Area Harvested</u> (hectares millions)	<u>Agriculture Production</u> metric tons millions)	<u>Value of Production</u> (constant prices US \$ millions)
1964	---	4.8	387.4
1965	---	3.7	384.8
1966	---	5.1	425.7
1967	---	5.1	406.7
1968	---	5.1	412.9
1969	---	5.2	418.9
1970	5.2	5.5	432.8
1971	5.4	5.5	438.2
1972	5.4	5.6	441.9

Sources: Area harvested, "Production Yearbook," FAO, June 1974.
Production and Value, "Agriculture Production," Economic Research
Service, US Department of Agriculture, May and June 1974.

TABLE 13

Brazil: Agriculture Quantity Productivity Trends
by Tons per Hectare and by Tons per Capita

<u>Year</u>	<u>Metric tons per hectare</u>	<u>Metric tons agriculture per capita</u>	<u>Metric tons national per capita</u>
1964	-	1.32	1.67
1965	-	.69	1.85
1966	-	.62	1.77
1967	-	.82	1.81
1968	-	.87	1.79
1969	-	.91	1.75
1970	1.05	4.11	1.79
1971	1.03	4.18	1.77
1972	1.05	4.34	1.78

Sources: Calculated using data from preceding tables

TABLE 14

Tanzania: Agriculture Quantity Productivity Trends

by Tons per Hectare and by Tons per Capita

<u>Year</u>	<u>Metric tons per hectare</u>	<u>Metric tons agriculture per capita</u>	<u>Metric tons national per capita</u>
1964	1.76	.49	.42
1965	-	.37	.32
1966	-	.50	.43
1967	-	.49	.41
1968	-	.47	.40
1969	-	.47	.40
1970	1.80	.48	.41
1971	1.79	.47	.40
1972	1.84	.46	.40

Sources: Calculated using data from preceding tables.

TABLE 15

Brazil: Agriculture Value Productivity Trends

<u>Year</u>	<u>per Capita</u> Agriculture production values per agriculture capita (in constant prices US dollars)	Agriculture production values per national capita
1964	80	40
1965	99	50
1966	90	44
1967	96	45
1968	98	45
1969	101	45
1970	103	45
1971	110	46
1972	113	46

Sources: Calculated using data from preceding tables

TABLE 16

Tanzania: Agriculture Value Productivity Trends

<u>Year</u>	<u>per Capita</u>	
	<u>Agriculture production values per agriculture capita</u>	<u>Agriculture production values per national capita</u>
	(in constant prices US dollars)	
1964	39	34
1965	38	33
1966	41	35
1967	39	33
1968	38	33
1969	38	32
1970	38	33
1971	37	32
1972	37	32

Sources: Calculated using data from preceding tables.

CHAPTER SIX
RURAL WELFARE

RURAL WELFARE

This chapter is in two sections: first a brief discussion of the AID programs which we have placed into the rural welfare classification and then a discussion of the progress and problems in rural welfare in Brazil and Tanzania coupled with a brief analysis of the problems inherent in efforts to promote directly rural welfare in poor countries.

A. AID Inputs

1. Brazil

Using the rather strict criteria for segregating projects which impact on the rural areas described in Chapter IV above, the resources devoted by AID to rural welfare projects in Brazil during the 1960-1973 period were rather limited. The total dollar figure is estimated at \$10 million, which is about 13 percent of the total resources devoted to rural area programs and less than one percent of the total resources provided to all programs in Brazil during the period. Clearly, \$10 million over a 14-year period is a very small drop in the bucket for a country the size of Brazil and it is not surprising that the effect was minimal. An obvious exception is the malaria eradication program which did make a visible contribution to rural welfare and, doubtless, population growth.

AID financed projects in the welfare category can be divided, in turn, into three broad categories: health, education and rural infrastructure.

a. Long Term Goals of AID Inputs

(1) Health: Improve the health of the people of Brazil through direct attack on malaria, improved health planning and improved nutrition.

(a) Malaria Eradication: Eradication of malaria in Brazil by 1975.

(b) State Public Health Planning (Northeast): Build administrative capacity of state health departments in the Northeast for better resource utilization and to promote long-range health planning and research.

(c) Protein Foods and Food Fortification: Increase available protein in foods consumed through fortification

and education. Improve diet of Brazilian people.

(d) School Feeding: Improve health and well-being school children and attract children to school.

(e) Maternal and Infant Feeding: Improve health and wellbeing of infants, pregnant and nursing mothers by raising nutritional levels.

(2) Education: Improve educational opportunities for children and adults, mostly in the Northeast. Most of these projects were rated as about 20 percent rural impact by Checchi.

(a) Elementary Education Training and Curriculum Improvement: Improve educational facilities in the Northeast to maximize educational opportunity in the 7-14 year-old range.

(b) Elementary and Basic Education: Develop human resources through construction of elementary schools; improve planning and administration.

(c) Rural Vocational Education and Training: Increase enrollment in rural vocational schools..

(d) Adult Literacy Training (Northeast): Provide basic educational opportunities to adults to learn to read and write, through teacher training.

(3) Rural Infrastructure: Provide rural roads, potable water supplies, electricity and other small projects.

(a) Roads (Northeast): Assist in financing design, feasibility studies and construction of roads.

(b) Well Testing, Rehabilitation and Drilling, (Northeast):

Provide potable water to contribute to the welfare and survival of people and livestock.

(c) Rural Electrification (Northeast): Increase availability of electric power to improve living standards.

(d) Food for Work: Improve agricultural and nutritional conditions in the Northeast and construct labor intensive projects.

b. Project Level Results

As in other areas, AID's inputs in the rural welfare area, as we have called it, achieved both favorable results and unfavorable results at the project level. In this section, we summarize the results for some projects as reported by auditors, in PARs or on the basis of our own comparison of goals, purposes, inputs and outputs. We were not able to obtain enough data on some projects to allow even a summary discussion of results.

(1) Health Projects

The malaria eradication program, which we have called a project with a 50 percent rural impact, accounted for a large portion of the funding attributed to rural welfare impact over the period studied. It appears that much of the programmed assistance was actually made available and that Brazil's Malaria Eradication Campaign (CEM) has had reasonable success. A 1964 audit indicated that 84 percent of the population at risk was covered. Various reports noted some problems, such as chemical shortages, inadequate storage facilities and lack of financial support from the Government of Brazil. And, there is still plenty of malaria in Brazil. In 1972, according to the Anuario Estatístico Do Brazil-1973, out of

slightly more than two million individuals in the malaria areas examined 84,000 were positive.

The School Feeding Program appears to have been successful on the project level. During the life of the program, a growing number of children received supplemental food and there were reports of cooperation among various ministries and of school gardens being developed to supplement diets with locally-grown foods.

By contrast, it appears that the Protein Foods and Food Fortification project and the Maternal and Infant Feeding projects were less successful. The latter apparently suffered from administrative weaknesses, lack of machinery, transport, storage and production facilities. With regard to the former project, three different PAR reports reviewed gave different sets of output indicators which made our evaluation difficult and must have resulted in rather unclear evaluation in the field as well.

The level of success achieved by the final project in the health category, State Public Health Planning, is difficult to assess since no PARs or audit reports were found. It is clear that 35 Brazilian technicians were trained and 330 health centers were repaired and restored.

(2) Education Projects

The Elementary and Basic Education Project was designed to construct elementary schools in several states, train teachers and the like. In most areas and states it fell far short of its targets. The most consistent problems appear to be maintenance of the facilities once built and operating costs which were seriously under-budgeted by the Governments. A follow-on project, Elementary Education Training and Curriculum Improvement in the Northeast, with more modest targets, was more successful in reaching its targets but problems of operating funds and maintenance remained. A third education project, one more specifically aimed at the

rural populations -Rural Vocational Education and Training -apparently ran into strong resistance from the Brazilian educational establishment which opposes vocational education, preferring to stress the traditional curriculum.

The two projects aimed at literacy training for adults appear to have had some success in training teachers and moving programs ahead. However, no detailed Audit Reports or PARs were located.

(3) Rural Infrastructure (Northeast)

The four projects identified in this category are small but seem to have had some success. No Audit Reports or PARs were located which gave any detail on their accomplishments, but clearly some progress was made on rural electrification in the Northeast, the recently inaugurated Food for Work Program has had an effect both on infrastructure and employment, and contributions were made in road development and well drilling.

2. Tanzania

Again, using our rather strict criteria for determining which projects can be considered to have impact on the rural populations, very little AID assistance was given to rural impact projects in the area of rural welfare in Tanzania. We located a grand total of two projects with total funding shown in the records of \$117,000, or somewhat less than two percent of the total input into rural impact projects. We recognize that there is an argument that certain welfare type projects, such as expanding urban water supplies, may improve the efficiency or quality of life in small urban areas which are interdependent with, and service, rural populations, and therefore impact on the rural poor. That there is a degree of interdependence is clear. However, except for projects which can be said to promote

migration to urban areas, which we have analyzed briefly elsewhere, we do not feel that such projects can fairly be said to impact on the rural poor in any significant way. We do believe that this is an interesting seminar topic and have provided additional analysis elsewhere in this paper.

a. Long Term Goals of AID Inputs

(1) Secondary Vocational Agricultural Education: Ensure skilled manpower for the agricultural sector through introducing agricultural vocational training in the secondary schools.

(2) Special Projects Assistance: Stimulate and assist self-help projects in rural areas.

b. Project Level Results

The Special Projects Assistance effort apparently did result in the completion of at least 50 projects of various kinds. The Secondary Vocational Agricultural Education project does not seem to have been implemented.

B. Country Situation and Analysis

This section briefly covers the situation, over time where possible, of Brazil and Tanzania in certain welfare categories such as health and education. In some instances we have been able to obtain data broken out along urban-rural lines. The section closes with a brief re-introduction of the concept of the rural-urban gap and, by adding in the cash income factor, goes on to suggest that projects designed to increase the welfare of rural populations face serious problems of replication and operation until the income gap is closed.

1. Brazil

As a country which has experienced rapid development during the period under review, Brazil has made great progress in providing increased levels of service to both rural and urban populations. The job is huge, considering the vast area of the country and its large and rapidly growing population. A great deal remains to be done.

a. Health

Progress has been made. The number of hospitals in the country increased from 2,622 to 4,157 between 1959 and 1970, an increase of 56 percent. Other indicators of health services also increased sharply. The country has continued a reasonably successful malaria eradication program which has reduced, but not eliminated, the incidence of the disease. Campaigns against various other diseases also carried forward. Nevertheless, in the rural areas of the country medical services are still inadequate, and life expectancy remains relatively short through disease abetted by inadequate diet.

b. Education

In the field of education, also, considerable progress has been

made during the past dozen years. Table 17 in the annex gives some broad indicators with a breakdown by urban and rural. It shows, for example, very rapid increases in the numbers of schools, teachers and pupils. In primary schools, it shows that the number of schools in the rural areas increased more rapidly than in the urban areas, but that in terms of numbers of teachers and pupils, the increases were more rapid in the urban and suburban areas than in the rural. The increase in numbers of secondary schools was also very rapid, but we found no convenient urban-rural breakdown for this category.

Although considerable stress was placed on literacy, the gains between 1960 and 1970 were quite modest, as shown in Table 18. Brazil still has a long way to go to create a highly literate population which normally accompanies a high degree of development.

The contrast between expansion of schools and students, on the one hand, and the relatively modest gains in literacy appear to illustrate not only the problems associated with rapid population growth but also those related to staffing and operating schools once built. Much of Brazilian education is plagued with shortages of trained teachers, supplies and equipment, the latter a function at least in part of budgetary constraints. It appears that the same problems which limited the effectiveness of AID programs in the education field- shortages of operating funds - effected the entire education program

2. Tanzania

As described in the previous section, AID inputs in the category of rural welfare were extremely small, according to our definitions and calculation. Without going into a detailed study here, it is clear that there is ample need for improved services to Tanzania's rural and urban populations.

1. Education

With regard to primary schools, for example, the number in the country as a whole increased from 3,730 in 1965 to 4,495 in 1972, an increase of 21 percent. The number of students increased from 710,200 to 1,003,596, or 41 percent. Tables 19 and 20 give the details by region. In spite of these increases, less than half of Tanzanian children between 7 and 8 were in school in 1971, according to the Ministry of Education. Table 21 gives the details by region, and indicates a range between 81 percent in the Coast Region near Dar es Salaam and 31 percent. As a matter of interest, we have added in a regional ranking by density of population in an attempt to determine whether the more densely populated regions, which might be assumed to be more urban or less rural, enjoyed a higher degree of social services. The evidence from this rough analysis is inconclusive.

2. Health

Table 21 also gives per capita figures for the capacity of rural health centers and rural water supplies on a regional basis. It would appear that both are inadequate, although considerable efforts have been made. Again, we find no strong evidence of significantly higher levels of service in the more or less rural regions. Table 22 gives additional data on health services on a regional basis. The data shows very sharp differences in per capita availability of the various services, but not a consistent urban-rural pattern. It should be noted that the largest urban center, Dar es Salaam, is omitted from these various tables.

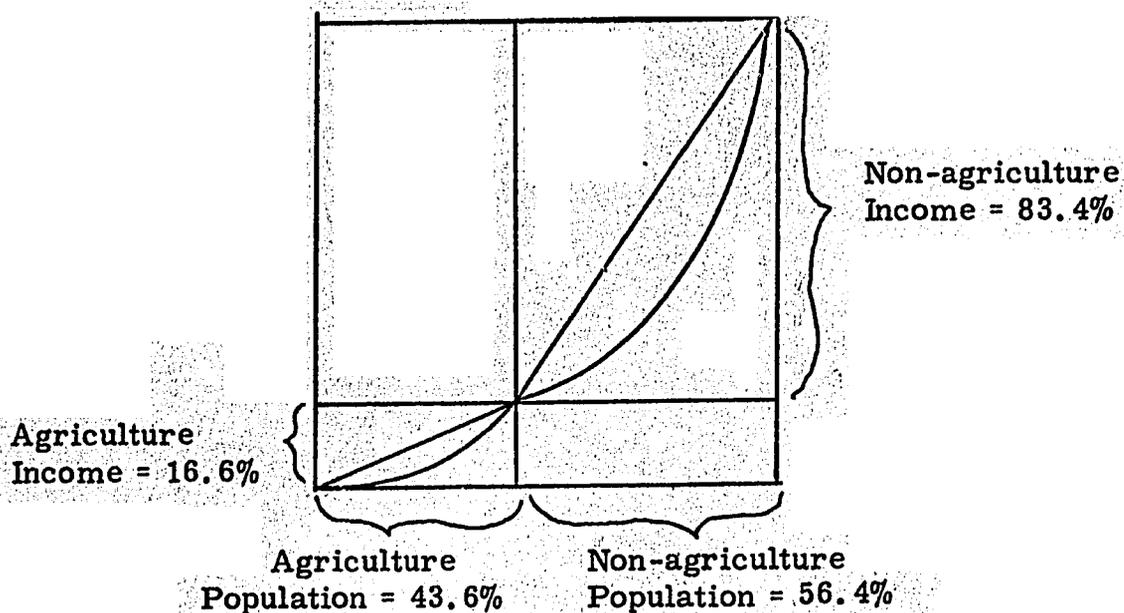
3. Cash Income and Rural Welfare

Graph F illustrates the income and population relationships between the agriculture and non-agriculture sectors in the two countries.

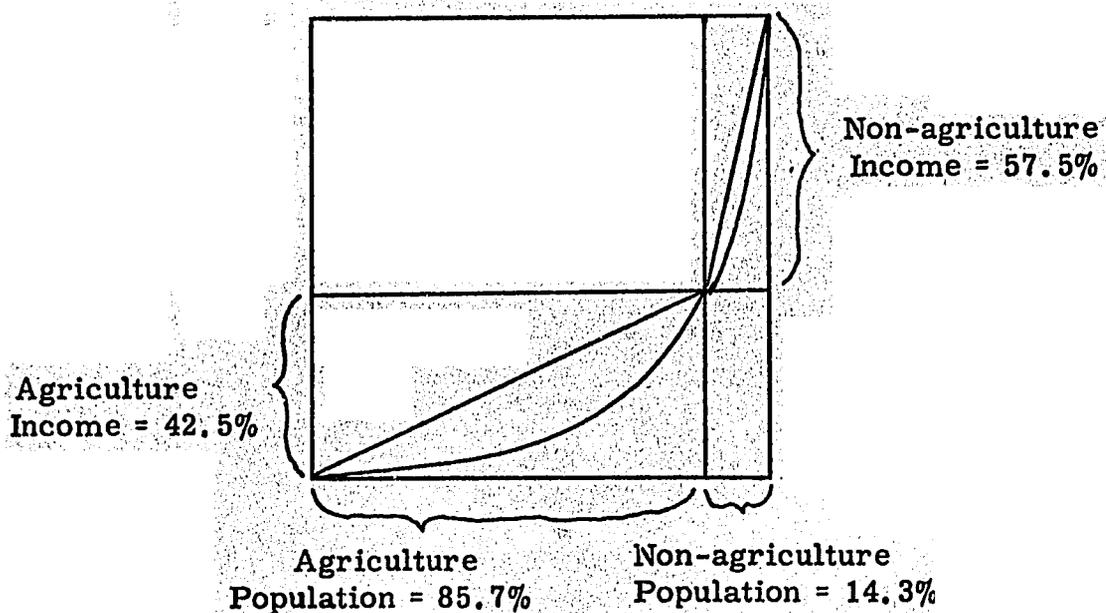
AGRICULTURE AND NON-AGRICULTURE INCOME
DISTRIBUTION BY POPULATION PERCENTAGES

GRAPH F.

BRAZIL 1970



TANZANIA 1969



Source: Tables 1-6, 9, and 10

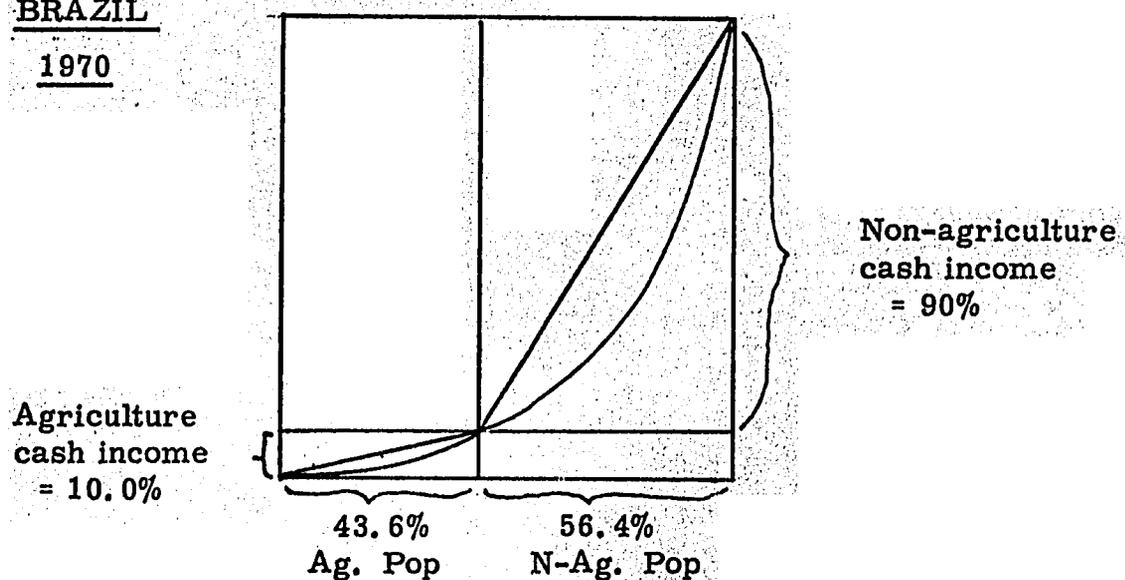
Brazil and Tanzania. In both countries the agriculture sector appears in the lower left quadrant of the diagrams.

The relationships clearly show that the agriculture sector has less income to distribute among the rural population than the non-agriculture sector has to distribute among its population. When subsistence consumption of food produced in the agriculture section is taken into account, the cash component in agriculture income is considerably less than the income proportion indicated in Graph F.

A household survey conducted in Tanzania in 1969 estimated that the cash component in the average per capita income in rural households was approximately 57% of the total. In Brazil the cash component is believed to be about 60%.

On the basis of this information Graph F may be revised, on the basis that most of the non-agriculture income is in cash, to reflect the cash relationships as indicated below.

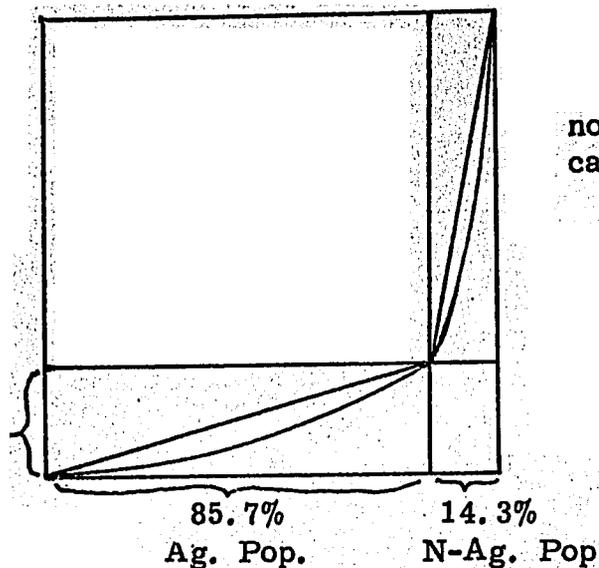
BRAZIL
1970



TANZANIA

1969

Agriculture
cash income
= 24.2%



non-agriculture
cash income
= 75.8%

The importance of the relatively small proportionate income distribution to agriculture and rural sector with respect to welfare and social overhead project lies in the constantly recurring cost of operating such projects, which need to be paid for in cash.

When rural cash income is relatively small, as shown above, and when people have a propensity to spend cash for what they consider to be more essential goods and services than services which we are calling welfare, such as health and education, there develops a real problem of where the necessary cash is to come from.

Initially the cash necessary to set up pilot welfare projects usually comes from the central government, often with international assistance, but even central governments lack the resources either to replicate hundreds of such projects throughout rural areas or to support their annual operating costs on a subsidized basis.

When rural income is as proportionately small as indicated above and alternate uses of cash have a high priority, there is little opportunity

for welfare projects to prosper until the rural sector can first start to close the income "gap"

ANNEX - TABLES

TABLE 17

BRAZIL - EDUCATION

	<u>1959</u>	<u>1972</u>	<u>% increase</u>
Primary Schools - Total	93,080	165,051	77
Urban and Suburban	(26,059)	(37,302)	(43)
Rural	(67,421)	(127,749)	(95)
Teachers, Primary - Total	211,601	525,628	148
Urban and Suburban	(130,876)	(343,722)	(163)
Rural	(80,725)	(181,906)	(125)
Students, Primary - Total	6,107,279	12,826,171 (1971)	110
Urban and Suburban	(3,697,163)	(8,106,188) "	(119)
Rural	(2,410,016)	(4,719,983)	(96)
Teacher/Pupil Ratio - Total	28.9	24.4	
Urban and Suburban	(28.2)	(23.6)	
Rural	(29.9)	(25.9)	
Secondary Schools - Total	7,287(1961)	22,958 (1972)	215
University Programs (Cursos)	1,315	3,124	138
Population	70,992,000 (1960)	93,139,037 (1970)	31

Source: Anuario Estatístico Do Brasil, 1973 and 1961. IBGE

TABLE 18

BRAZIL - LITERACY RATES:

Age Group	1960	1970
5 and more	53.57	61.56
10 and more	60.63	67.95
15 and more	60.52	66.89
5 - 9	19.71	29.87
10 - 14	61.13	72.89
15 - 19	66.59	77.04
20 - 29	66.10	72.43
30 - 39	62.41	67.97
40 - 49	55.69	62.08
50 and More and Age Unknown	47.47	51.39

Source: Preliminary result of 1970 Census - Brazil.
(Tabulacoes Avancadas do Censo Demografico
VIII Recenseamento Geral - 1970; Resultados
Preliminares).

TABLE 19
TANZANIA

Number of Public Primary Schools by Region, 1965 and 1972

REGION	1965	1972
ARUSHA	164	219
COAST	159	226
DODOMA	198	263
IRINGA	173	231
KIGOMA	134	162
KILIMANJARO	333	367
LINDI	1/	153
MARA	171	215
MBEYA	248	327
MOROGORO	248	257
MITWARA	378	242
MWANZA	290	334
RUVUMA	160	188
SHINYANGA	170	241
SINGIDA	172	200
TABORA	166	209
TANGA	274	343
WEST LAKE	282	318
TOTAL	3,720	4,495

1/ Lindi Region became a separate Region in July, 1971.
Formerly it was combined with Mtwara Region.

Source: Educational Statistics Handbook, 1969-72.
Ministry of National Education, April 1973

TABLE 20

TANZANIAPrimary School Enrollment, 1965 and 1972

REGION	1965	1972
ARUSHA	31,040	46,110
COAST	42,847	67,386
DODOMA	36,164	54,606
IRINGA	31,755	51,848
KIGOMA	22,342	35,271
KILIMANJARO	78,445	96,447
LINDI	<u>1/</u>	33,090
MARA	35,748	49,645
MBEYA	48,321	71,814
MOROGORO	43,718	58,980
M'TWARA	55,263	48,669
MWANZA	57,529	74,368
RUVUMA	28,118	41,505
SHINYANGA	31,497	48,047
SINGIDA	30,353	43,978
TABORA	28,118	40,428
TANGA	56,360	73,713
WEST LAKE	52,941	67,691
TOTAL	710,200	1,003,596

1/ Lindi Region came into existence in July, 1971.
Formerly it was combined with Mtwara Region.

Source: Educational Statistics Handbook, 1969-1972
Ministry of National Education, April 1973.

TABLE 21

TANZANIA

Social Services, by Region, 1971

Regions	Population Density Ranking	Rural Water Supply	Health	Education
		Capacity as % of Regional Population	Capacity of Rural Health Centers as % of Regional Population	Enrollment in Standard I as a % of Age Group 7-8
Arusha	16	29	33.5	39.4
Coast	9	18	26.8	81.2
Dodoma	8	22	49.2	41.5
Iringa	10	9	12.0	36.0
Kigoma	11	12	38.5	59.2
Kilimanjaro	2	28	38.8	61.5
Lindi	13	7	42.1	37.8
Mara	5	8	30.0	46.0
Mbeya	12	7	17.4	41.4
Morogoro	14	8	32.3	51.1
Mtwara	4	7	41.4	37.8
Mwanza	1	11	48.5	59.9
Ruvuma	17	11	21.5	57.2
Shinyanga	7	11	47.6	31.2
Singida	15	16	50.3	68.9
Tabora	18	30	39.2	40.0
Tanga	3	13	33.2	54.2
West Lake	6	12	20.2	59.6
Average		13	36.0	48.0

TABLE 22

TANZANIA
Various Medical Facilities by Region, 1972

Region	Population Density Ranking	No. of Hospital Beds	Rural Health Centers	Rural Dispensaries	Population per hospital bed	Population per Rural Health Center	Population per Dispensary
Arusha	16	965	5	71	740	142,740	10,052
Coast	9	1,469	2	98	623	457,250	9,332
Dodoma	8	645	8	100	1,225	98,813	7,905
Iringa	10	969	3	92	825	266,733	8,698
Kigoma	11	467	3	71	1,079	168,000	7,098
Kilimanjaro	2	1,040	6	85	732	126,850	8,954
Lindi	13	566	4	63	882	124,775	7,922
Mara	5	465	5	71	1,360	126,460	8,905
Mbeya	12	1,114	5	99	1,024	228,160	11,523
Morogoro	14	1,052	6	109	714	125,117	6,887
Mtwara	4	785	6	42	919	120,250	17,179
Mwanza	1	1,291	13	108	937	93,030	11,198
Ruvuma	17	1,005	2	62	446	224,050	7,227
Shinyanga	7	544	9	101	1,868	11,289	10,060
Singida	15	593	4	63	823	122,100	7,512
Tabora	18	903	5	67	687	124,850	9,255
Tanga	3	1,386	9	117	581	89,511	6,885
West Lake	6	1,306	4	80	559	182,725	9,136
Total		16,504	99	1,501	820	136,836	9,025

Note: The facilities shown are those functioning at the end of December 1972 and do not include any other facilities under construction during 1972/73.

CHAPTER SEVEN

RURAL DEVELOPMENT - ORGANIZING THE RURAL SECTOR

RURAL DEVELOPMENT - ORGANIZING THE RURAL SECTOR

This chapter is divided into two sections. First is a discussion of AID inputs into this activity in Brazil and Tanzania. Second is a brief discussion of the situation in the two countries with respect to this topic. The second section also provides some analysis of the land tenure question with respect to assisting the rural poor.

A. AID Inputs

1. Brazil

AID programs in Brazil in the area of organizing the rural sector fall into three categories: migration and colonization, cooperative development and labor. Labor was placed in the urban sector in our summary chart and analysis in Chapter Four because most of the thrust of the effort was aimed at the urban work force, but the goals of the project included rural labor. The total resources utilized by AID in this overall area over the 1960-73 period are estimated at about \$2.2 million, or about 2.8 percent of the total aimed at the rural sector. On the summary chart, most of this is included under the Code 100 - Agriculture category. It is clear that a sum such as \$2.2 million over a 14 year period would have relatively little impact on the status of the rural poor in a country as large as Brazil.

a. Long Term Goals of AID Inputs

- (1) Frontier Homestead: Relieve overpopulation in coastal areas, provide farming opportunities for those dispossessed by Northeast sugar modernization; help develop Brazil's interior.
- (2) Migration and Settlement: Assist Government of Brazil's land reform agency to determine migration and settlement patterns and encourage settlement in interior.
- (3) Pernambuco Colonization: Assist colonization by providing housing, and training; increase incomes.
- (4) Colonization - Food for Peace: Use food to encourage frontier colonization as part of land reform program.

(5) Agricultural Cooperatives: Help increase agricultural production and reduce marketing losses through cooperatives.

(6) Trade Union Development: Rural aspect - assist rural labor movement in the Northeast, through development of rural labor centers.

b. Project Level Results

Except possibly in the cooperative development activity, it would appear that the projects in the area of organizing the rural sector were not very successful. We located one or more audit reports on two of the four land reform-related projects. Regarding the Frontier Homestead project, there was poor utilization of equipment and no progress on land titling, which was considered to be of major importance. A 1971 audit, however, stated that some of the soils maps made under the project had been very useful in helping to set the alignment for the Amazon Highway.

The Pernambuco Colonization project was, according to the audit, characterized by poor or non-existent training of colonists, poor utilization of available arable land, poor technical services and a pattern of colonists who left the area in the early years. There were apparently problems of inadequate support from the State Government and political difficulties.

The Food for Peace-Colonization project was not subject of an audit that we could find, but there is no doubt that a significant volume of food was delivered and presumably contributed in some way to the colonization effort. We found no record of output indicators for the Migration and Settlement project.

Although we located no audit report, the CAPs reported a reasonable level of success in the Agricultural Cooperatives project, with 40 participants trained, 400 in-service personnel trained, 225 cooperatives established or

revitalized and four coordinating councils established. Similarly, the CAPs indicate a level of achievement for the rural aspects of the trade union project; by 1966 there were three out of eight rural labor centers established.

2. Tanzania

A significant portion of AID projects in Tanzania targeted to the rural sector fall into the organization of the rural sector category. These are made up of the community development programs carried out in the mid-60s and some of the cooperatives, agricultural credit and credit union projects. A total of approximately \$2.5 million was devoted to these activities during the period, or about 40 percent of the total to the rural sector. The agricultural credit and related projects are included in the Code 100-Agriculture category in our summary table in Chapter Four.

a. Long Term Goals of AID Inputs

(1) Community Development: The goals changed over the life of the project, but were mainly to help release talents and decrease ignorance, poverty and other disadvantages of rural populations through training, establishing training centers, (e. g. Tengeru), self-help projects and the like. A related project, Community Development Training had similar goals - training and training centers, as did a Community Development Training Center loan for construction of an expanded training center at Tengeru.

Two other small community development projects were listed: Community Development Support Services: to provide mobile services to community development field areas, and Community Development Survey and Research: to obtain socio-economic data needed to plan community development programs in the South and Lake regions.

(2) Rural Development: Survey project on proposed settlement scheme to establish a model settlement in Bashanet in order to improve crop diversification and farming methods.

(3) Rural Credit Union Development: Establish an effective credit union system to generate and mobilize rural savings and make low cost credit available.

(4) Agricultural Credit: Help develop agricultural credit institutions and strengthen the cooperative movement. A second project, Agricultural Credit and Cooperatives, had similar goals. A third, Agricultural Credit, was designed to assist the Rural Development Bank to develop a capacity to make loans for rural development.

(5) Tanzania National Service: Develop human resources of youth through training, including training for rural development.

b. Project Level Results

We were unable to find audits or other evaluative documents which covered these projects. The audit dated April 21, 1972, for example, did not include any of these projects, virtually all of which were inactive by that date. Therefore, we were only able to compare the project inputs and outputs as given in the CAPs in order to try to arrive at a judgement.

The long-running community development projects seem to have achieved many of their output indicators, to one degree or another. The Tengeru Community Development Training Center was completed and expanded, large numbers of workers were trained and a very large number of self-help projects were listed as completed. These include new roads and repaired roads, clinics, school classrooms, community development centers and communal shambas.

The Rural Credit Union Development project appears to have contributed to the establishment of a Savings and Credit Union League and a number of member credit unions. With regard to the various agricultural information on actual work done or achievements. The same is true of the project to assist the Tanzania National Service in its rural development efforts.

B. Country Situation and Analysis

1. Brazil

a. Land Reform and Colonization

Land reform and colonization programs have been on the books in Brazil for a number of years, and are under the overall direction of the National Institute for Colonization and Agrarian Reform (INCRA). The most recent land reform program is the PROTERRA program in the Northeast, which got underway, on paper, in 1971. Its goals are land reform, the promotion of a rural middle class (of medium sized farmers) and agri-business projects. The project has managed to provide land, obtained mostly from large sugar estates, to about 300 farmers, a few of which are reported to be doing very well. Those who have obtained land, on rather generous credit terms, generally have relatively large plots of 50 to 100 hectares, which is several times the planned level but seems to be the minimum needed to support a rural "middle class" farmer in the sugar zone.

Generally, however, this and other land reform and colonization projects in Brazil have made very limited progress because of high costs, administrative requirements beyond the available resources, poor planning, resistance from powerful landlords and a variety of other problems.

b. Cooperatives

Cooperatives are an important factor in the rural economy in Brazil in that they handle a large portion of the agricultural commodities.

According to the "Anuario Estadístico do Brazil" for 1961 and 1973, the number of cooperatives registered fell off sharply between those two years, but the number of producer cooperatives, which are of major interest in the rural sector, fell off only slightly.

2. Tanzania

a. Village Organization

During the period under review, and continuing to the present, Tanzania has been involved in a very comprehensive program to organize the rural sector. Shortly after independence, Tanzania launched a "transformation program" aimed at speeding rural development through the establishment of nuclear village settlement schemes aimed at the production of high priority crops. The actual scheme was launched in 1963 but made relatively slow progress; by the end of 1965 only nine schemes had been launched on a pilot basis. In 1966 the Government decided to abandon the program and switch the village settlements into the new format which had been developed, the ujamaa village.

The ujamaa village program, which has expanded rapidly in recent years and forms the cornerstone of Tanzania's rural development and organization efforts, has been described elsewhere in this presentation. Briefly, the ujamaa village program is based on the establishment of comprehensive, democratically run villages which combine the features of village living (as opposed to the previous scattered farms), provision of a relatively high level of social services, political cohesion and some communal farming on communal plots. This latter feature has worked very badly, with yields and outputs far below those on non-communal land, and recently has been officially dropped. There is some question whether the communal

feature has, in fact, been totally abandoned.

It appears that the Government, which has put very heavy emphasis on the program, has used the promise of priority treatment with respect to investment in social services to help promote the establishment of ujamaa villages, in spite of ideology which holds that such is not the case and that the villages are a step toward self sufficiency. In fact, most observers have concluded that the villages, to date at least, have fostered dependence.

The growth of ujamaa villages has been very rapid, but has been concentrated in the poorer areas of the country where commercial farming was not well established. Nonetheless, there is evidence, discussed at length elsewhere, that the ujamaa village program has entailed serious losses in production.

b. Cooperatives

Cooperatives are also very active in Tanzania. There are three levels. The first level is the marketing cooperative, of which there were 1,300 in 1973, and which cover the entire country and constitute the marketing channel for agricultural commodities. They are very much under the influence of the Government, in common with the rest of the agricultural sector. There is apparently a great deal of inefficiency in the marketing work performed. The second level is the regional cooperative union, and the third is the Cooperative Union of Tanzania. The cooperatives are also a link to the parastatal marketing organizations which sit at the top of the marketing pyramid in Tanzania.

The significant AID input into community development and related activities in the 1960s would appear to have been heavily overtaken by events since, especially the widespread development of the ujamaa villages.

Land Tenure - Discussion

Land tenure can take many forms from outright ownership to simple rental, including sharecropping. In addition to the manner in which title or rights by which land is held for agricultural or village use in rural areas there is the matter of the size of acreage held by individual users.

The distribution of land by cumulative acreage and cumulative holders of tenure rights takes on the typical shape of the Lorenz Curve used to illustrate income distribution. Such a curve using the simple data of acreage distribution lacks the depth necessary for application to the rural poor.

Of much greater importance for our purposes is the rent to be paid under various land tenure arrangements other than ownership. It is rather typical for such tenant farmers to share one-half or more of their crops with the landowners. In arid countries where tenant farmers are poor it is usual to have the crops shared as many as five ways: one fifth each to the landowner, the party holding the water-rights which may be other than the owner, the party supplying the seed, the party supplying the draft animal and the plow and finally the tenant farmer himself. In such cases they may all be relatively poor. More often the landowner and the party holding the water rights are relatively well-to-do. Nevertheless, they all suffer from the income "gap" in comparison with their cousins in the urban areas.

If data had been found to grade land according to the number of people sharing in the distribution of crops as rent, the sag in the Lorenz curve would be quite deep and show a very unequal distribution as part of the problem of helping the rural poor.

In Tanzania, a semi-arid country, the land-crop distribution was

considered to be sufficiently intensive, so that the ujamaa village program was adopted with the stated purpose of having all rural persons living in such villages.

In these villages land-tenure was reduced in part to communal rights to share a portion of the land owned by the village collectively. This apparently fair land-tenure and distribution scheme has not proven to be particularly productive as was found when we plotted Graph I for productivity which turned out to be stagnant by tons and declining by value. As an incentive for more productive farming and better incomes, communal land-tenure has not yet worked out successfully in Tanzania.

In Brazil the land-tenure policy was more open and it was possible to encourage land ownership by opening new land areas for resettlement.

This open policy seems to have extended to migration of the rural population to urban areas with the agriculture population increasing slightly in the early 1960s and then declining very slowly thereafter. The combination of migration and land ownership resulted in increased agriculture productivity as shown in Graph I which would be expected with a rapidly expanding total population.

CHAPTER EIGHT
SUMMARY OF FINDINGS

SUMMARY OF FINDINGS

The purpose of this Chapter of our paper is to summarize our findings. Section A presents the gist our findings with respect to program and projects in Brazil. Section B summarizes our findings for programs and projects in Tanzania. Section C summarizes our findings with respect to systems research concerning the problems of the rural poor. Section D contains concluding comments.

A. Programs and Projects in Brazil

With respect to AID programs and projects in Brazil we find:

1. During the period, 1960 - 1973, AID inputs to Brazil amounted to \$1,139.9 million. Of this amount, 77.3 million, or 6.8 percent represented direct rural sector programs. Another \$48.0 million in aid, or 4.2 percent of the total, represented urban programs of potential assistance to rural persons who migrated to the cities. Rural sector funding as a percentage of total AID funding in Brazil has showed a generally downward trend since 1961.

2. Of the \$77.3 million in rural projects in Brazil, \$64.4 million, or 83.3 percent fell into the categories of agricultural and non-agricultural production, and economic growth. Measured by their own rationales, the most successful projects in this category were in the areas of:

- o Agricultural credit
- o Marketing information
- o High quality protein corn
- o Price support and food stabilization

Modestly successful rural productivity and economic growth project included:

- o Seed industry development
- o Agricultural research and extension
- o Fertilizer industry development
- o Feed grain development
- o Higher agricultural education

Unsuccessful Brazilian projects in this category included:

- o Development of distribution, storage, and farm service centers
- o Agricultural economic planning and analysis
- o Fish production, processing, and marketing
- o Sugar zone modernization, diversification, and reform
- o Rural industrial technical assistance

3. Of the \$77.3 million in rural projects in Brazil, \$10.0 million or 13.6 percent represented rural welfare programs.

Fairly successful projects included:

- o Malaria eradication
- o School feeding

Projects of lesser or uncertain success include:

- o Protein foods and food fortification
- o Maternal and infant feeding
- o State public health planning
- o Elementary and basic education
- o Literacy training for adults
- o Rural infrastructure

Rural vocational education and hiring at the secondary level ran into severe opposition, and must be deemed unsuccessful.

4. Approximately \$2.2 million, most of it is classified in the agricultural production category, was spent on migration and colonization, cooperative development activity. It would appear that projects in the area of organizing the rural poor were not very successful.

B. Programs and Projects in Tanzania

With respect to AID programs in Tanzania we find:

1. During the period 1964 - 1971, AID inputs to Tanzania amounted to \$24,179,000. Of this amount, \$6,334,000, or 26.2 percent of the total was intended to impact on the rural sector. Another \$822,000, or 3.4 percent of the total, represented urban programs of potential assistance to persons who migrated to the cities. Rural sector funding as a percentage of total AID funding in Tanzania moved sharply upward at the end of the period analyzed.

2. Of the \$6,334,000 in rural projects in Tanzania, \$4,331,000, or 68.4 percent, fell into the categories of agricultural and non-agricultural production, and economic growth. Scant evidence is available on the success or failure of the projects encompassed within these categories. Judged on the available information, the better projects appeared to be:

- o Development of the Agricultural College at Morogoro
- o Agricultural extension services
- o Agricultural materials and services
- o Construction of the Bunda-Nansio Road

- o Masai livestock and range management

The least effective projects appeared to be:

- o Agricultural research
- o Agricultural marketing development
- o Seed multiplication and distribution

3. Of the \$6,334,000 in rural projects in Tanzania, two projects amounting of \$117,000, or somewhat less than two percent of the total, represented rural welfare programs. The former of these programs, secondary vocational agricultural education, does not appear to have been implemented. The second, a special project program, resulted in the completion of fifty projects.

4. A total of about \$2.5 million, much of it overlapping with the categories of agricultural and non-agricultural production, and economic growth, was devoted to organizing the rural sector. There is little information available with respect to project level results achieved by these community development programs.

C. Systems Research Findings

The principal findings of our systems research are as follows:

1. On The Income Gap and Migration:

a. Between 1960 and 1972, the gap between agricultural income and non-agricultural income in Brazil increased from \$148 to \$398 in constant U.S. dollars. Between 1962 and 1972, the gap between agricultural and non-agricultural income increased from \$181 to \$277 in Tanzania.

b. During the period 1961 and 1972, Brazil had substantial and growing migration from rural areas to the cities. In Tanzania, such migration was comparatively light and fell off in magnitude. These trends reflected the policies of the respective governments.

c. In neither country did improved agriculture inputs or migration policy appear to have acted effectively in solving the aggregate problem of the rural poor. However, our research does suggest that improved agricultural inputs and out migration can together help to increase income levels, while a no-migration policy appears to stifle both the absorption of improved agricultural inputs and agricultural income levels.

2. On Income Distribution and Employment:

a. For 1969 and 1970, the income distribution patterns in Tanzania suggest greater inequalities than in Brazil. Both countries manifested greater income inequality than in the United States.

b. Incomes in Brazil were more unevenly distributed in 1970 than they were in 1960. Comparable data were not available for Tanzania.

c. For 1969 and 1970, agricultural incomes were more unevenly distributed in Tanzania than they were in Brazil. By contrast, non-agricultural income was more evenly distributed in Tanzania than in Brazil. These results suggest systemic problems with which announced national policies may not be consistent.

d. Data for the two countries suggests that off-farm employment is not likely to yield easy solutions to the "income gap." The systemic problems are simply too overpowering

3. Productivity, Technology, and the "Biological Constraint":

a. Between 1964 and 1972, agricultural productivity rose in Brazil and fell in Tanzania. In both countries, productivity in the non-agricultural sector rose, and rose more rapidly than agricultural productivity.

b. The differences in agricultural and non-agricultural productivity found in both countries do not appear to be attributable to articulated national and AID policy. Instead, they appear attributable to biological limitations and constraints affecting food prices and production which in term limits the ability of farmers to invest in higher productivity. Where improvements in productivity are made, they serve to shift part of the already low income from poor farmers to farmers with better market and production opportunities.

4. On Rural Welfare and Rural Income:

a. Rural incomes, especially rural cash incomes are relatively small in proportion to incomes in urban areas. When people have a propensity to spend cash for goods and services which they consider to be more essential than health, education, and welfare services, there develop real problems concerning source of support for these services.

b. "Pilot" projects supported by the central governments and international sources tend to founder unless a sufficiently large and steady source of resources can be found to support the program on a continuing global basis. Again, we are dealing with a systemic constraint.

D. Conclusion

AID's interest in the problems of the rural poor derives from a multiplicity of influences: from Congressional mandates pertaining to poverty, from deep concern with the problems of the cities are facing in handling the influx of rural poor, from academic criticism concerning the oversubsidization of industrial development, and from many other sources. As those concerned with the problems of the cities look to rural areas for solutions so those concerned with rural problems may be tempted to place the burden of solving the problems of rural poverty upon the cities. Our approach to rural poverty should not become part of an analytical process whose objective is to define the problem in such a way that it belongs to someone else. It is important that we should understand that the problems of both urban and rural areas derive from the relationships which bind them together. The difficulties being experienced are in large part systemic. In large part, they require systemic solutions.