

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

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Batch 69

1. SUBJECT CLASSIFICATION
A. PRIMARY
Serials Y-DG00-0000-0000
B. SECONDARY
Development and economics--Labor economics

2. TITLE AND SUBTITLE
Employment and unemployment in the developing countries; annual research report, 1969/1970

3. AUTHOR(S)
(101) Yale Univ. Economic Growth Ctr.

4. DOCUMENT DATE
1970

5. NUMBER OF PAGES
25p.

6. ARC NUMBER
ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Yale

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)
(Research summary)

9. ABSTRACT

10. CONTROL NUMBER
PN-AAE-602

11. PRICE OF DOCUMENT

12. DESCRIPTORS
**Developing countries
Employment**

13. PROJECT NUMBER

14. CONTRACT NUMBER
CSD-2492 Res.

15. TYPE OF DOCUMENT

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ECONOMIC GROWTH CENTER

Annual Report to the Agency for International Development

CSD-2492, 1969-70

J. Erikson
CSD-2492 Rev.
Yale PN-AAE-602

I. PROGRESS TO DATE

A. Papers Prepared

- Center Paper 140. "A Model of an Agrarian Economy with Non-agricultural Activities" by Stephen Hymer and Stephen Resnick (The American Economic Review, Vol. LIX, No. 4, part 1, Sept. 1969)
- Center Paper 147. "The Decline of Rural Industry Under Export Expansion: A Comparison Among Burma, Philippines and Thailand, 1870-1933" by Stephen A. Resnick (Journal of Economic History, June 1970)
- Center Paper 156. "The Role of the Service Sector in Employment Expansion" by Ajit Bhalla (International Labour Review, Vol. 101, No. 5, May 1970)
- Discussion Paper 71. "Technological Transfer, Employment and Development, (Revised)" by J.C.H. Fei and Gustav Ranis, August 1969
- Discussion Paper 75. "The Population Question in Northeast Brazil: Its Economic and Ideological Dimensions" by Herman F. Daly, September 1969
- Discussion Paper 80. "A Marxian-Malthusian View of Poverty and Exploitation with a Corresponding Typology of Social Classes" by Herman Daly, September 1969.

- Discussion Paper 81. "Learning by Doing and Dynamic Comparative Advantage" by Leonard Dudley, December 1969
- Discussion Paper 88. "A Disaggregative Approach to LDC's Tertiary Sector" by Ajit Bhalla, June 1970
- Discussion Paper 89. "Income and Wealth Redistribution in the Development Process and Their Relationship to Output Growth" by Albert Berry, July 1970
- Discussion Paper 90. "Relative Prices in Planning for Economic Development" by Gustav Ranis, May 1970
- Discussion Paper 95. "Industrialization, Employment and the Choice of Alternative Vintage Equipment in Less Developed Countries (Revised)" by Howard Pack and Michael Todaro, September 1970
- Discussion Paper 97. "Technology Choice, Employment and Growth" by Gustav Ranis, July 1970
- Discussion Paper 98. "LDC Innovation Analysis and the Technology Gap" by J.C.H. Fei and Gustav Ranis, August 1970

"On the Empirical Relevance of the Ranis-Fei Model of Economic Development" by J.C.H. Fei and Gustav Ranis, to be published in American Economic Review

"The Distribution of Agriculturally-Based Income in Colombia, 1960" by Albert Berry

"A Tentative Approach to the Employment Problem in Less Developed Countries" by J.C.H. Fei and Gustav Ranis

Papers in Preparation (see section III, A - Future Courses)

R. Seminars, Workshops, Briefings

Growth Center Seminars offer the students and faculty of economics and allied social sciences at Yale an opportunity to hear speakers from Yale and other institutions and to explore with them subjects of mutual concern. The seminar series this year included a special focus on employment problems: for example, on June 1, Dr. S. M. Singh of the World Bank presented a paper entitled "Overall Employment Prospects in Less Developed Countries."

A joint conference with AID officials and others already engaged in research on employment convened at the Growth Center in September 1969. The objective of the meeting was to define the Growth Center approach to the employment issue more carefully as well as to consider the relation of work being done here to lines of study being pursued by other AID supported research groups. Discussion related to both of the two main lines for proposed Center research, i.e., (1) empirical studies of a number of developing countries as a whole, including some cross-country comparisons, and (2) specific related sectoral and functional studies. It also focussed on the weaknesses and strengths of the proposed typology of countries into large labor surplus economies, small export oriented economies, natural resources rich/human resources poor economies, and natural resources poor/human resources rich types. Professors Fei and Ranis presented the theoretical logic for this classification and an attempt was made to come to some consensus as to the different nature and causes of unemployment in countries

corresponding to these categories, different expected degree of unemployment, and possible differences in methodology which might have to be used to measure and evaluate the problems of countries in each category.

Research methodologies on the various countries should be substantially dependent on the different types of data available in different countries: some questions may be asked in one country and not in another: in these situations an attempt will be made to generalize from the experience of individual countries and to speculate on the extent to which the results from one country would be valid for all those in the same general category, or for broader sets of countries.

In December a delegation including Gustav Paris, Howard Pack, Marsha Goldfarb, Albert Berry and Benjamin Cohen journeyed to Washington to discuss lines of research and future plans with members of AID. A useful interchange of ideas and questions occurred.

C. Changes in Approach

The broad outlines of the Growth Center's approach to the unemployment issue were presented in the original grant proposal and are expanded upon in various parts of this report. That approach may be characterized as one which attempts to relate the existence of unemployment and underemployment phenomena to broad characteristics of a country's growth process and which searches for common features in the historical experience of different countries which would permit a typology relating the

nature of the unemployment problem both to characteristics of economies and to their stage of development. As the research has proceeded there has been increasing awareness of the fact that the unemployment problem tends to be closely related to questions of income and wealth distribution and that there may be much more meaning to analyzing the first phenomenon when it is done in conjunction with the second. This tie-in is now the subject of some ongoing theoretical work and is taken into account explicitly in several of the country studies.

One change in approach, not so much in terms of the definition of the phenomena to be understood as in terms of how to get at those phenomena, is an increasing realization that analysis of macro data is frequently an unsatisfactory, or at best incomplete, way of getting at the questions of unemployment causation. This has led to an increasing focus on the use of micro data, both analysis at the firm level and at the level of the individual participant in the labor force. Denis and Fei have followed the former path while Berry plans to address the urban unemployment problem in Colombia at least in part through the analysis of time profiles of individual families in the labor force.

D. Staffing Progress

The project was initiated in July 1960 under the direction of principal investigator Gustav Denis, Director of the Economic Growth Center.

1. Country and Comparative Studies: In accordance with the PIGF analysis accompanying the contract proposal, Gustav

Ranis and John Fei undertook a joint approach to the methodology of the employment research by means of formulating testable hypotheses to explain comparative growth and employment generation.

Integral to this segment of the research was the definition and assignment of eight subject countries that would constitute the framework within which comparative empirical studies on employment generation could be carried out. As currently constituted, the country assignments for the research staff, both currently at Yale and Growth Center alumni, is as follows: Brazil/Werner Baer, Chile/Markos Mamalakis, Colombia/Albert Berry, East Africa/Howard Pack, Korea/Gustav Ranis, Pakistan/Donald Solico, and Taiwan/John Fei. A proposal to designate Peru as the eighth subject country with Shene Hunt as analyst was rejected by AID in October and, since that date, efforts to propose an alternative eight country choice have continued.

2. Sectoral and Functional Studies

- a. Flow of Technology: Researchers at work in this area of study during 1960-70 included Richard Nelson, Stephen Hymer and Howard Pack.
- b. Technical Change and Employment in Agriculture: This is the subject of Robert Evenson's research. ✓
- c. Industrial and Service Sector Labor Absorption: This segment is being studied jointly by Gustav Ranis and Albert Berry with the assistance of Research Associate Ajit Phalle. ✓

d. Education Strategy and Employment Studies: These constitute Marsha Goldfarb's contribution to the project. ✓

E. Difficulties Experienced

1. Data collection: There are, as discussed in greater detail below, serious data problems in dealing with the employment problem in underdeveloped countries because it is difficult to define, even conceptually, good indicators of the seriousness of the problem. The series which would be useful, though not perfect, frequently are not available or are available only for parts of a country or for short periods of time. These problems have come up in most of the studies of individual countries and cross section analysis, but since they were anticipated are not "special difficulties."

A project of cataloguing sources of information relevant to the unemployment issue on a cross-country basis and possibly setting up a data bank has not progressed because of the very limited total amount of information to be found and the great problems in putting the data in some comparable form. At the moment, these problems have appeared so great that Marsha Goldfarb, who was planning to work along these lines, has set this project aside in favor of continuing her more specific work on Chile.

2. Administrative Problems: Delays in designating subject countries and matching of available personnel have constituted major impediments in the first year of the contract.

(See Section I, D, 1.)

4. Methodological Problems: The major methodological problem faced in researching the question of incomplete or unsatisfactory utilization of human resources in LDC's is how one arrives at an operationally meaningful definition of the phenomenon. Since the structures of the economies are so different from those of the developed world (in particular, the agricultural and small scale sectors are so much more important), a lack of aggregate demand for labor does not primarily show up in the form of the open unemployment of the developed countries. On the other hand there is no meaning to defining situations of unsatisfactory utilization of manpower by the fact that low incomes are generated; this would be simply to define the underdeveloped state. As a result of these problems it has become clear that some definitional advance is necessary to give clearer focus to the empirical work.

Part of the methodological difficulties in dealing with unemployment are conceptual and another, very important, part has to do with the scarcity and inadequacy of the particular sets of data which would be most relevant and useful in the analysis of the problem. Data on open unemployment are infrequently collected for the underdeveloped

countries, never cover the whole economy, and usually have been collected only for a few years, if at all. As mentioned above, however, even if such series were complete and perfect it would give only one side of the story, or represent only one aspect of the phenomenon in which we are interested. Various forms of the so-called disguised unemployment which characterizes the unorganized and traditional sectors are much harder to measure almost no matter how the conceptual issue of their definition is resolved, severe measurement problems will be present. Even wage data, perhaps the other most relevant series, tends to be scarce, loosely defined, and of dubious value in many of the countries in question.

II. SUBSTANTIVE PROGRESS

A. Country and Comparative Studies

Country specialists active under this contract (in 1969-70) included Gustav Ranis, John Fei, Albert Perry, and Howard Pack. John Fei, for the case of Taiwan, and Gustav Ranis, for the case of Korea, spent a substantial portion of the academic year and this summer investigating the process of growth and employment creation in these two economies during recent decades. Their preliminary findings indicate a very interesting over time pattern followed by these systems, which may be designated open dualistic economies. Moving out of agrarian situations into transitional growth, they can be shown to have first entered an import substitution phase in which output growth is the central focus, development is essentially labor-based, pure technology

transplantation dominates, employment is relatively neglected and domestic entrepreneurship is given a chance to mature. *How?*

✓ Later, as distortions in the major relative prices dominating the economy are reduced, these economies can be documented to have entered the export substitution phase in which the conflict between output and employment generation is minimized, development is essentially unskilled labor-based, technological adaptation becomes important, and overall progress is accelerated. (See Discussion Paper 90, "Relative Prices in Planning for Economic Development" and Discussion Paper 97, "Technology Choice, Employment and Growth.") Similarities as well as important contrasts in the pattern of employment and output generation in these two cases, as well as with the historical case of Japan, are being brought out in the course of the research. *As a consequence*

✓ Berry began preliminary work on some aspects of Colombia's unemployment problem during 1969-70 and then focused on the employment generating potential of small scale industry during a visit to Colombia this summer. This study compares the employment implications of different types of industrialization, the main distinctions being between capital and labor intensive industries and between large and small firms.

Howard Pack, due to concentration on his work on technological alternatives in underdeveloped countries, has not yet begun research on the unemployment problem in East Africa. ✓

B. Sectoral and Functional Studies

The cross-country and/or topic-oriented researchers included

Gustav Ranis, John Fei, Albert Berry, Howard Pack, Richard Nelson, Stephen Hymer, Robert Evenson, and Marsha Goldfarb. Fei and Ranis have been engaged in exploring a methodology for an analysis of technology transfer from rich to poor countries with a focus on the distinction between the process of pure transplantation and that of indigenous adaptation "on top of" the imported technology. The focus of their work is on the industrial sector and on the problem of generating efficient capital-saving innovations, both from the aggregative and individual entrepreneurial points of view, in labor surplus types of situations. Their work has focussed on combining the notion of a technology shelf, the maturation process of indigenous entrepreneurs, and the changing factor endowment of developing economies through time within one analytical framework.

This conceptual work has been tested empirically against the historical case of Japan (see "LDC Innovation Analysis and the Technology Gap") and is being applied to the case studies of Korea and Taiwan.

Albert Berry, who will be analyzing occupational structures with emphasis on the service industries, on a cross sectional basis with a view to measuring the reactions of economies to excess labor conditions, began with an examination of the underemployment situation in Colombia (see III, A below).

During the past year Howard Pack approached completion of the first part of his study on choice of technology, i.e., cross-country comparisons of employment elasticities in

manufacturing. The results (in the process of being written up) include:

- (1) the statistical significance of differential cross-country elasticities;
- (2) explanation of these differences by a number of variables including:
 - (a) changing relative factor prices
 - (b) the influence of cumulative output
 - (c) the relative importance of imported equipment
 - (d) the share of output exported (quality requirements in exports may necessitate relatively capital intensive equipment).

Stephen Hymer's research on the relation between firm behaviour and employment has included a study of the relationship between wage rates and size of city (in collaboration with D. Mazumdar); the basic empirical work for this has already been done, showing a significantly higher wage in larger cities. Accompanying theoretical analysis is now under way. A second study deals with the effect of the multinational corporation on the demand for high level occupations in various countries. The major hypothesis is set forth in the paper "The Multinational Corporation and Uneven Development" (Economic Growth Center Discussion Paper 83) and is being further tested in other studies. An assistant is preparing an annotated bibliography on the subject of the localization of control in the corporation and its relationship to the geographical location of various

activities with particular attention to technological flexibility and the demand for scientists and engineers.

Richard Nelson's work during the past year continued to focus on production theory and the processes of technological change, both those processes whose major determinants are within the firm and those (like some forms of research) in which the public sector plays an important role. He has been studying in considerable detail the way research and development takes place and what factors determine its ultimate productivity.

Robert Evenson's work on LDC agriculture includes two studies in preparation dealing with determinants of labor demand; one looks at the Green Revolution in this light and the other, at variables influencing factor prices in the U.S. The first paper assesses the origins and future prospects for the generation and dissemination of Green Revolution technology. It supports generally optimistic expectations about the shifts in supply functions and real productivity gains possible in the next few years, based on the work of the Philippine International Rice Research Institute and the wheat research program in Mexico, but is considerably less optimistic as to the employment implications of these shifts.

Marsha Goldfarb's work is directed at the relationship of various types and levels of education to employment and income; her main effort to date has concentrated on Chile. Among her major findings thus far, from work on the Santiago labor market, are the following conclusions:

- (1) The value in terms of job-income from a year of education is twice as high for a man as for a woman.
- (2) Education performs a job-rationing function in the long run, since the relative importance of education in explaining job-income levels is greater for those over 30 than under 30.
- (3) Contrary to expectations, vocational secondary education does not appear to have a smaller effect on income than academic secondary education.

While in Chile this summer, Mrs. Goldfarb collaborated with the Ministry of Education in setting up a linear programming model for educational planning.

A second study, being carried out in collaboration with an association of Chilean teachers, deals with the financial alternatives of the private side of the educational system and attempts to put forward possible schemes to deal with its problems.

Ajit Bhalla, a research associate during the past year, focussed on the role of the services in employment creation, using partly a cross-country analysis and partly concentrating on the cases of Taiwan and the Philippines. He proposed a disaggregation of labor inputs into wage-labor, self supporting labor and family labor, and constructed a demand-supply model to explain the behavior of the service sector over time (in terms of amount and forms of employment and income levels). (See Discussion Paper No. 38, "A Disaggregative Approach to LDC's Tertiary Sector.") His empirical work enabled him to at least initiate quantification of the over time demand patterns for different types of service labor and to explain the changing forms of employment.

III. FUTURE COURSES OF ACTION

A. New Phases or Fields of Research

In future work, Albert Berry expects to come at the employment-employment problem in Colombia from several points of view.

One will involve looking at the implications of rural-urban migration for employment patterns and, in particular, for unemployment and its form (as between disguised and open). The main source of information will be life histories of individuals who have migrated to the large cities (combination of census and survey data) which hopefully will provide some hints as to whether urban unemployment tends to be a more or less transitory and age-specific problem. (There is a good deal of evidence that this is the case, but it is not clear whether the problem of open unemployment is resolved more by departure from the city, by shifting into very low productivity disguised unemployment occupational categories, or by moving successfully to productive and income generating occupations. There is some evidence that out-migration, from Bogota at least, has been very large).

Two approaches will be pursued in collaboration with a Colombian, Miguel Urrutia. The extent to which increases in education affect the employment problem will be studied with a null hypothesis that while education may redistribute the employment, it does not increase it substantially. Finally, Berry and Urrutia plan to take a general look at the relationship between government activity in the economy and income distribution and unemployment. The education question just referred to could be thought of as a part of this broader study: the remaining parts will have to do with the relevance of government construction and public works projects for employment, and the way in which other government policies, (e.g. foreign

trade policies) affect the employment issue.

Howard Pack plans during the coming year to continue his examination of the range of choice of technology available to the typical contemporary LDC. His work to date, reported on above, focussed on cross country comparisons of data aggregated to the level of the industry. In future work he hopes to investigate at a more micro level, using engineering data obtained from firms and trade organizations to find out whether there have been significant variations in the labor intensity of processes currently in use, as among the major machinery exporting developed countries. He also hopes to examine whatever facts are available on actual markets in second hand machinery in the LDC's.

Concurrent with the continuation of his research on technological alternatives open to underdeveloped countries, Pack will focus on the unemployment problem in East Africa.

Hugh Patrick's research under this program will focus on the relationship between capital and labor, and particularly on the role of capital markets (broadly defined) in increasing an economy's saving rate and in allocating that savings to investment uses. Both the aggregate savings rate and the criteria and techniques for the allocation of investment funds have direct impact on the amount and type of employment created. Patrick's general view is that many countries have pursued misguided policies--including low real interest rates, inflation, retarded or imprudent financial institution

development--which have tended to reduce the saving rate, restrict the effective mobilization of savings, and encourage capital-intensive industries and techniques of production at the expense of employment.

Patrick also plans to examine the effects of non-marginal changes in the level and structure of interest rates both in encouraging saving in financial form and in allocating funds efficiently as between choices in technology and output mix.

Richard Nelson will continue his studies of the productive potential of economic systems, especially with respect to the determinants of their capacity to incorporate new productivity-increasing information, and as to how the transfer of technology occurs. The unemployment problem in LDC's is frequently linked either to the slow adoption of foreign technology (and correspondingly slow growth) or to the adoption of "too modern" or "too highly capital intensive" technologies.

Nelson's work will be aimed at throwing enough light on the transfer process to suggest ways in which the flow can be speeded up or slowed down (as is appropriate) or made more selective.

Robert Evenson will be concerned with analysis of factors affecting employment in the agricultural sector in the LDC's. He is concentrating specifically on Indian agriculture and spent two months there this summer gathering data and initiating the analysis. His goal is a multi-dimensional assessment of the shifts in the demand for labor that take place when new technology is introduced in the sector. He will first investigate the micro-aspects of the new technology on individual farm operations. (This step is critical to aggregate analysis.) A number of studies are now available which show that output per farm and labor per farm (but not per unit of output) increase considerably when new rice and wheat varieties are introduced. But these studies do not reveal much about the elasticity of substitution between labor and other factors, a parameter that assumes a major role in any aggregate analysis. The elasticity of substitution of machinery for labor, for example, may be quite different with the new technology.

Evenson plans to examine the relative performance of certain tasks (seed bed preparation etc.) by mechanical implements (with machine power) and simpler tools used by laborers. He hypothesizes that the new technology has shifted the advantage to machines and the more sophisticated mechanical implements by making the tasks which are performed in a superior manner by the economically more important. For example, machines

are superior at preparing seedbeds and adequate seedbed preparation is more critical to the new high yielding fertilizer responsive crops. Perhaps more importantly, machines can perform tasks more rapidly and the new technology, especially insofar as it allows multiple cropping, probably increases the premium on timeliness of harvesting, seeding, etc. Thus, the incentives to mechanize and replace labor with mechanical power may be far greater than implied by relative input and output prices.

He plans also to look at the regional differences in technology introduction in India. The period from 1950-1965 has been marked by substantial differences in rates of food production increase by district. This reflects substantial change in production technology prior to the "green revolution". It will be useful to examine the pre-revolution experience and make comparisons with the post-1965 experience. Regional shifts in the demand for agricultural labor in the U.S. have been major factors in the extent of industrialization of labor.

Finally, the aggregate demand aspects will be considered. As noted previously, the critical parameters as far as labor is concerned are the aggregate price and income elasticities of demand for food and fiber products, (and population growth). The experience of every developed country indicates that the demand for labor decreases when the agricultural sector experiences any important degree of productivity growth, (with the exception of crops where international trade is quite important).

With inelastic demand for the product, total revenue to producers declines as prices decline. In addition, as the real price of machines has fallen relative to the price of labor, substantial substitution has taken place. This perspective suggests that as LDC's become self-sufficient in food production they will encounter massive resource adjustment problems.

During the coming year Marsha Goldfarb will use data collected in Chile to analyze aspects of the ongoing extension of educational services, in terms of the number of children who enter the school system, the lowering of the wastage rate, and some measure of the quality of the education they receive. She hopes to set up a detailed model describing the operation of the educational system which might be used, for example, to relate changes in the dropout rate to changes in the availability of school facilities, teacher quality, and other variables.

Werner Baer, who will be looking at unemployment in Brazil, hopes to throw light on the slow rate of manpower absorption in industry, on the question of what happens to the large proportion of the labor force in the services, and then be in a position to estimate what would happen if a substantial amount of agricultural modernization were to occur. With these objectives in mind, he plans to focus in as much detail as possible on the determinants of techniques chosen by industry: who makes the decisions (for example, whether it is engineers or someone else in the firm), whether credit availability is important, whether there is a distinction in capital intensity and ability to sustain excess capacity as between foreign and national companies, and other related issues.

On the labor side, Baer plans to analyze changes in the occupational structure in Brazil over the last years, and to study the implications of different overall growth rates for future labor absorption. A more detailed comparison of labor needs with projected supply (based on the present edu-

occupational structure and trends could complement the more general analysis, since a number of empirical studies are now being undertaken in Brazil. Some parts of this work, unfortunately, will be delayed until the 1971 population census becomes available.

Ron Soligo, working on Pakistan, aside from the usual exercise of reviewing the statistics available on unemployment, changes in the occupational structure, and wage rates by sector and subsector in as much detail as possible, wants to focus particularly on the relationship between income distribution and the unemployment problem from the demand side. He begins with the hypothesis that a highly unequal distribution of income tends to promote a relatively higher demand for imports and for domestically produced goods with high capital/labor ratios than would otherwise be the case. His objective is to construct a formal model and look at the effects on the rate of growth of output and employment of such parameters as the marginal income elasticities of demand for various products by income class and the marginal capital/labor ratios. He plans also to estimate these magnitudes for Pakistan and to relate them to the conclusions derived from the earlier analysis of the model.

Markos Hamalakis, working on Chile, plans to determine intersectoral productivity and employment-unemployment differentials. With these data he hopes to measure with some care the degree of complementarity and substitutability of sectoral employment. In particular, an attempt will be made to measure statistically the complementary expansion of employment in export industries on the one side, and manufacturing and specific service subsectors on the other side. This will then be linked to an examination of employment expansion in services and manufacturing due to such "autonomous" forces as urbanization, level of income, etc. A second step will involve analysis of the location and distribution of the labor force within the rural-urban framework and possibly, if desirable, a regional analysis at

the North-Center-South or provincial level. As part of a tentative estimate of social costs and benefits of urban and rural employment, an attempt will be made to correct the income differentials between the rural and urban areas for goods and services consumed in the rural sector but not measured in the national accounts value added.

Finally, there will be an examination of specific labor force characteristics and potential on an intersectoral basis, with a division of the labor force into high, intermediate, and low productivity segments.

B. Proposed Reports, Meetings

Apart from the usual written reports to AID, a discussion of research results to date and future courses between a group of the Growth Center researchers and members of AID is planned for this fall. At that time we hope to explain in somewhat greater detail the results to date and future lines of research for some of these specific projects, hear comments and criticisms from AID, and respond to more specific questions.

In the spring of 1971 a conference of members from the development centers at Harvard University, Williams College, and the Growth Center will meet at Harvard and the unemployment question will, it is assumed, be a major topic of discussion. This conference should be particularly useful since it will bring together three of the research center's most involved in work pertaining to the issue. Since each center will be responsible

for guiding the discussion and making a presentation on one or two major issues in development, the Growth Center plans to take this opportunity to test some of its current research on unemployment.

C. Changes in Personnel

Effective September 1, 1970, Howard Pack departed Yale University to accept a teaching post at Swarthmore College. It is expected that Pack will continue his research (under the country and comparative studies segment of the contract) as an EGC alumnus and will, therefore, become subject to the terms and conditions applying to the alumni. Efforts to recruit an eighth country analyst continue subject to the limitations imposed by academic calendars and commitments. It is intended to make this assignment by December 1970 but the actual work probably cannot commence until July 1971. Stephen Hymer, who has been engaged in an examination of the impact of the multi-national corporation on LDC employment, also departed the project as of September 1, 1970. He is replaced by Hugh Patrick (see IV, above).

E. Contract Schedule

Due to the delay in designating countries and the consequent absence of consultants or sub-contractors during the first year of the project, a substantial lag has developed with respect to actual levels of performance and expenditure. It is currently still anticipated that this lag can be compensated for in the remaining two years of the contract by means of an increased time commitment especially with respect to the alumni analysts.

1969-70 FISCAL SUMMARY

AID/CSD-2492

| <u>Line Item</u> | <u>Budgeted</u> | <u>Actual Expenditures</u> |
|--------------------------|-----------------|----------------------------|
| SALARIES | | |
| Professional | \$57,639 | \$49,079 |
| Research Assistants | 29,834 | 23,160 |
| Adm., Sec., Cler. | 26,351 | 29,611 |
| FRINGE BENEFITS | 8,268 | 7,806 |
| OVERHEAD | 50,787 | 44,730 |
| SUB-CONTRACTS | 43,900 | - - - |
| TRAVEL & ALLOWANCES | 23,300 | 4,825 |
| PUBLICATION EXPENDITURES | 9,000 | - - - |
| OFFICE SUPPLIES | 12,000 | 10,835 |
| COMPUTER FEES | 8,000 | 1,121 |
| CONFERENCES | 2,000 | 150 |
| MISCELLANEOUS | <u>999</u> | <u>1</u> |
| | \$272,128 | \$171,368 |