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A PROPOSAL FOR RESEARCH ON RURAL EMPLOYMENT IN TROPICAL AFRICA:  
A NETWORK APPROACH

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## I. JUSTIFICATION FOR THE RESEARCH

In December, 1971, the International Labour Office (ILO) had outstanding requests from 14 developing countries (9 of the 14 were from Africa) to mount major missions to advise on problems of unemployment. The ILO missions which have studied unemployment in Colombia in 1970<sup>1/</sup> and Ceylon in 1971<sup>2/</sup>, will send a thirty-member mission to Kenya in March/April of 1972. However, the ILO does not have the capacity to meet the requests of the other eight African countries. Moreover, the ILO is now questioning the effectiveness of short-term employment missions. The Deputy Director of the ILO, Dr. Abbas Amman, recently noted that "the action-oriented field strategy teams have little time to do substantive research. All they are and will be able to do is data collection and some additional ad hoc pieces of investigation in the national context."<sup>3/</sup>

The OECD studies on employment are nearing completion; these studies devoted little attention to rural employment problems in Africa.<sup>4/</sup> The AID-financed studies of unemployment being carried out by Yale cover nine countries but with one principal researcher per country, Yale has not been able to devote much attention to rural employment problems.

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<sup>1/</sup> ILO, Towards Full Employment: Programme for Colombia, Geneva, 1970.

<sup>2/</sup> ILO, Matching Employment Opportunities and Expectations: A Programme of Action of Ceylon. Geneva, November, 1971.

<sup>3/</sup> October 13, 1971 letter of invitation to an ILO Conference of Directors of Research Institutes, which was held in Geneva from 13-16 December, 1971.

<sup>4/</sup> Yudelman, M., Butler, G. and Banerji, R. Technological Change in Agriculture and Employment in Developing Countries, Development Center Studies. Employment Series No. 4. Paris: OECD, 1971.

Cornell is concentrating its research on employment and income distribution in Asia.<sup>1/</sup> Also, Iowa State is concentrating its research in Latin America, in developing techniques of measuring employment, and in developing macro and sectoral models which trace the employment consequences of alternative policies.<sup>2/</sup> The Rockefeller Foundation will shortly begin making modest grants directly to individual researchers and research institutes in developing countries for research on the employment problem. The World Bank and Inter-American Bank have recently sponsored several working papers on unemployment. Finally, a number of bi-lateral agencies such as SIDA are becoming interested in research on employment problems.

Two promising attempts to form a network of researchers on unemployment are evolving in Asia and Latin America. In Asia, Professor Harry Oshima of the University of the Philippines and Professor You Poh Seng of the University of Singapore have helped organize a Committee on Asian Manpower Studies (CAMS). In Latin America, ECIEL<sup>3/</sup> is now adding the employment problem to its research agenda.

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<sup>1/</sup> Lele, Uma J. and Mellor, John W., "The Political Economy of Employment Oriented Development", Occasional Paper No. 42, Cornell University, June, 1971.

<sup>2/</sup> Thorbecke, Erik and Stoutjesdijk, Ardy, Employment and Output, A Methodology Applied to Peru and Guatemala, Organization for Economic Cooperation and Development, Development Centre, Research Division, Paris, October 1970, 227 pp.

<sup>3/</sup> Program of Joint Studies on Latin American Economic Integration, the acronym formed from its Spanish name, Estudios Conjuntos sobre Integración Económica Latinoamericana.

Research on employment problems in Africa was surveyed for AID in 1970, by Eicher, et al.<sup>1/</sup> The Eicher survey revealed that studies by Callaway,<sup>2/</sup> Harbison,<sup>3/</sup> Frank,<sup>4/</sup> Harris and Todaro<sup>5/</sup> and Kilby<sup>6/</sup> and a number of others confirmed (a) the inability of the industrial urban sector to absorb the projected increases in the African labor force in the next 10-15 years, (b) that family planning is in its infancy, and (c) that macro economic policies and agricultural development strategies can play a crucial role in determining the rate of labor absorption in agriculture. However, planning in most Tropical African countries has rarely taken the unemployment problem into explicit consideration at the project, sector or macro economic levels. This lack of attention to the employment issue is partially the result of the dearth of micro economic studies--particularly on food crops

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<sup>1/</sup>Carl K. Eicher, Tom Zalla, James Kocher and Fred Winch. Employment Generation in African Agriculture. East Lansing, Michigan: Michigan State University, Institute of International Agriculture, July 1970.

<sup>2/</sup>Archibald Callaway, "School-Leavers and the Developing Economy of Nigeria", Conference Proceedings, NISER, Ibadan, Nigeria, 1960, pp. 60-72.

<sup>3/</sup>Frederick Harbison, "From Ashby to Reconstruction: Manpower and Education in Nigeria", Growth and Development of the Nigerian Economy. Edited by C. Eicher and C. Liedholm. East Lansing: Michigan State University Press, 1970.

<sup>4/</sup>Charles R. Frank, "The Problem of Urban Unemployment in Africa", Employment and Unemployment Problems of the Near East and South Asia, Edited by R. G. Ridker and H. Lubell, Vol. II. New Delhi: Vikas Publications, 1971, Ch. 27, pp. 783-818.

<sup>5/</sup>J. R. Harris and M. P. Todaro, "Migration, Unemployment and Development: A Two Sector Analysis". The American Economic Review, Vol. 60, No. 1 (March, 1970), pp. 126-142.

<sup>6/</sup>Peter Kilby, Industrialization in an Open Economy: Nigeria 1945-1966. New York: Cambridge Univ. Press, 1969.

in Tropical Africa.<sup>1/</sup> Moreover, farm management studies in Tropical Africa have rarely devoted much attention to off-farm employment and migration issues and have generally been conducted in isolation from regional and national policy problems.

The central premise of this study is that since 70-90% of the population of the typical country in Tropical Africa are in agriculture, there is a need for intensive research in rural areas to determine the potential, if any, for absorbing more labor in productive economic activities. This study assumes that until the functioning of the rural labour market is more fully understood effective strategies and policies for dealing with employment problems cannot be articulated. Therefore, an important objective of the proposed research is to undertake a series of studies on rural employment in order to advise policy makers in Tropical African nations on what--if anything--can be done to increase employment and incomes in rural areas. An integral part of the research will be the training of Africans and the development of an African capacity for economic research.

Another important objective of the proposed research is to assist in developing a conceptual framework and research methodology for including employment objectives into project, sub-sector and sectoral analysis in developing countries. Although there is increasing interest in the employment problem in Asia, Latin America and Africa, the development of suitable theories and methodologies for analyzing the problem is still in its infancy.

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<sup>1/</sup>The need for micro studies in developing countries in general has been emphasized by Hayami and Ruttan. See Yujiro Hayami and Vernon Ruttan, Agricultural Development: An International Perspective, Johns Hopkins, 1971.

The Harris and Todaro model and the Lele-Mellor model are recent attempts to explicitly incorporate employment into two sector models of development. However, there are a number of theoretical and conceptual problems in these models which must be overcome for a more complete analysis of employment. For example, there is little agreement on a satisfactory measure of unemployment, the rural-urban migration process is poorly understood and there is little knowledge of the effects of factor prices on capital-labor substitution. Until these difficulties are overcome, incorporation of employment objectives in project, sector and national planning can only be rudimentary.

Over the past six months, Carl K. Eicher and researchers at Michigan State have worked closely with a number of scholars in Africa on a conceptual framework for analyzing employment problems and policies and in laying out a number of country specific micro-studies of rural employment, including the potential of labor absorption in alternative agricultural production systems and off-farm rural activities, the determinants of out-migration, etc. The discussion which follows summarizes the activities of this joint planning phase and serves as a background to the research proposal which is spelled out in Section III.

## II. SUMMARY OF ACTIVITIES UNDER AID/csd/3306 PLANNING CONTRACT

July 1, 1972 - March 31, 1972

This three-year research proposal which is spelled out in the next section is an outgrowth of a nine-month planning contract--AID/csd/3306. The purpose of the planning contract was to allow Carl K. Eicher and a team of researchers at MSU and in Tropical Africa an opportunity to jointly design a three-year research proposal on rural employment problems in Tropical Africa. The planning contract enabled MSU researchers to visit AID missions, local government officials and researchers in Africa in order to interact and develop country specific research priorities within the context of the overall conceptual framework. The field visits also allowed an opportunity to determine whether local financing--mission and/or government--would be forthcoming to complement funding from the Central Research Office of AID/Washington.

Over the first six months (July - December, 1971) of the nine-month period of the planning contract the following progress was recorded:

1. Research associates in Nigeria, Sierra Leone, and Zaire Republic (formerly Democratic Republic of the Congo) undertook an intensive review of the literature on employment problems and government policies and strategies for coping with the problems. The following papers were prepared over the past six months:

- A) Dunstan Spencer, "Agriculture and the Problem of Urban Unemployment in Sierra Leone", Paper presented at the First Conference of the Agricultural Society of Sierra Leone, Freetown, September 17/18, 1971.

- B) S. M. Essang, "Official Views on Rural Unemployment, Rural-Urban Migration, Population Growth, Income Distribution and Agricultural Mechanization: A Summary Report and Observations", Department of Agricultural Economics, University of Ibadan, Nigeria, December, 1971.
- C) Eric Tollens, "Critical Review of Research on Agricultural Economics and Unemployment in the Republic of Zaire" (Department du Rurale Economie, National Universite du Zaire, Campus de Kinshasa, January, 1972 draft)

2. A total of 1290 publications on various aspects of unemployment, migration and mechanization were assembled in the Department of Agricultural Economics at MSU; xerox copies of many of these publications were made available to researchers in Nigeria, Ghana, Zaire Republic and Sierra Leone. In addition, a systematic attempt was made to acquire "non-price" literature such as preliminary conference papers, research proposals, etc. in order that these could quickly be sent to researchers in the field. This exercise led to the conviction that an orderly exchange of current publications is a valuable component of a research network and that financing for such an information system should be included in the three-year proposal.

3. In order to develop an overall conceptual framework for the study, Byerlee and Dunlop reviewed the literature and prepared the following four working papers:

- A) D. Byerlee, "Macro Economic Considerations in Research on African Rural Development and Employment Generation".

- B) D. Dunlop, "Population Growth and Economic Welfare: Its Long-Run Effects"
- C) D. Byerlee, "Research on Migration in Africa: Past, Present, and Future".
- D) D. Dunlop, "An Analysis of the Rural Non-Farm Economy (Small-Scale Industry, Trading and Service Activities): Implications for Research".

In addition to the above working papers, Gordon Gemmill prepared a preliminary report of his research on oxen powered mechanization and maize production in Malawi. Gemmill's paper, "Studies of Mechanization: Review and Progress" will be incorporated into a Rural Employment working paper, "Needed Redirection in Research on Agricultural Mechanization".

4. A meeting of network researchers was held at Ibadan in December, 1971. It was agreed at the Ibadan meeting that the research should focus on rural employment problems in Tropical Africa. It was also agreed at the Ibadan meeting that the research should be concentrated in three countries--Nigeria, Zaire, and Sierra Leone (called concentration countries) and that the network should facilitate the research of scholars in other countries such as Ghana, Malawi, Ethiopia and possibly Tanzania and Uganda. In total approximately 25 researchers and five or six countries will be included in the network. (See Appendix A.)

5. Since employment problems cannot analytically or for policy purposes be separated from other development problems, it is necessary to pursue research on employment as an integral part of high priority policy topics which will likely vary considerably from country to country. Since the agricultural sector is so large in countries such as Zaire and Nigeria the research will concentrate on a range of rural employment problems in major food producing regions in these countries.

A close examination of food prices and trends in food imports in Nigeria, Zaire, Ghana, Sierra Leone, etc. reveals that food policy is emerging as a key issue in Tropical Africa.<sup>1/</sup> However, the bulk of the economic research in Tropical Africa has been focused on export crops.<sup>2/</sup> Economists have assigned a low priority to research on food crop production because it was assumed that African countries were in the "land surplus" category and that food production would grow almost automatically in response to growth in population and effective demand.

Government policy makers and donors such as AID, IBRD, etc. have become very interested in how food production can be expanded in Zaire, Nigeria, Ghana, etc.<sup>3/</sup> Since policy makers in these countries have a common interest in both employment and food production problems the network researchers decided to concentrate their research on rural employment in major food producing regions.

6. Local Financial Support--The planning contract provided an opportunity for MSU researchers to interact with government officials and AID missions in Nigeria, Ghana, and Zaire Republic in order to arrive at the country specific research priorities and to determine whether any mission or government financing would be forthcoming to complement central funding. The following financial commitments were obtained:

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<sup>1/</sup>For example, the Republic of Zaire is importing 100,000 tons of maize per year, and substantial quantities of wheat flour and rice. Food prices in Nigeria have risen 30% in the past years. Nigeria has embarked on a number of schemes to bring 1.5 million acres of land in the Northern states under irrigated wheat production. Ghana is importing \$10 million of rice annually and Sierra Leone is also a rice importer.

<sup>2/</sup>See Carl K. Eicher, Research on Agricultural Development in Five English-Speaking Countries in West Africa, New York: Agricultural Development Council, 1970.

<sup>3/</sup>H. C. Kriesel, "Cereal Development Policy in Nigeria for the 1970's", USAID/Lagos, Draft, October 18, 1971.

- A) The Ministry of Agriculture of the Republic of Zaire and AID/Kinshasa are giving high priority to the proposed research. AID/Kinshasa has agreed to allocate up to 50,000 Zaires (1 Zaire = \$2.00) per year (total of \$300,000) to pay the local cost of the Zaire portion of a study of rural employment in major food producing regions. It is proposed that MSU play the major role in carrying out the study in Zaire.
- B) In Nigeria, The Federal Ministry of Agriculture and Natural Resources has informally agreed to finance Dr. Essang's proposed study of "Strategies for Increasing Food Production and Rural Employment" and the first phase of Dr. Olayide's proposed study "Research on Rural Integrated Development and Food Production in the Guinea Savannah Zone of Nigeria". It is anticipated that further studies will be developed by Nigerian scholars--e.g. Olatunbosun, Idachaba, and Falusi--by late 1972. Since Nigeria has a large number of young agricultural economists, it is proposed that Nigerians carry out the bulk of the projected studies in Nigeria. MSU consultants--e.g. Liedholm--will work with Nigerian scholars on a request basis.
- C) In Sierra Leone, there is very little funding available to develop the agricultural economics research capacity of the Njala University College. Presently, there are four Sierra Leone faculty members in the Department of Agricultural Economics. It is proposed to finance the total portion of the Sierra Leone study under an MSU-sub-contract to Njala. A Sierra Leoneon--Dunstan Spencer--is the principal researchers in charge of the

Sierra Leone project.

D) In Ghana, Fred Winch, Planning Unit, Ministry of Agriculture, is undertaking a micro economic study of the rice industry in Northern Ghana with emphasis on rice production under alternative systems of mechanical technology. Winch's salary is partially financed by AID/Ghana through a contract with the Near East Foundation. Mr. Y. Atta-Konadu, Ministry of Agriculture, is in the early stages of a micro economic study of the maize industry. John Nabila, Department of Geography, University of Legon, will undertake a study of the out-migration from the rice producing area in Northern Ghana.

### III. OBJECTIVES OF THE THREE-YEAR STUDY

1. Further develop a conceptual framework for (a) analyzing employment problems and policies and (b) incorporating the employment objective into project, sub-sector and sector analysis in developing countries.
2. A. Undertake a series of micro-level studies on rural employment in Tropical Africa including:
  - i. Demand for labor in alternative production systems
  - ii. Demand for labor in off-farm rural activities
  - iii. Determinants of out-migration; and
- B. On the basis of the aggregation and integration of the micro level research to evaluate the effects of micro and macro level policies on rural employment and income and provide general policy guidelines for dealing with the employment problem in Tropical Africa; and
- C. From the results of A & B above to assist in providing an improved theoretical and empirical basis for incorporating labor into sectoral and macro-planning models.
3. Formulate specific policy guidelines for dealing with employment problems in three concentration countries--Zaire, Nigeria and Sierra Leone--as research results become available.
4. Facilitate the development of a community of African scholars through a network which links scholars in Africa with each other and with others engaged in employment research in Latin America, Asia, U. S., etc.
5. Contribute to the training of African economists and agricultural economists and the development of the research capacity of African institutions.

#### IV. RESEARCH PROGRAM AND METHODOLOGY

The research effort will focus on an analysis of rural employment in food producing regions of Tropical Africa. Three phases of the research program are planned. First, network researchers will continue to survey the literature, refine the conceptual framework for analyzing rural employment problems and develop methodology for incorporating employment into project, sub-sector and sector analysis. This phase of the research will be ongoing throughout the project. The second phase, beginning three to six months after project initiation will involve micro-level research in the three concentration countries, Sierra Leone, Nigeria and Zaire and in other countries such as Ghana and Malawi. In the third phase, network researchers will spend several months at MSU analyzing data and interacting with other researchers in order to complete a final analysis of rural employment problems in each country. From these studies of approximately 25 researchers in at least five countries, the final report will be prepared consisting of (a) specific policy guidelines for rural employment in each country studies, (b) comparative analysis of rural employment problems in Tropical Africa to give general policy guidelines and (c) theoretical and methodological contributions of the combined project research.

##### A. Conceptual Framework for Research on Rural Employment

Although the research emphasis in each country will vary depending upon the policy priorities and existing data base in each country, an overall framework for the research, is applicable to an analysis of rural employment. In this conceptualization the research is divided into three main levels of aggregation: (1) micro-level research on rural

labor supply and demand and (2) aggregate analysis of the rural labor market and (3) incorporation of employment objectives into sectoral and macro-economic analysis. A description of specific research at each level and the proposed methodology follows.

1. Micro-Level Research on Rural Employment

Micro-level research on rural employment provides the basic foundation for analysis of employment problems at higher levels of aggregation. Moreover, because of the dearth of micro-economic research in rural areas and particularly food producing areas of Africa,<sup>1/</sup> a major emphasis in the present study will be on obtaining primary data to analyze the rural labor market. Three major areas of micro-economic research are proposed: (a) demand for labor under alternative production systems, (b) labor absorption in rural non-farm economic activities<sup>2/</sup> and (c) determinants of migration. The first two areas of study will be designed to determine the rural labor demand function; the latter is an important determinant of the rural labor supply.

A unique feature of the proposed research will be the study of the rural firm-household to provide data simultaneously for analysis of agricultural production activities, non-farm rural economic activities and migration. This approach recognizes the important interactions between

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<sup>1/</sup> Most studies of African food production systems have been conducted by anthropologists and geographers. See Peter F. McLoughlin (ed.), African Food Production Systems: Cases and Theory, Johns Hopkins Press, Baltimore, 1970, for a series of such studies. Similar micro-level studies are now required of economists.

<sup>2/</sup> Most farm management and agricultural sector studies ignore the importance of non-farm economic activities in rural income and employment.

farm and non-farm activities and out-migration. For example, Norman<sup>1/</sup> found that rural households in the North of Nigeria allocated 30 to 40 percent of their time to rural non-farm activities. Likewise, the decision to migrate from rural areas is closely related to income and employment opportunities generated by both farm and non-farm activities.

\* Data on production, employment and expenditure of rural households relevant to agricultural production, the non-farm economy and migration will be obtained from interviews of a random sample of households in selected villages in major food producing regions. Interview techniques will be based on the experience of Spencer<sup>2/</sup> and others<sup>3/</sup> using enumerators, stationed in the village, to interview heads of households at regular intervals (i.e. weekly or bi-weekly).

(a) Demand for Labor Under Alternative Agricultural Production Systems

The micro-economic study of agricultural production will be undertaken to determine seasonal labor demand and incomes under alternative production systems, and mechanical and biological technologies. Specific data related to agricultural production activities will include (a) the production system (rotation, timing of planting, harvesting, etc.), (b) the seasonal demand for labor by each activity, (c) technical input-output data relating yields to fertilizer use, new varieties, mechanical techniques, etc.

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<sup>1/</sup>D. W. Norman, "Dry Land Farming Among the Hausa in the North of Nigeria, in R. D. Stevens (ed.), Tradition and Change in Agriculture, (Forthcoming).

<sup>2/</sup>Dunstan Spencer, "Rice Survey: Enumerators Reference Manual", Department of Agricultural Economics and Extension, Njala University College, 1971.

<sup>3/</sup>For example: P. Mueller and K. H. Zevering, "Employment Promotion through Rural Development: A Pilot Project in Western Nigeria", pp. 111-130, International Labour Review, Vol. 100, No. 2, 1969.

(d) cost and expenditures, and (e) decision making.<sup>1/</sup> The data will be analyzed with budgeting and programming techniques<sup>2/</sup> to determine (a) substitutability and/or complementary between factors of production particularly labor and capital and (b) the dynamic effects of new technologies on labor demand and incomes.

The analysis will be used to evaluate the effects on labor demand, incomes and income distribution of specific agricultural production - employment policies; including introduction of mechanical techniques and high yielding varieties, provision of credit, price policies, etc. Particular attention will be devoted to mechanization strategies on a crop by crop basis.<sup>3/</sup> However, the study will not emphasize mechanization per se, but recognizes the interrelationships between mechanical and other technologies in determining agricultural incomes and employment. Furthermore, the impact of macro-economic policies on the relative prices of capital and labor and consequently the choice of mechanical technique, will be investigated to determine possible differences in the social and private returns of mechanization strategies.

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<sup>1/</sup> It is also anticipated that the work of Dr. Douglas Hedley, International Institute of Tropical Agriculture, will provide improved methodology for research on decision making of rural households under risk and uncertainty.

<sup>2/</sup> Examples of the use of linear programming in an African context are: Norman, Op. cit. and S. O. Olayide, S. O. Olowude, and S. A. Oni, "Application of Linear Programming to Farm Planning in Developing Countries", Journal of the Association for the Advancement of Agricultural Sciences in Africa, Vol. 1 No. 1, August, 1971. Recently recursive programming techniques have been used to study the dynamic impacts of new biological and mechanical technologies in India. See, R. H. Day, Inderjit Singh, and Molinder S. Mudahar, "A Dynamic Micro-Economic Model of Agricultural Development", Paper Presented at the ADC Conference on Agricultural Sector Analysis and Planning", Iowa State University, May, 1971.

<sup>3/</sup> Methodological problems and research needs in evaluating mechanization are discussed in Carl K. Eicher, Gordon Gemmill, Fred Winch and Duane Thomforde, "Needed Redirections in Mechanization Research", Rural Employment Working Paper, Department of Agricultural Economics, Michigan State University, (in preparation).

(b) Labor Absorption in Rural, Non-Farm Economic Activities

The proposed research recognizes that there are important linkages between agricultural productions and rural non-farm activities. The research will analyze the linkages between these related sub-sectors of the rural economy, as they affect rural employment in a dynamic process. In particular, the research will analyze the demand in the rural economy for (i) consumption goods and services, (ii) investment goods (primarily farm equipment) and (iii) agricultural production related activities (transport, marketing, processing). The research will also analyze the supply of goods and services produced by the non-farm economy as determined by the supply of (i) labor<sup>1/</sup> (ii) entrepreneurial capacity, (iii) capital and (iv) other inputs. Research on the supply of inputs will incorporate a detailed analysis of the principle decision making units in rural areas--firms, individuals or households--in order to determine the primary factors affecting their decision to allocate labor, capital and entrepreneurial capacity between agricultural and non-farm production analysis.

Basic data will be collected on the (i) number of producing units (full or part-time), (ii) outputs, and (iii) inputs, including the number and characteristics of entrepreneurs. This type of information can be acquired, using standard small scale industry survey techniques<sup>2/</sup> in

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<sup>1/</sup>The studies outlined in section (c) below will comprise the major analytical input on labor supply issues.

<sup>2/</sup> See Callaway, Archibald, "Nigerian Enterprise and the Employment of Youth: Study of 225 Business in Ibadan", Institute of Commonwealth Studies, University of Oxford, England, October 1971 (draft); Kilby, Peter, Industrialization in an Open Economy: Nigeria, 1945-1966, Cambridge University Press, London, 1969, particularly chapter 10, pages 309-344, and Harris, John, "A Study of the Entrepreneurs in Nigeria", Massachusetts Institute of Technology, Working Paper Entrepreneurship and Economic Development, 1971". Carl Liedholm also used similar methodology in his industrial production studies in the former Eastern region of Nigeria during 1965-1966.

specific geographical areas corresponding with the micro-level agricultural production studies. In addition an analysis of the rural non-farm activities requires: (a) data on rural consumption survey to be obtained in the rural household survey,<sup>1/</sup> and (b) a survey of entrepreneurs engaged in non-farm production activities on a full or part-time basis in order to ascertain the supply constraints for each output category.

An analysis of potential labor absorption in non-farm rural activities will be undertaken on the basis of the data generated from the above studies. It will focus on the distribution of the demand in rural areas for goods produced in urban areas and non-farm goods produced in rural areas. On this basis, it will be possible to identify possible supply constraints on rural non-farm enterprises to meet this demand and absorb labor.

### (3) Determinants of Migration

The most important determinants of the labor supply function in rural areas are (a) population growth and (b) out-migration. Because in the short-run population growth is fixed, this study will emphasize research on migration particularly rural to urban migration. The importance of this research is underlined by the inadequacy of past migration research for analysis of rural employment problems. Until recently, most research on migration in Africa has been almost exclusively the domain of anthropologists, sociologists and geographers. Although these studies have almost invariably

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<sup>1/</sup>See Massell, Benton F. and Parnes, Andres, "Estimation of Expenditure Elasticities from a Sample of Rural Households in Uganda", Bulletin of the Oxford University Institute of Economics and Statistics, Vol. 31, 1969, pp. 313-329 and see David Dunlop, "An Analysis of the Interactions Between Agricultural Production and the Rural Non-Farm Economy: Implications for Future Research", Rural Employment Working Paper, Department of Agricultural Economics, Michigan State University, December 1971 (draft) for description of the methodological problems encountered in such surveys.

concluded the economic factors are most important in the decision to migrate, the research has not been sufficiently analytical to evaluate the effects of economic policy on rural to urban migration.<sup>1/</sup>

A review of the literature on migration in Africa completed during the planning phase of this project,<sup>2/</sup> has pointed to the need for fresh theoretical and methodological approaches to studies of migration. The proposed research on migration will focus on the decision making process of individual migrants and non-migrants and the environment in which these decisions are made (e.g., the information and uncertainty on urban jobs, uncertainty on future rural incomes, etc.) It is anticipated that some elements of human capital theory and the theory of decision-making under uncertainty may give added insights to refinement of migration models.<sup>3/</sup> The literature review has also revealed that research on migration in Africa by economists have suffered from methodological weaknesses particularly

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<sup>1/</sup>One recent exception to this is the Harris-Todaro model of migration. Although the model is an important contribution it is limited by unrealistic assumptions and lack of empirical testing. See John R. Harris and Michael P. Todaro, "Migration, Unemployment and Development: A Two Sector Analysis", The American Economic Review, Vol. 60, No. 1, 1970, pp. 126-142. For a critique of the model, see D. R. Byerlee, "Agricultural Development and Urban Unemployment: A Simulation Analysis of the Nigerian Economy, Unpublished Ph. D. Dissertation, Oregon State University, 1971, pp. 23-33.

<sup>2/</sup>D. R. Byerlee, "Migration Research in Africa: Past, Present and Future", Working Paper No. 3A, Rural Employment Project, Department of Agricultural Economics, Michigan State University, December 1971.

<sup>3/</sup>The extensive theoretical literature on migration in the U. S. has been ignored by most researchers of migration in Africa.

in (a) the use of census data,<sup>1/</sup> (b) or surveys in urban areas.<sup>2/</sup> Although U. S. studies of migration are almost invariably based on regression analysis of census data, the deficiencies of most African censuses emphasizes the need to collect primary data. Rural to urban migration cannot be studied in urban areas alone since an adequate theory of migration must explain the migration decisions of people in both rural and urban areas.

The migration research will be undertaken through an intensive analysis of out-migration from food producing areas in Zaire and Nigeria, rather than extensive analysis of migration throughout a country. Surveys of rural households will be used to interview non-migrants and potential migrants. In addition, the sample survey of rural households will also provide valuable data on income, employment and consumption of rural households for use in the migration research. Finally, migrants from the survey region will be interviewed in urban areas to obtain estimates of income and employment opportunities in urban areas.<sup>3/</sup>

Data on actual and perceived income and employment opportunities in rural and urban areas by age, sex, and education, attitudes to risks, etc., will provide a more complete understanding of the rural to urban migration process and hence economic factors which determine the rural labor supply. The results of the field research will contribute to an improved theory of

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<sup>1/</sup>See, for example, Ralph E. Beals, Mildred B. Levy and Leon N. Moses, "Rationality and Migration in Ghana", The Review of Economics and Statistics, Vol. 49, 1967, pp. 109-127.

<sup>2/</sup>A good example of undue focus on urban areas is the inconclusive attempt of Rempel to test the Todaro model of migration. See Henry Rempel, "Labor Migration into Urban Areas and Urban Unemployment in Kenya," Unpublished Ph. D. Dissertation, University of Wisconsin, 1970.

<sup>3/</sup>Speare has recently used a similar methodology from a rural and urban perspective in a study of migration in Taiwan. See Alden Speare, Jr., "A Cost-Benefit Model of Rural to Urban Migration in Taiwan," Population Studies, Vol. 25, No. 1, March, 1971, pp. 117-130.

migration, and provide some insights which can be gained into the divergence of social and private costs and benefits of migration and specific policies advanced for improving the performance of the labor market.

## 2. Aggregate Analysis of the Rural Labor Market: Policy Implications

The results of the research on agricultural production activities, non-farm rural activities and migration will be aggregated and integrated to provide the demand and supply components of the rural labor market. In particular, the aggregation will take account of (a) the dynamic interactions between the agricultural sector and the rural non-farm sector, and (b) the relationship of the supply and demand for labor to the age, sex and educational composition of the labor force. This analysis of the rural labor market and the basic data from the rural sample survey on seasonal labor profiles and earnings by age, sex and education will provide a more complete understanding of the current rural employment picture and set the stage for policy analysis.

Various policies will be evaluated for their effects on rural employment, rural incomes and rural income distribution. A basic consideration in policy evaluation will be a search for those micro- and macro-economic policies if any, which increase both employment and earnings in agriculture and decrease the rate of out-migration. This policy evaluation will be partial in the sense that the effects of the policies on the total economy will not be considered. That is, policies will be evaluated with respect to rural employment and income goals rather than national income and employment goals. At the macro-level, it will be necessary to consider some of the important linkages between the rural and urban economies, such as the effects of projected increases in urban

population, employment and incomes on (a) food consumption demand and food prices and (b) rural to urban migration.

Specific micro-economic policies to be evaluated include: (a) agricultural production policies - credit, mechanization, chemical-biological inputs, etc., and (b) rural industrialization policies - credit, vocational training, tax incentives, etc. The implications of important macro-economic policies on rural employment and incomes will also be determined. These include: (a) wage rates - e.g. the effect of minimum wage policies on rural wages? (b) monetary policy - e.g. the effect of national monetary policy on the availability of credit in rural areas? and (c) fiscal policy - e.g. the effects of taxation policy on income distribution and employment in rural areas. Finally, it is proposed to determine the effects of factor price distortions resulting from macro-economic policies such as overvalued exchange rates, depreciation allowances and wage rates, on: (i) the choice of techniques in agriculture and non-farm rural activities and (ii) the development of new techniques.

The policy evaluation will be undertaken at two levels. In the first phase country specific policy guidelines will be advanced as the research in each country progresses. In the second phase, general policy guidelines will be drawn up on the basis of a comparative analysis of research results from a number of countries.

3. Incorporation of Employment Objectives into Sectoral and Macro-Economic Analysis

The proposed research will contribute to improved theoretical concepts and provide empirical information on capital - labor substitution in agricultural production, farm - non-farm linkages, and rural-urban migration. Furthermore, the study will test new methodologies for studying migration and the rural non-farm sector. These improved tools for analyzing the rural labor market will allow more effective incorporation of the employment dimension in sector analysis and macro-economic models. For example, it is anticipated that the network research will assist in incorporation of the employment dimension in sector and macro-economic analysis.

OVERVIEW OF COUNTRY SPECIFIC RESEARCH: PRESENT AND PROPOSED<sup>1/</sup>

Concentration Countries	Research Status	Agricultural Production	Non-Farm Rural Activities	Migration	Macro-Level
Nigeria	Present	Norman (RERU) - Farm Management Studies in North of Nigeria Hedley (IITA) - decision making Olayide & Ogunfowora (Ibadan) - farm management using LP	ILO-Western Nigeria Study Callaway--Small Scale Industries	U. of Ife-- Demo- graphic study	Djiemoh - (U. of Lagos --dimensions of unemployment
	Proposed	Olayide and CIMMYT researchers - Labor demand in alternative production systems Essang (Ibadan) - Rural employ- ment and food production Falusi - not specified	Olatunbosun (NISER) and Liedholm (MSU) - Labor absorption in non-farm activities Olayide - farm non-farm linkages	Essang - migration from food producing areas Idachaba - Improved Theory of Migration	Simulation Team-- Abkin and Ministry of Agriculture
Sierra Leone	Present	Spencer (Njala College) - Employment in Traditional rice production			
	Proposed	Spencer and Parker (Njala College) --Employment under Alternative Production Systems	Ph. D. dissertation and Liedholm (MSU) --Labor Absorption in non-farm acti- vities		Spencer-Parker MSU consultant Marketing as constraint on rural employment
Zaire	Present	Tollens (UNAZA) - cotton production Bazola (ONRD) - labor demand in food crops			
	Proposed	MSU - Agricultural Economists and 2 Ph. D. dissertations	Byerlee (MSU), Liedholm (MSU), Ph. D. Dissertation-- non-farm activities in food producing areas	Byerlee (MSU) --MSU consul- tant (Hathaway) Ph. D. dissertation --Migration from maize producing areas	Tollens - MSU consultant (Sorenson)- preliminary urban employment demand studies

<sup>1/</sup> A more complete description of present and proposed research in the three concentration countries--  
Nigeria, Zaire, and Sierra Leone is found in Appendix B.

## V. OPERATION OF THE RESEARCH NETWORK

The planning contract has enabled a group of scholars at MSU to work with scholars in Africa in developing a research proposal. This interaction has convinced participating scholars that a network approach to research offers comparative perspective, an organized information system and will facilitate the development of a scientific community in Tropical Africa. Approximately 25 network researchers have already been identified to carry out the proposed three-year study. (See Appendix A.)

The network will facilitate a systematic exchange of information on theoretical developments and research methodology relating to employment problems in developing countries, and will help link scholars in Africa with researchers on employment problems in Latin America, Asia, Western Europe (e.g. FAO, ILO, OECD) and North America. CAMS and ECIEL are examples of network organization which can make a valuable input into the African network.

The network will consist of (a) project coordinator--Carl K. Eicher; (b) MSU agricultural economists and economists; (c) researchers in African universities and research institutes; (d) employment library and information system; (e) rotating conferences in Africa; (f) flow of consultants between the U. S. and Africa and within Africa, and (g) a flow of scholars for doctoral and post-doctoral study in the U. S., and of doctoral candidates to Africa for dissertation research; (h) final three-month write-up period at which time 5-7 principle researchers from

the field will assemble in East Lansing to prepare the country specific reports and overall summary report.

The information system will be carried out through continuation of the employment library and reproduction of relevant materials for rapid distribution to scholars in the network. In addition, it is proposed that a complete duplicate of the present 1290 items in the Employment Library be transferred to an African institute (tentatively IITA in Ibadan)<sup>1/</sup> in order to make the entire collection more accessible to scholars in Africa.

Four conferences of 15 to 20 researchers are planned to allow network scholars to exchange information on theoretical developments, research methodology, and preliminary research results on specific aspects of the employment problem (e.g. mechanization, migration, etc.). To allow network scholars to be familiarized with ongoing research on employment problems in Latin America and Asia at least one researcher from the CAMS and ECIEL networks will be invited to each conference. The conferences will be held in Sierra Leone, Zaire, Nigeria and Bellagio, Italy.<sup>2/</sup>

Emphasis will be placed on encouraging Africans to serve as consultants in various network countries although outside researchers will serve in a limited role. For example, Dunstan Spencer's research methodology on micro economic studies in Sierra Leone will be channeled to the field research teams in Zaire by having Mr. Spencer spend two or three weeks

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<sup>1/</sup> IITA has not been formally consulted on this matter. Dr. Hedley, Agricultural Economist at IITA, suggested that the IITA library would appear to be an ideal location for the duplicate employment collection and that the IITA library--when completed--should be able to offer library services to researchers in Tropical Africa.

<sup>2/</sup> The planned Bellagio Conference site is an outgrowth of a request by Rockefeller to assist in organizing a conference on unemployment research in Africa.

per year as a consultant to the field research teams in Zaire.

The network will help identify Africans for overseas training in economics and agricultural economics through an evaluation of their performance as research assistants in the field work. Finally the network should help identify rural employment research priorities for African and American graduate students in residence in American universities.

VI. CONTRIBUTION TO THE TRAINING OF AFRICAN SCHOLARS  
AND THE DEVELOPMENT OF AFRICAN RESEARCH INSTITUTIONS

The training of economists and agricultural economists will be an integral part of the research program. This will be achieved through the participation of local researchers in the design and execution of the field research and the identification of Africans for graduate training in economics and agricultural economics. For example, in Zaire, one Zairois agricultural economist has already agreed to collaborate with the field research in Zaire and agreement has been reached to send one or two Zairois to the U. S. for graduate study in Fall, 1972.

An important aspect of training involves the support of the newly established Master's degree program in Agricultural Economics at the University of Ibadan. The proposed research by Nigerian lecturers will provide field research opportunities for Master's degree students as well as generate data for a curriculum relevant to local conditions. Since there are only two Zairois Agricultural Economists at the Master's Level in Zaire, an attempt will be made to channel Zairois to Ibadan for a Master's degree in agricultural economics.

Special effort will be made to encourage Africans in the United States to return to collect data for their dissertations. The Employment Library, working papers, and researchers in the network can play a valuable role in linking African graduate students in the U. S. with priority problems in the field.

Specific research institutions which will be assisted include IRES in Zaire, The Department of Agricultural Economics at Ibadan, Department of Agricultural Economics at Njala University College in Sierra Leone, the Federal Ministry of Agriculture and Natural Resources in Nigeria, and the CIMMYT teams in Zaire and Nigeria. The findings of the employment project will be made available to the researchers who are helping develop simulation capabilities within the Federal Ministry of Agriculture and Natural Resources in Nigeria.

## VII. RESEARCH COMPETENCE

Carl K. Eicher, Professor of Agricultural Economics at Michigan State University, will be the project director and coordinator of the research network which will include approximately 25 researchers in five or six countries. Eicher has devoted full time to research and teaching on development problems in Tropical Africa over the past eleven years. His interest in unemployment began in 1964 with an article, "Disguised Unemployment in Agriculture" which has been widely cited and reprinted. Eicher spent 36 months in Nigeria in 1963-66 and from 1964-66 served as Director of the Economic Development Institute, University of Nigeria. Eicher served as Staff Economist of the Consortium for the Study of Nigerian Rural Development (CSNRD) from 1966-69, and is a co-author of the CSNRD report, Strategies and Policies for Nigerian Rural Development, 1969-1985. He has worked in Zaire, Tanzania, Nigeria, Ghana and Kenya as a consultant to the World Bank, the U. S. National Academy of Science, AID, and the Rockefeller Foundation. His publications on African development include two books, three monographs and forty-five articles and papers over the past eleven years.

Derek Byerlee received a Master's Degree in Farm Management from the University of New England in Australia and recently completed his Ph. D. dissertation on employment problems in Nigeria entitled "Agricultural Development and Urban Unemployment: A Simulation Analysis of the Nigerian Economy". He has published a number of articles on decision making under risk and uncertainty, including one recent note in the Quarterly Journal of Economics. Byerlee has worked as an agricultural development officer in

Papau-New Guinea and is presently working as a consultant on macro-economic planning in Korea. He will undertake research in Zaire.

Carl Liedholm, Associate Professor, Department of Economics, undertook an intensive study of small scale industry in Nigeria from 1965-67 and compiled the first index of industrial productivity in Eastern Nigeria. Liedholm is particularly interested in research on labor absorption in non-farm rural industries. He will serve as a consultant in Sierra Leone, Nigeria and Zaire Republic. Liedholm is co-editor of Growth and Development of the Nigerian Economy, 1970.

Vernon Sorenson, Professor of Agricultural Economics, MSU, is a specialist in marketing, agricultural trade and policy. Sorenson has worked on agricultural trade and policy problems in European agriculture over the past six years. He will serve as a consultant in the study of rural employment in Zaire.

Dale Hathaway, Professor and Chairman, Department of Agricultural Economics, Michigan State University, has concentrated on agricultural policy research over the past twenty years. He has conducted a major study of the determinants of out-migration from U. S. agriculture, and is currently serving as a consultant in Korea on a study of the rural labor force. He has worked in Pakistan, Argentina, Colombia, Korea, and Eastern Europe. He will serve as a consultant on the migration phase of the research in Zaire.

A number of other members of the MSU faculty will be engaged as consultants. The Department of Agricultural Economics is recruiting an agricultural economist for the Zaire phase of the projected research. In addition, the Departments of Economics and Agricultural Economics are recruiting an economic demographer.

VIII. BUDGET FOR YEARS I, II, III AND TOTAL

1972 - 1975

	Year I	Year II	Year III	Total
Salaries <u>1/</u>	97,234	97,483	98,983	293,700
Consultants <u>2/</u>	7,666	5,666	6,668	20,000
Fringe Benefits <u>3/</u>	16,530	16,572	16,827	49,929
Overhead <u>4/</u>	48,098	44,482	48,900	141,480
Travel and Transportation <u>5/</u>	25,050	19,550	38,350	82,950
Conferences <u>6/</u>	9,500	19,000	12,600	41,100
Allowances <u>7/</u>	14,000	-----	8,000	22,000
Other Direct Costs <u>8/</u>	13,166	11,167	45,667	70,000
Field Research of 12 Participants <u>9/</u>	15,000	30,000	30,000	75,000
Equipment <u>10/</u>	666	667	667	2,000
Sub-Contract in Sierra Leone <u>11/</u>	6,000	21,700	21,700	49,400
<b>Total</b>	<b>252,910</b>	<b>266,287</b>	<b>328,362</b>	<b>847,559<sup>1/</sup></b>

1/ This figure includes a total of 146 man months of professional time, including 36 months for the project coordinator, 72 months for two agricultural economists at MSU and in Zaire, and 43 months of MSU short term researchers- agricultural economists and economists-for work at MSU and in Zaire, Nigeria and Sierra Leone. Also included are 12 months for an administrative officer (four months per year), 36 months of secretarial time and 36 months for a half-time library assistant. See Appendix C for a more detailed allocation of MSU professional staff.

2/ This figure includes 120 days of non MSU consultants in the U.S. and approximately 270 days of African consultants.

3/ Seventeen percent of MSU salaries, including retirement, social security, health insurance, etc.

4/ Overhead rate is 61% for on-campus and 32% for off-campus salaries.

5/ This figure includes the cost of the following items:

(a) Round trip air fare, vacation allowance and home leave for two MSU agricultural economists and families in Zaire	\$22,200
(b) Air fare and per diem for six round trips to Africa for U.S. consultants.	\$27,150
(c) Air fare and per diem for ten roundtrips within Africa by African and U.S. consultants.	\$11,400
(d) Air fare and per diem for consultants within the U.S.	\$ 8,100
(e) Project write up expenses (air fare and per diem) for six African scholars at the end of project in East Lansing for three months.	\$14,100
This expense is included in Year III.	
<b>Total</b>	<b>\$82,950</b>

- 6/ This figure includes the total cost of four conferences to be held during the three year period. The cost includes international air fare, per diem, paper reproduction and local travel for 17 participants, including one participant per conference from CAMS or ECIEL. Three conferences will be held in Africa and one in Bellagio. Two conferences will be held in the second year.
- 7/ This figure includes moving, storage and freight allowances for two MSU agricultural economists and families to be located in Zaire.
- 8/ Other direct costs include:
- |  |          |
|--|----------|
| (a) Library - Information system costs                                       | \$10,000 |
| (b) Supplies, Telephone and other miscellaneous expenses of the Secretariat. | \$20,000 |
| (c) Publication costs of country reports and summary report                  | \$20,000 |
| (d) Cost of data processing  | \$20,000 |
| Total  | \$70,000 |
- 9/ This figure includes partial funding to support six doctoral dissertations during their field research phase in countries other than Zaire. It includes international air fare to location of field research, stipend and field research costs. The figure also includes round-trip air fare for six doctoral candidates, who will recruit local support for their field research in Zaire.
- 10/ Additional office and library equipment are needed to support the research effort. Principle equipment included are files and bookcases.
- 11/ See table 1, for a summary budget analysis of the Sierra Leone sub-contract, the principle investigator being Mr. Dunstan Spencer. He had indicated that his primary budgetary requirements will be in years II and III.
- 12/ In discussions with the AID/Mission in Kinshasa in December 1971, the mission agreed to allocate up to \$300,000 to Carl K. Eicher and a team of researchers to finance the local cost of the projected research on rural employment and food grain production in Zaire. This funding is, of course, linked to AID/Washington's approval of the overall proposal as salaries, international travel, allowances, etc. of MSU professional staff working in Zaire will be paid from the AID/Washington contract to MSU.

Table 1. Budget of Sierra Leone Research, 1972-1975

	<u>Total Cost in Leones</u>	<u>Total Cost in U. S. Dollars</u> <sup>(1)</sup>
(1) Salaries and Wages		
(a) Investigators	Le 6,000.	\$ 7,800.
(b) Research Assistant	3,600.	4,680.
(c) Junior Office Research Assistants	3,000.	3,900.
(d) Enumerators	3,680.	4,784.
(2) Overnight Allowances	4,430.	5,759.
(3) Transportation	13,080	17,004
(4) Office Supplies and Equipment (Printing Questionnaires, paper, etc.)	3,300.	4,290.
(5) Miscellaneous--Postage and Contingencies	910.	1,183.
(6) Research in Progress	<u>8,400.</u>	<u>10,920.</u>
Total Cost	Le 46,400.	\$60,320.
Less: Funding of Research in Progress <sup>(2)</sup>	<u>- 8,400.</u>	<u>- 10,920.</u>
Net Total Cost To Project	<u>Le 38,000.</u>	<u>\$49,400.</u>

(1) Rate of exchange after U. S. dollar devaluation in December, 1971 of approximately 8%, is Leone 1.00 ≈ \$1.30

(2) Funding has been received from Ministry of Agriculture and Natural Resources (Sierra Leone) and USAID (Univ. of Illinois Sierra Leone Contract).

APPENDIX A

EMPLOYMENT NETWORK RESEARCHERS: NAMES, NATIONALITY AND INSTITUTIONAL AFFILIATION

1. Nilam Bedi, (Kenyan), Institute of Development Studies, University of Nairobi. Pursuing Ph. D. in agricultural economics at MSU under Rockefeller Fellowship.
2. Derek Byerlee, (Australian), Assistant Professor of Agricultural Economics, MSU. Interested in conducting research in Zaire.
3. E. J. Chuta, (Nigerian), Economic Development Institute, University of Nigeria. Ph. D. Candidate in Agricultural Economics at MSU.
4. David Dunlop, (U.S.A.), Instructor in Agricultural Economics, MSU. Recently completed research on the health industry in Uganda.
5. Carl K. Eicher, (U.S.A.), Professor of Agricultural Economics, MSU, Former Director, Economic Development Institute, University of Nigeria.
6. Sunday Essang, (Nigerian), Lecturer, Department of Agricultural Economics, University of Ibadan, Nigeria. Recently completed research on the impact of government policy on income distribution among cocoa farmers in Western Nigeria. Currently organizing a study entitled, "Alternative Strategies of Increasing Food Production and Rural Employment in Nigeria".
7. A. Falusi, (Nigerian), Ph. D. Candidate in Agricultural Economics, Cornell University. Currently affiliated with the International Institute of Tropical Agriculture, Ibadan, in order to carry out dissertation research on the fertilizer industry in Nigeria. Desires to be linked with the network when he returns to Nigeria in the fall of 1972.

8. Gordon T. Gemmill, (United Kingdom), Ph. D. candidate in Agricultural Economics, MSU. As a Lecturer in Agricultural Economics, Bunda College of Agriculture, Malawi, he carried out a two-year micro economic study of smallholder maize production under oxen-powered mechanization. Fluent in French.
9. John Hanson, (U.S.A.), Professor of Education, MSU. Teacher and researcher on African educational problems since 1960.
10. Douglas Hedley, (Canadian), Agricultural Economist, Institute of International Agriculture, Ibadan, Nigeria. Recently completed data collection of farmer decision making under risk and uncertainty in three villages in Western Nigeria.
11. Francis Idachaba, (Nigerian), completing Ph. D. in Agricultural Economics at MSU during the summer of 1972, and will join a Nigerian university in the fall of 1972.
12. James Kocher, (U.S.A.), Economic Demographer, Population Council, New York City, will join the University of Dar Es Salaam in April, 1972, on a two-year Population Council grant.
13. Besa Kotati (Zairois), Ph. D. candidate in Education, MSU, will return to Zaire in June of 1972 to collect data for his dissertation, "Education for Rural Development in the Katanga Region of Zaire" and then will join the National University of Zaire.
14. Dean Linsenmeyer, (U.S.A.), Ph. D. candidate in agricultural economics at MSU. Spent three years working on rural development problems in Zaire. Desires to return to Zaire in 1973 to collect data for his dissertation and then live in Zaire for an extended period of time.

15. Carl Liedholm, (U.S.A.), Associate Professor and Chairman, Department of Economics, MSU. Completed first industrial survey of Eastern Nigeria, 1965-67. Interested in research on labor absorption in small-scale industry in rural areas.
16. Shem Migoc-Adholla, (Kenyan), Department of Political Science, University of Dar Es Salaam. Recently completed course requirements for a Ph. D. in sociology at UCLA. Spending September '71 - April '72 at MSU in preparation for field work on migration in Tanzania.
17. John Nabjla, (Ghanzian), Department of Geography, University of Legon, Ghana. Completing course work for Ph. D. in Geography at MSU. Recipient of Population Council Grant for Ph. D. dissertation research on migration in Northern Ghana. Returns to Ghana in June, 1972.
18. Felix Nweke, (Nigerian), Department of Agricultural Economics, University of Nigeria. Ph. D. candidate in Agricultural Economics at MSU.
19. Sam Olayide, (Nigerian), Senior Lecturer, Department of Agricultural Economics, University of Ibadan; Dr. Olayide has developed a three-year research proposal to study rural employment problems in the Guinea Savannah Zone of Nigeria.
20. Dupe Olatunbosun, (Nigerian), Head, Agricultural Development Section, Nigerian Institute of Social and Economic Research, University of Ibadan, Nigeria. Anticipates spending sabbatical leave at University of Michigan in 1972-73 and plans to develop a research project with Carl Liedholm of MSU on Labor Absorption in Small Scale Industries in Rural Areas of Nigeria.

21. May Parker, (Sierra Leonean), Department of Agricultural Economics, University of Sierra Leone. Interested in rice marketing in Sierra Leone.
22. Robert Ranger, (U.S.A.), Ph. D. candidate in Agricultural Economics, MSU. Dissertation research on incorporating employment objectives into agricultural projects.
23. John Shields, (U.S.A.), former Peace Corps Volunteer in Botswana. Ph. D. candidate in Agricultural Economics at MSU. Interested in education and rural development in Africa.
24. Vernon Sorenson, (U.S.A.), Professor of Agricultural Economics, MSU. Specialist in marketing, trade, and policy. Interested in the proposed research in Zaire.
25. Dunstan Spencer, (Sierra Leonean), Lecturer, Department of Agricultural Economics, Njala University College, Njala, Sierra Leone. Currently conducting a micro economic study of rice production in Sierra Leone under five alternative production systems.
26. Eric Tollens, (Belgian), Department du Rurale Economie, Universite du Zaire, Campus de Kinshasa. Currently conducting a study of the cotton industry. Fluent in French. Plans to spend 4-5 years in Zaire.
27. David Wallender, (U.S.A.), completing three years with the Peace Corps in Upper Volta. Fluent in French. Will begin Ph. D. program in Agricultural Economics at MSU in Fall, 1972.
28. Fred Winch, (U.S.A.), former Peace Corps Volunteer in Nigeria. Currently undertaking research on the economics of rice industry under alternative mechanical technologies in Northern Ghana as a member of the Planning Division, Ministry of Agriculture, Ghana.

SUMMARY OF COUNTRY SPECIFIC STUDIES

The identification of country specific studies by network researchers will be an ongoing process during the three year research project. Studies which have been identified to date are summarized below together with details of the principal researcher and the source of funding.

NIGERIA

1. Research on Rural Integrated Development and Food Production in the Guinea Savannah Zone of Nigeria<sup>1/</sup>

This research proposal has been prepared by Dr. Samson Olajuwon Olayide, Senior Lecturer, Department of Agricultural Economics, University of Ibadan, Nigeria. The main objective of this three year study is to determine the labor absorption potential in rural areas with emphasis on the Guinea Savannah Zone. Olayide proposes to undertake a comprehensive micro-level survey of some 2000 - 3000 rural households in the Guinea Savannah Zone of Nigeria. This survey will include data on: (a) production relationships for both farm and non-farm enterprises; (b) labour, employment, income, wages, consumption patterns, etc. for each households; (c) the relationship between scale of operation and income and employment; (d) detailed analysis of the rural labor market and (e) socio-cultural and attitudinal relationships relevant to rural employment, particularly as they affect migration. By participation of Masters level students, the research program is "inextricably interwoven with the development of a sound graduate training at the Masters level in agricultural economics at the University of Ibadan."

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<sup>1/</sup> The Federal Ministry of Agriculture and Natural Resources has informally agreed to finance the first phase of this research.

2. Alternative Strategies for Increasing Food Production and Rural Employment in Nigeria.<sup>1/</sup>

A detailed research proposal is being developed by Dr. Sunday Essang, Lecturer, Department of Agricultural Economics, University of Ibadan. Since there is considerable pessimism in government circles<sup>2/</sup> about the ability of small peasant farms to increase food production in line with the growth in effective demand, a number of large government schemes are being launched or considered to expand food production. Examples of these government schemes are government food farms, state farms, cooperatives, government tractor hire schemes, large-scale wheat irrigation schemes. Essang will collect data on the economics of food production under peasant farms as compared with the alternative schemes now being introduced by a number of state governments. Essang will draw on the experience of several other African countries in large scale government and private food production schemes-- e.g. Ghana, Liberia -- in order that this experience can be channeled into the Nigerian decision making framework. Special emphasis will be directed to an examination of what strategies and methods of organizing agriculture will lead to both expanded food production and rural employment.

3. Migration from Food Producing Areas to Urban Areas in Nigeria

A research proposal is being developed by Dr. Sunday Essang in cooperation with a graduate student at the University of Ibadan. The

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<sup>1/</sup>The Federal Ministry of Agriculture and Natural Resources has informally agreed to finance this research.

<sup>2/</sup>The research is an outgrowth of some preliminary research reported in S. M. Essang, "Official Views on Rural Unemployment, Rural-Urban Migration, Population Growth, Income Distribution and Agricultural Mechanization: A Summary Report and Observations", Department of Agricultural Economics, University of Ibadan, December, 1971.

research will focus on rural-urban migration in the Guinea Savannah Zone of Nigeria.

4. The Role of the Non-Farm Rural Economy in Rural Employment and Development

This research proposal is being developed by Dr. Dupe Olatunbosun, Nigerian Institute of Social and Economic Research, University of Ibadan, in cooperation with Dr. Sam Olayide, and Dr. Carl Liedholm, Department of Economics, Michigan State University.

SIERRA LEONE<sup>1/</sup>

Strategies for Increasing Rice Production and Rural Employment in Sierra Leone

This proposal has been developed by Mr. Dunstan Spencer and Mr. May Parker, Lecturers in Agricultural Economics, Njala University College, Njala, Sierra Leone. The research outlined is a continuation of ongoing research by Mr. Spencer on rice production. In the first phase of this research (June 1970 - June 1972) the international and domestic demand for rice have been analyzed and the traditional rice production systems studied. From this basis, Mr. Spencer proposes a study of the implications of new production techniques including water control, biological technology and mechanization for rural employment and food production. The government is presently giving top priority to this project.

In addition, studies will be undertaken of small-scale enterprises to assess their role in dealing with Sierra Leone's growing unemployment problem. Finally, a study of rice processing and marketing will determine possible bottlenecks to expanded rural employment and rice production.

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<sup>1/</sup>The research in Sierra Leone will be financed under a subcontract from Michigan State University to the principal researcher--Mr. Dunstan Spencer.

ZAIRE

Alternative Strategies for Increasing Cotton Production and Employment

This study is presently being undertaken by Mr. Eric Tollens, Department of Rurale Economie, National University of Zaire, under a Ford Foundation Grant, to formulate guidelines for increasing cotton production and restructuring the marketing system. The cotton industry is a top priority problem of the Ministry of Agriculture.

Proposed Research on Rural Development and Rural Employment in Zaire Republic with Emphasis on the Food Grain Subsector<sup>1/</sup>

MSU will undertake this study in close cooperation with the Ministry of Agriculture, AID/Zaire, CIMMYT and the National University. Zaire is importing substantial quantities of maize and rice while rural to urban migration continues. Since the Zaire Government and AID/Zaire are committed to expanding maize and rice production in cooperation with IITA and CIMMYT, micro-economic studies will be carried out in the two major maize producing regions with a smaller study being carried out in the rice producing area. It is proposed to study (a) food production and employment under existing and alternative technologies; (b) out-migration from the food producing areas; (c) non-farm rural enterprises and (d) the marketing system as a possible bottleneck to increased employment and food production. From these studies, specific policy guidelines will be given for increasing maize and rice production, rural employment and rural development in Zaire. Furthermore, general macro-economic policies

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<sup>1/</sup>This three-year study will start in mid-1972. AID/Zaire has agreed to allocate up to \$300,000 over three years to Carl K. Eicher and a team of MSU researchers to carry out the study if AID/W provides the central funding for salaries, international air fares, allowances, etc. of the MSU faculty and associated graduate students. It is anticipated that the \$300,000 will pay all local costs of the study.

relating to trade, food pricing policy and fiscal and monetary policy will be examined for their effect on rural employment and development.

GHANA

1. An Economic Analysis of Rice Production in the Northern Region of Ghana

\* This study developed by Mr. Fred Winch, Planning Division, Ministry of Agriculture, Ghana, was started in December, 1971. The research involves a detailed micro-level study of the rice industry to determine the impact of new biological and mechanical technologies on rice production, rural employment and incomes, and provide policy guidelines for a government rice production campaign.

2. The Determinants of Out-Migration From Rural Areas of Northern Ghana

Mr. John Nabila, Department of Geography, University of Legon, Ghana and currently Ph. D. candidate at MSU will undertake this study under a Population Council Grant. The research will determine economic and non-economic factors which affect out-migration from rice producing areas of Northern Ghana. The data on rural incomes and employment obtained by Winch will be useful inputs into his research.

APPENDIX C

ALLOCATION OF MSU PROFESSIONAL STAFF

	LOCATION					Total Man Months
	Zaire	Nigeria	Sierra Leone	Other Network Countries	MSU	
1. Carl K. Eicher	4	2	1	3	26	36
2. Derek Byerlee	28				8	36
3. Agricultural Economist <sup>1/</sup>	28				8	36
4. Vernon Sorenson	6				3	9
5. Carl Liedholm	1	4	1		3	9
6. Dale Hathaway	1	1				2
7. Agricultural Economist	8				4	12
8. Macco Economist			6			6

<sup>1/</sup> To be recruited

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