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UNCERTAINTY AND AGRICULTURAL INNOVATION

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December 1974

CONTENTS

ABSTRACT	iii
DESCRIPTION OF RESEARCH	
Introduction	1
Modification of the Traditional Approach	2
Hypotheses for Empirical Research	6
History of the Research	8
Significance of This Research	13
References Cited	16
PERSONNEL AND FACILITIES	18
BUDGET	21
BUDGET JUSTIFICATION	23

ABSTRACT

This proposal requests funds to elaborate and test a new approach to the study of adoption of agricultural innovations. The new approach begins with the idea that early adopters are usually uncertain about the exact economic implications of adoption. This idea modifies the traditional approach which emphasizes full information and rational decisions.

The two approaches lead to different predictions about the behavior of farmers. Specifically, the new uncertainty-oriented approach challenges the common finding and conventional theoretical wisdom that adoption rate increases with the farmer's economic rank. It predicts that, under certain conditions, the tendency to adopt decreases as economic rank increases. Preliminary results support this hypothesis.

Controversy surrounding these preliminary results points to the need to bring a large number of cases to bear on the contrasting predictions. The proposed research will locate, obtain and analyze appropriate data that will permit secondary analysis.

INTRODUCTION

When people decide to do something new, something innovative, they usually face a risk. Newness often involves the unknown and the uncertain. The actor who invests resources in a new venture risks losing his investment. Such an actor presumably anticipates gain of some kind, and fears loss. The research proposed here explores, for a limited situation, how people at different ranks in a stratification system might handle this balance of anticipation, fear and uncertainty.

The focus is on these aspects of the adoption of agricultural innovations. The research will concentrate on secondary analysis of data gathered by other investigators, thereby taking advantage of the enormous amount of work already done in this field (Rogers 1962, Rogers and Shoemaker 1971).

Most work done on the adoption of innovations in agriculture is within the information-oriented tradition found in university departments of Rural Sociology and Communications and in Agricultural Experiment Stations. This great tradition is oriented to rational planning and the reduction of uncertainty in the dispersion of technological advances in agriculture. It concentrates on the communication of information that would lead a rational actor to adopt an innovation.

The research proposed here focuses on another part of the process leading to adoption. It takes response to uncertainty to be an important element in the early stages of dispersion of an innovation. It notes that firm knowledge among potential adopters grows only slowly with experience.

Thus, earlier adopters are likely to be people who adopt before they can be certain of outcomes. They are people who take risks.

The traditional information-oriented approach and the risk-taking approach proposed here are complimentary in their focus, and share many features. But there are real differences in the conclusions they make about the relative importance of crucial factors in the adoption process. And they have different policy implications. Below I will set out the contrast in more concrete terms.

MODIFICATION OF THE TRADITIONAL APPROACH

In studies of the diffusion of agricultural (and other) innovations it is commonly found that adoption increases with economic rank (Rogers 1962:174-175; Rogers and Shoemaker 1971:187). That is, rich farmers adopt new farming practices more readily, on a statistical basis, than do poor ones. While not all studies show this relation of rank and adoption rate, a high percentage do, and the finding may be considered well established. In addition, the traditional approach which emphasizes information and rational planning often generalizes this finding to give richer farmers the overall positive image associated with the innovative actor in our culture.

The research proposed here seeks to modify the overall conceptual scheme, the specific theory and even the empirical findings associated with this traditional approach. I stress the fact that the aim is modification not replacement, and the related fact there are many problems in the study of the adoption of innovations that neither approach addresses or solves.

The problem addressed in this research is a limited, important one.

The uncertainty-risk idea leads to modification of the conceptual scheme. Uncertainty and risk are associated with action under conditions where information is less than perfect.¹ A clear definition of uncertainty translated into concrete research operations emerges below.

The overall scheme which results when the uncertainty-risk idea is added to the information-oriented conceptual apparatus traditionally used may be described in terms of three simplified factors. The three factors are:

1. Ability to pay for the innovation,
2. Knowledge (information),
3. Inclination to risk.

Ability to pay. Whatever the approach to the adoption of innovations, the potential adopter's ability to pay for the innovation is clearly crucial. Innovations are often costly and seldom infinitely divisible. For example, in a situation where a relatively wealthy farmer can barely afford a small tractor, a poorer farmer may simply be excluded from adoption because he cannot pay for the innovation. On the whole, over a range of situations, this factor alone would lead to the finding that wealthier

1. Frank Knight (1921:19-20) distinguishes between measurable or quantifiable uncertainty, which he calls "risk," and unmeasurable or "nonquantitative" uncertainty which he calls "uncertainty." Risk describes situations where an actor knows the odds for and against a desirable outcome from a given course of action; uncertainty describes situations where he does not. In many recent discussions of agricultural development, "risk and uncertainty" appears as a single term, and I will follow that usage here. I should note, however, that while economists tend towards measures and models that embody the "risk" side of Knight's distinction, my aim here is to give more emphasis to the "uncertainty" side. See Cancian 1972:6, 134-136, and 157-159 for further discussion of these definitional problems.

farmers are leading innovators.

Knowledge (Information). The more knowledge a farmer has, the more he can be certain about the economic payoff of his investment in an innovation. Thus, knowledge reduces the riskiness of an innovation and leads to a more straightforward, rational decision to adopt. Lack of such firm knowledge, which is of concern here, makes the decision to adopt more complex and inclination to risk more important.

In both the traditional information-oriented approach and the modification which emphasizes the balance of rational decision and inclination to risk it is clear that increased knowledge or information increases the tendency to adopt. While the approaches emphasize different aspects of the potential adopter's knowledge or lack of it, they suggest the same thing about the results of increasing knowledge.

It is a reasonable assumption that, in most populations, education and access to information will increase with economic rank. Thus, on the whole, over a range of situations, this factor alone would lead to the finding that wealthier farmers are leading innovators.

Inclination to risk. Inclination to risk is an imputed motive that may explain some variance not explained by the factors listed above. It is inclination to go ahead with an innovation even when the outcome is not entirely clear. Emphasis on this factor leads to some new ideas about the adoption process.

While it is clear, tautologically, that ability to pay increases with economic rank, and it is likely that knowledge and its effects on adoption

increase with economic rank; it is not immediately clear what the relation of economic rank and the inclination to risk might be. The approach developed for this research emphasizes the reasons why inclination to risk may decrease as economic rank increases. For example, high ranking people have more rank to maintain and less rank to gain than low ranking people. Thus, if we attend to conservation of rank as well as to actors' desire to increase their rank through innovation, there is reason to think that higher ranking people will be less inclined to risk than lower ranking people. When, uncertainty is high, i.e., when loss is a likelihood, conservation of rank may be the dominant motive. It may be that higher ranking people act more cautiously in order to preserve what they have. This theoretical reasoning leads to the proposition that, on the whole, over a range of situations, when uncertainty is high, wealthier farmers will innovate less than poorer farmers.

This assertion is the most important part of the proposed modification of the traditional information-oriented approach to the adoption of innovations. It leads to importantly different predictions about the behavior of adopters of different economic ranks.

Of course, this theoretical statement is not empirically obvious, and alternative theories about the relation of economic rank and inclination to risk could be constructed. More important, adoption behavior is typically recorded as a single act, not as a three part act in terms of the three factors laid out above. Thus, in order to test the theoretical proposition connected with the uncertainty-risk approach, a way must be found to express

the factors in empirical research.

HYPOTHESES FOR EMPIRICAL RESEARCH

The uncertainty idea is a complex one that is subject to many definitional problems, but one thing is clear: if the idea means anything, uncertainty is greater in the early stages of the introduction of an innovation and less in the later stages. As soon as some people adopt an innovation and use it for a time, they know more about its economic consequences for someone in their situation, and their friends and neighbors know more. The uncertainty of all of them about the economic consequences is reduced.² As this reduction of uncertainty occurs, the relevance of inclination to risk lessens. Decisions to adopt become more straightforward ones determined by the ability to pay and specific factors involving the increasingly known characteristics of the innovation and the situation of the particular farmer.

These ideas about uncertainty lead to two testable hypotheses about the adoption of innovations. It may be hypothesized that, early in the adoption process, inclination to risk is more important than ability to pay and knowledge. Thus, Hypothesis A may be stated as follows:

In the early stages of adoption (when uncertainty is high), poor farmers will adopt more than rich farmers.

This is a Quixotic gesture in the face of the established positive relation

2. Clearly, with ideally tested innovations and ideally informed farmers there is little room for significant reduction of uncertainty, but all innovations and farmers are not ideal.

of economic rank and adoption mentioned above (Rogers 1962:174-185; Rogers and Shoemaker 1971:187). But, preliminary results show that, under certain conditions, it is possible to question the established positive relationship. I do not expect a general confirmation of the negative relationship stated in the hypothesis. Rather I hope to establish some qualifications on the broad generalization that is now commonly accepted.

The second hypothesis is more important, for it avoids the unrealistic absoluteness of Hypothesis A and its conventionally accepted alternative. By using the notion of stages of the adoption process over which uncertainty decreases, this hypothesis offers a more subtle and relevant test of the uncertainty-risk idea in general and the proposition that inclination to risk is negatively related to economic rank in specific.

The logic is as follows: if inclination to risk is more important in the early stages of the adoption process, then the negative relation of economic rank and adoption should be more important in the early stages of the adoption process. Thus, if stages are compared, we should find an increasingly positive relation of economic rank and adoption as the innovation becomes more wide-spread. This is true whether the overall relation is positive or negative at the outset. It should be less positive (more negative) in the early stages of adoption than in the later stages of adoption. Hypothesis B may be stated as follows:

The positive difference between adoption rate in an early stage of the adoption process and adoption rate in a later stage of the adoption process will increase as economic rank increases.

As will be shown below, this hypothesis is supported by preliminary research.

HISTORY OF THE RESEARCH

The proposed research is an expansion and modification of previous research. It is partly a response to controversy engendered by publication of preliminary results. Thus it seems relevant to briefly describe the development of the ideas presented above, the nature of the original empirical research and the published response to both the ideas and the preliminary results. In this process, data relevant to the hypothesis stated above will be presented.

Preliminary Work. The idea that adoption might be negatively related to economic rank developed in Summer 1964 when I was doing research on adoption of innovations in Zinacatan, Mexico. When the Zinacantan data confirmed this counter-intuitive and counter-empirical idea, I sought additional cases. Correspondence with a number of cooperative rural sociologists whose publications indicated that they had appropriate data provided six additional cases and the preliminary results were published (Cancian 1967). Figure 1 and Table 1 show that Hypothesis A is supported by four of seven cases and Hypothesis B is supported by five of seven cases, when the rank continuum is divided into quartiles and the relationship between Low Middle and High Middle quartiles is considered.

The four cases (Cancian, Dean et al, Fliegel and Lindstrom) that show the Low Middle rank adopting more than the High Middle rank challenge the accepted finding that the relation of economic rank and adoption rate is

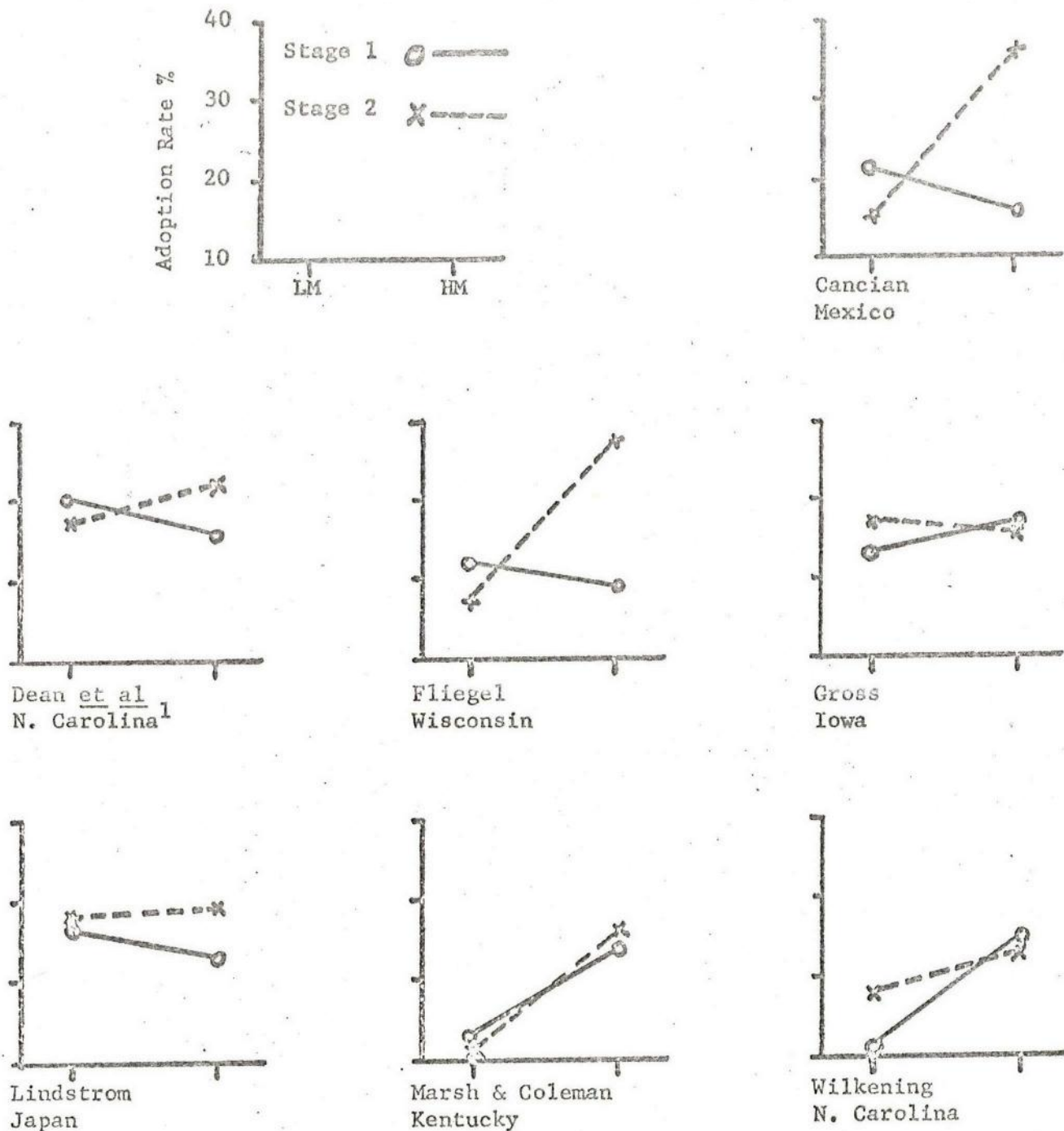


Figure 1

Note: The lines are drawn to facilitate visual comparison of the points which represent the data (see Table 1). Stage 1 shows adoption rate by rank among the first 25% of the total population to adopt. Stage 2 shows adoption rate by rank for the second 25% of the total population to adopt. The ranks shown represent the middle ranks in a population divided into quartiles. LM rank is the second quartile from the bottom. HM rank is the third quartile from the bottom. Table 1 gives results for all four quartiles.

1. See Cancian 1967 for full reference to studies by others.

Table 1

ADOPTION RATES BY RANK AND STUDY*

Study	Stage 1				Stage 2			
	Low	Low-Middle	High-Middle	High	Low	Low-Middle	High-Middle	High
1. Cancian	17**	21**	16**	46**	0	15	36	49
2. Dean <i>et al.</i>	14	30	26	30	10	27	32	32
3. Flegel	16	22	19	43	8	17	37	39
4. Gross	13	23	27	36	24	27	26	23
5. Lindstrom	18	27	23	33	20	28	29	22
6. Marsh & Coleman	23	13	24	40	27	11	26	36
7. Wilkening	10	11	25	54	17	18	23	42

*From Cancian 1967:922

**Percentage of row.

monotonic and positive. They suggest that analysis techniques often used by rural sociologists (regression or tripartite division of the economic rank continuum) may be obscuring an important tendency towards a different relation of economic rank and adoption rate in the middle ranks.

The five cases (those mentioned above, plus Marsh and Coleman) that support Hypothesis B represent more important support for the uncertainty-risk modification of the traditional approach to the adoption of agricultural innovations.

These very preliminary and imperfect findings in support of Hypotheses A and B are made more plausible by an interesting fact about the deviant cases. It seems that where discontinuities in the available data made it necessary to use poor approximations to quartiles as measures of economic ranks and stages of adoption, confirmation of the hypotheses is less likely (Cancian 1967:925-926). That is, deviant cases would be eliminated by certain reasonable standards of data quality control. While this fact has no apparent theoretical relevance, it does give reason to believe that Hypotheses A and B would receive stronger support from a larger and more carefully controlled sample of cases.

These preliminary results were replicated in a full-scale study of Zinacanteco responses to government corn-buying and road-building programs done in 1966-67 and published in a book (Cancian 1972). With the book I began setting the research in the context of an approach emphasizing action under uncertainty.

Reactions. Reactions by the community of rural sociologists began before

the appearance of the book, but the published ones appeared after its publication. They seem to have been stimulated in part by my provocative, but basically unimportant, identification of the High Middle rank with the "middle class" and the consequent phrasing of the theory as an explanation of "middle class conservatism."

In a long and critical review of the book Denton Morrison justifies his almost exclusive attention to the single chapter on rank and risk-taking theory with the remark that it "....challenges major aspects of existing notions in the social science literature and deserves major scrutiny" (1973:262). He concludes his review (page 265) as follows:

Cancian's theory, method, and data are a model of explicitness and detail: this is one of the reasons he is open to specific criticism. Thus I do not wish the above remarks to negate the very important service he has done in causing us to re-examine both the implicit theory and the empirical evidence for the relationship between stratification and innovation. But there are crucial difficulties in his theory, method, data, and interpretations that must give us "substantial uncertainty" about the claims, despite the important and quite possibly corrective stimulus Cancian has provided.

Gartell Wilkening and Presser (1973) devoted a paper to criticism of various aspects of the theory and research. They make appropriate and telling criticisms of the specification and analysis of my Hypotheses 1, 2, 3, 4, 7, and 8 which involve the relation of the variables across all four economic ranks. However, they do not undermine the tests of the central ideas embodied in Hypotheses 5 and 6 (Hypotheses A and B here). As is clear in all the publications, Hypotheses 5 and 6 (A and B here), which are specified for the middle ranks, are the crucial ones. Gartell, Wilkening

and Presser's single attempt to challenge these hypotheses involves a serious error on their part.³

While, in a sense, I would like to argue that critical response to publication of the theory and the preliminary results is a better measure of their importance than positive response, I will list the published positive response that has come to my attention. Kivlin and Fliegel (1968) and Stanfield and Whiting (1972) employ the idea of "middle class conservatism" that emerges from the preliminary finding that the High Middle rank may adopt innovations more slowly than the Low Middle rank. Layton (1973) uses the entire framework in interpretation of a French community. Almy (1974) has systematically tested the theory and provided independent confirmation of the central hypotheses.

Gartell, Wilkening and Presser's criticisms involved the addition of one case to my data. My replication in Zinacatan (Cancian 1972) involved additional measures in one of the populations included in the original

3. Gartell, Wilkening and Presser (1973:397) reinterpret Hypothesis 6 (Hypothesis B here) and recalculate results on the basis of this reinterpretation. In their Table 2 (page 398) they show the hypothesis confirmed in only one of eight cases. Further down the page, they slide gently into the conclusion that "Overall, the test results of hypotheses 5 and 6 suggest that the inhibiting effect (Cancian's original theory) is not consistently manifest." If their recalculations had been appropriate, they might have been less gentle. In fact, their recalculations are based on an entirely inappropriate assumption stated on page 397: "Hypothesis 6....clearly implies that there will be a higher rate of adoption in Stage II than in Stage I for both the High Middle and Low Middle categories. Terms on both sides of the equation should be positive (emphasis in the original)." They neglect the rather obvious fact that the adoption rates across stages in the data are largely an artifact of the definition of stages and the discontinuities in the data. Given this, the principles on which they base their recalculations are meaningless.

(Cancian 1967) study. Such compiling of small numbers of cases is inappropriate given the nature of the questions asked. Thus, I am presently involved in an attempt to enlarge the sample substantially.

Present Work. I am presently trying to gather additional cases. Letters have been sent to more than 25 scholars and institutions whose publications indicate that they may have appropriate data. A covering letter explaining my purpose is tailored to the situation of the addressee. In addition, each addressee is sent a description of my needs that is attached here as Appendix 1. The literature search continues.

While no data sets have been received at this writing, several promising responses have been received. Even with the kind cooperation of others, locating data sets requires much detective work. Investigators change institutions, co-authors lose track of each other, data and code books are misplaced. I hope to have twenty or more data sets located by the end of this academic year (June 1975), and expect that several of these will actually be in my hands by that time.

This work is proceeding with the aid of one half-time research assistant paid by a small grant from the Stanford Center for Research in International Studies. The grant also provides a small amount for incidental expenses and travel.

With this proposal I am requesting funds for: 1. collection of data that are located and available, but expensive to obtain; 2. support of myself and assistants during the period of analysis and report preparation, and 3. computer time and other expenses incidental to the analysis. Details

of the uses of funds are supplied in the budget and the budget justification section below.

SIGNIFICANCE OF THIS RESEARCH

The work described above is important in at least two ways.

1. The uncertainty-risk approach implies that ^{programs} ~~programs~~ for change (specifically those focused on agricultural practices among small farmers in the United States and elsewhere) should be reevaluated in two major ways:
 - a. inclination to risk, rather than access to information and ability to process it, may be crucial at the beginning of the process of change, and
 - b. the high middle ranks (the "Middle Class"), which is often the cultural ideal and the focus of change efforts, may be, for a number of reasons, particularly conservative and an especially poor initial target for change programs.

These ideas have three immediate, concrete implications for the administration of change programs designed to increase agricultural productivity. First, information diffusion, insofar as it is used, should be aimed at lower-than-average income farmers. Second, technology development and credit programs should be tailored to an investment level that can be attained by lower-than-average income farmers. Third, investments in infrastructure, like roads and agricultural technology, should concentrate on opening opportunities loosely defined. Less should be planned in detail, and more should be left to the ingenuity of the farmer. He will adopt with incomplete information. He will determine the ultimate suitability of the

innovation for his situation. This last point should not be taken to encourage technological irresponsibility on the part of the developers of new techniques. Rather it suggests that the ultimate decision must be shared with the farmer.

The data used to test the theory in my previous studies were sufficient to draw attention to the theory and to cause some upset on the part of investigators devoted to established perspectives, but they were not sufficient to convince them (or me) that the major elements of the theory must be routinely considered in the design of research on change and innovation. The research proposed here will permit analysis of many more studies which should: a. substantiate the importance of the theory (if in fact it is confirmed in these tests), and b. aid in specification of the conditions under which the theory may or may not be applicable. That is, further concrete implications for change and innovation research should emerge.

2. The uncertainty-risk approach may also be seen as part of a larger trend that is developing an alternative to what I call "information-oriented" approaches to action. These latter include various applications of micro-economic theory, decision-making approaches in psychology and anthropology, and communication research in rural sociology. All of these approaches treat the initiation of action as the result of a rational calculation made in terms of specified goals and known conditions. To put it crudely, deviations from perfect information about goals and implications of action and from perfectly rational calculation are problems for these models.

The alternative to the rational-calculation, information-oriented approach attends directly to the uncertainty and complexity that everyday life forces on the actor. An important part of this alternative approach is embodied in Simon's principle of bounded rationality. "The capacity of the human mind for formulating and solving complex problems is very small compared with the size of the problems whose solution is required for objectively rational behavior in the real world --- or even for a reasonable approximation to such objective rationality" (1957:198). This principle is the basis of Simon's well-known idea that actors are often "satisficing" rather than maximizing. More recently, March (1972) has written about the manner in which models of action used by social scientists restrict our research and our conceptions of what is appropriate and possible. Crozier's (1964) attention to the function of uncertainty in organizations is also part of the shift in emphasis, broadly defined.

The approach presented here is one concrete application of these general ideas. It is important because it involves a specific research application that is directly parallel to studies done within the information-oriented tradition. And it is important because it begins to face the obvious problem: how can we use a rigorous model to study a natural situation characterized by looseness and uncertainty? This is a problem that the rational-calculation, information-oriented approach does not have to face, because the character of its model is consistent with its characterization of the nature of human action (see Cancian 1966, 1974 for brief discussions of related problems).

The proposed research may be seen as an attempt to draw out the implications of the idea that ignorance and uncertainty are often as basic as information and rationality in situations of change. Here I have used variance in uncertainty (over stages of innovation) to specify the implications of the approach. This is the kind of basic step that will, I hope, contribute to the development of rigorous models of loose, complex and uncertain natural situations.

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PERSONNEL AND FACILITIES

Principal Investigator

Frank Cancian was born in Stafford Springs, Connecticut on August 14, 1934. He received a B.A., in philosophy, from Wesleyan University in 1956, studied in Italy on a Fulbright Grant in 1956-67, and worked as a reporter-photographer for the Providence Journal Company in 1957-58. He received a Ph.D. in Social Anthropology from the Department of Social Relations, Harvard University, in 1963, and has taught at Harvard University (Instructor 1963-64), Cornell University (Associate Professor 1966-69) and Stanford University (Assistant Professor 1964-66 and Professor 1969 to present). In 1966-67 he was a Foreign Area Fellowship Program Post-doctoral Fellow in Latin American Studies, and in 1970-71 he was a fellow at the Center for Advanced Study in the Behavioral Sciences. His recent teaching has concentrated on Economic Anthropology, Social Stratification and Design of Field Research. His major field work, totaling about 36 months on seven trips between 1960 and 1971, has been in Zinacantan, Mexico. He is Chairperson of Anthropology at Stanford. His relevant publications are listed under references cited above.

Research Assistants

Research assistants will be recruited from the graduate student body in Anthropology and Sociology, or from the community. Two ideal candidates are described (with their permission) below. Active recruitment of the

best qualified personnel will begin as soon as funds are committed.

Gaylord Heeley received a B.A. in Political Science from Smith College in 1969, has a M.A.T. degree from Antioch College and has done graduate work at Sarah Lawrence College. She started a school in Philadelphia under a grant from the city, and she worked as northern California editor of the T.V. Guide for more than a year. She is presently a second year graduate student in Anthropology at Stanford, where her interests include the study of social stratification. Her editorial and organizational skills in combination with her skills as a social scientist would be invaluable in the proposed research.

Thomas Glenn received a B.A. in Economics from Stanford University in 1963 and did graduate work in Economics at Tulane University. He taught Economics, including courses in micro-economic theory, international economics, urban economics and mathematics for economists during eight years of teaching, two as an instructor at Tulane, four as an assistant professor at Franklin and Marshall College and two as a lecturer at California State University at San Francisco. He is presently a second-year graduate student, and his topical specialty is economic anthropology. His extensive experience in computer programming and his very strong academic background in statistics in combination with his skills as a social scientist would be invaluable in the proposed research.

Facilities

A 400-square-foot, furnished office will be available for the exclusive use of the project, and space for secretarial work and long-term storage will be available in the same building. It is convenient to Stanford's central computer facility, which is excellent.

Characteristics of Data for Economic Rank and Adoption StudyThe Sample:

Two-hundred or more farmers living in the same community.

Populations whose members live in different physical communities may be used insofar as they form a reference group.

For populations that include many part-time farmers, it will be useful to separate out full-time and part-time farmers and to concentrate on analysis of full-time farmers.

For populations that include many different types of farming (e.g., grains and dairy) it will be useful to separate the major types of activity.

Economic Rank Variable:

Acreage, number of animals and gross value of annual product will be taken as very good measures of this variable.

Level of living, tax reports, ratings by alters, etc., may also be used.

While data providing a continuous distribution on this variable would be ideal, any data permitting division of the population into approximate quartiles will be useable.

Adoption Variable:

Time (year) of adoption of a crucial innovation will be the ideal measure of this variable.

Indices based on time of adoption of many innovations or on the number of innovations adopted by a given point in time may also be used.

For indices that include expensive and inexpensive innovations, it will be useful to be able to separate innovations on the basis of cost.

While data providing continuous distribution on this variable would be ideal, any data permitting the division of the population into approximate quartiles will be useable.

Other Variables:

It will be useful to be able to control for age, education, types and number of information sources and other variables that are often important to adoption.

Frank Cancian
Department of Anthropology
Stanford University
Stanford, California 94305

OFFICE MEMORANDUM

TO: Supervisors of External Research Projects

DATE: April 30, 1979

FROM: Suman Bery, VPD

SKB

SUBJECT: Project Narratives

1. In preparing the 1979 edition of the Abstracts of Current Studies booklet, we plan to retain substantially the same format followed last year. On this basis and following the guidelines set out below, I would appreciate it if you would prepare, by c.o.b. Thursday, May 31 a narrative on the research project(s) that you supervise. Your draft of 3-4 pages (double spaced) should consist of a main narrative section followed by three summary sections on project responsibility, completion, and published reports.

2. Though coverage will vary among projects, the Narrative Section should deal with the following:

- (i) The Project Framework: The nature of the topic being considered; the approaches taken so far and how this research project differs from or improves upon other studies in the same area of concentration, and how the Bank has so far dealt with the problem being considered. For research that evaluates Bank development projects, the project should be described in some detail.
- (ii) Objectives and Strategy: This discussion, with the one on methodology, forms the major part of the narrative. It should address the issue of the usefulness of this study for Bank policy and operations, for policymaking agencies in developing countries, and more generally, for the development community? It would be helpful if you could make explicit why the Bank and not a university or some other institution has undertaken this research. Include here, or as a separate paragraph, a description of the output(s) expected from the project. If the study is carried out in phases, describe how the current phase builds on earlier ones (enumerating major findings from these earlier phases) and how it lays the groundwork for further analysis.
- (iii) Methodology: Describe, as appropriate, the features of the model structure used; how surveys have been designed and carried out;

how different portions of the research relate to each other. Avoid equations, but do not hesitate to elaborate on technical aspects you feel are essential for a clear understanding of the project.

- (iv) Outputs of the project (if not covered elsewhere), and planned extensions of the work.

3. The narrative should end with three Summary Sections giving the following information:

- (i) Responsibility: The names of the Departments, Bank staff members, and consultants involved in the project. For research with collaborating institutions, list their full names and locations and summarize their contributions to the research design and execution. In addition, this section should also indicate whether government ministries or other public agencies are involved, through awareness and approval, if not active participation.
- (ii) Completion Date: The month and year in which the project is expected to be completed. Please be more specific than "final report is being prepared."
- (iii) Reports: List the books, Occasional Papers, Staff Working Papers, journal articles, and other reports that have been completed and are available to the public. Articles issued in the World Bank Reprint Series should be so indicated. The reports should be listed in a standard professional format, with author, title, publisher, date of publication, and, for a journal article, volume number and date. For publications in languages other than English, special attention should be given to accents and spelling.

4. An assistant will be available in early June for a limited time to work with you, as necessary, to revise your drafts. Please, therefore, make sure that the drafts reach me no later than c.o.b. Thursday, May 31.

cc: Mrs. Hughes, Messrs. Duloy, B.B. King, Habte, Haq, Jaycox, Rovani, Willoughby, Yudelman, de la Renaudiere, Thalwitz
Ms. Hidalgo-Gato, Peter, Stout, McLeod, P. Moses, C. King, de Tchihatchef, Weaving, Hazzah
Messrs. Bhatnagar, Veraart, Gomez, Soncini, Kang, Rathnam, Lowther

ROUTING SLIP		DATE: April 26, 1979	
NAME		ROOM NO.	
Mrs. Hughes			
Mr. Cheetham			
Mr. Bery ✓			
<input type="checkbox"/>	APPROPRIATE DISPOSITION	<input type="checkbox"/>	NOTE AND RETURN
<input type="checkbox"/>	APPROVAL	<input type="checkbox"/>	NOTE AND SEND ON
<input type="checkbox"/>	CLEARANCE	<input type="checkbox"/>	PER OUR CONVERSATION
<input type="checkbox"/>	COMMENT	<input type="checkbox"/>	PER YOUR REQUEST
<input type="checkbox"/>	FOR ACTION	<input type="checkbox"/>	PREPARE REPLY
<input checked="" type="checkbox"/>	INFORMATION	<input type="checkbox"/>	RECOMMENDATION
<input type="checkbox"/>	INITIAL	<input type="checkbox"/>	SIGNATURE
<input type="checkbox"/>	NOTE AND FILE	<input type="checkbox"/>	URGENT
REMARKS:			
I shall be seeting Robert Wood at 10 a.m. on May 2.			
FROM: Benjamin B. King		ROOM NO.: K4000	EXTENSION: 61001

OFFICE MEMORANDUM

Research - General

TO: Distribution below

DATE: April 26, 1979

FROM: Benjamin B. King *BBK*

RESEARCH LIBRARY COPY

SUBJECT: Visit of Director of ODI

1. Please see the attached letter from Robert Wood. He is, in effect, asking for support from the Bank for some ODI projects. Past experience suggests that working with ODI is not easy, since they want us to act like a Foundation, although we tell them that's not what we are. Unless there is a very good case for support, I would, therefore, suggest keeping our distance.

2. However, we may be interested in keeping tabs on some of the projects. I am therefore circulating numbers 1 and 5 to those who might be interested. Please let me know by c.o.b. Tuesday, May 1, if there is anything you want me to say to Robert Wood or if you'd like to see him yourself.

Attachments

Distribution

Mr. Westphal (1, 5)
Mr. Anderson (1)
Ms. Cortes (1)
Mr. Keesing (5)
Mr. Mazumdar (1)

*File: Research
Instructions*

R.I.D.E.P.

Those Listed Below

April 25, 1979

Suman Bery, VPD

A Panel to Review a Research Proposal:
"The Construction of Econometric Models
for the Supply of Perennials"

1. A panel consisting of Messrs. J. Benard (Chairman), C. Blitzter, T.N. Srinivasan, C. Carlier and A. Green has been established to review the attached proposal on Wednesday, May 2nd at 10:00 p.m. in Room K3700.

<u>Proposal</u>	<u>Staff Responsible</u>	<u>Amount Requested</u>
The Construction of Econometric Models for the Supply of Perennials	M.J. Hartley	\$85,000

2. The panel is expected to consider issues such as:

- (i) Is the proposed research of interest to the Bank?
- (ii) What contribution are the research findings expected to make to the Bank's operations?
- (iii) Are the hypotheses to be tested and the methods of analysis well defined?
- (iv) Are organizational arrangements adequate and clearly specified?

3. The proposal was discussed in draft form at a workshop on April 13th. As a result of the workshop discussion the scope and phasing of the proposal were altered. These changes are outlined in the memorandum "Response to Suggestions in Workshop on Research Proposal on Perennials", which is attached to the present proposal. Also attached are guidelines designed for the preparation and submission of research proposal, which may be of assistance in the review.

4. I would appreciate receiving the recommendations of the panel by Monday, May 7th.

Attachment (s)

Distribution:

Messrs. J. Benard, C. Blitzter, T.N. Srinivasan,
C. Carlier, A. Green

cc: Messrs. B.B. King, M.J. Hartley

OFFICE MEMORANDUM

*Res. General
(Sector Planning)*

TO: Those Listed Below

DATE: April 23, 1979

FROM: Suman Bery, VPD *SKB*SUBJECT: A Panel to Review a Research Proposal:
"Sector Planning for Agriculture and
Rural Development"

1. A panel consisting of Messrs. R. Picciotto (Chairman), G. Pyatt, O. Price, P. Naylor and W.I. Jones has been established to review the attached proposal on Thursday, April 26th at 4:00 p.m. in Room A330.

2. The panel is expected to consider issues such as:

- (i) Is the proposed research of interest to the Bank?
- (ii) What contribution will the research findings make to the Bank's operations?
- (iii) Is the scope and method of the work proposed well defined? Are organizational arrangements clearly specified and adequate for the task?

Guidelines for the preparation and submission of research proposals are attached. These may be of assistance in the review.

3. I would appreciate receiving the recommendations of the panel by Thursday, May 3rd.

Attachment (s)

Distribution:

Messrs. R. Picciotto, G. Pyatt, O. Price
P. Naylor, W.I. Jones, B. Balassa

cc: Messrs. G. Donaldson, M. Yudelman, P. Scandizzo

SKBery:bf

OFFICE MEMORANDUM

Research - General
Exports of Technology
from Semi-Industrial Economies

TO: Mr. Larry Westphal

DATE: April 10, 1979

FROM: Suman Bery, VPD *SKB*SUBJECT: Your draft announcement: "Exports of Technology from Semi-Industrial Economies"

1. Thank you for allowing me to comment on this draft.
2. What you propose represents an ambitious attack or an important set of issues. At present it comes across as a full scale program of research, given the variety of sectors and activities you intend to encompass. I would favor concentration on industrial technology at present. Generalizations to other sectors could proceed once the theoretical framework and mode of attack were clearly established. Within industry, the factors influencing capital goods exports are likely to be different from those influencing service exports. This distinction might be more sharply drawn.
3. If the finalized version of this 'announcement' is intended for a non-DPS audience, the tone and balance of your sections 'Why Research ...' and 'Justification for Bank Involvement' should be altered. The current draft stresses the academic interest. Instead, I would suggest reversing the order of A and B on p. 2 (and in the ensuing narrative). The section on Bank involvement would be strengthened by your identifying the policy and lending implications of the research more explicitly. The reference to the internal and external panels and to academic interest should come as an additional endorsement rather than as the main justification.
4. Presentationally, I would suggest that the list of questions on p. 11 come sooner, on p. 2. I also think that the present paragraphs 5 through 13 could be made more succinct.
5. I hope these comments are helpful. I look forward to the finalized version.

cc: Messrs. B. Balassa, B.B. King, M. Selowsky

SKBery:bf

Mr. Friedrich Kahnert, URBOR

April 6, 1979

Uche Mbanefo, WAPID

Research Proposal CEPAZE

1. Your memorandum and attachments of March 29 on the above subject have been reviewed by members of our Division who work on Cameroon and Mali. The staff member who works on Upper Volta is away on mission. Nevertheless, the attached note, prepared by Ms. Insel, who is familiar with Mali, is fairly representative of the general feeling in this division towards the proposed research project. I trust that you and the project planners will find her comments and suggestions useful.

cc: Ms. Insel (WAPID), Messrs. Beguery and Hindle (WAPID).

UMbanefo/an

DRAFT
BInsel/td
April 4, 1979

TO: Serge Guetta
FROM: Barbara Insel
SUBJECT: Research Proposal by CEPAZE

1. The attached proposal would study artisans in Cameroon, Upper Volta and Mali through the following arrangements for about \$75,000:

- 3 weeks in the field in each country to review artisan problems;
- fourteen weeks to prepare report;
- a final three weeks summary visit over a one year period.

The nature of the final product expected is not described. Apparently, some financial participation is expected from the Bank.

2. I have two comments:

- 1) The issues to be investigated are generally described and appear to be essentially a summary of the conventional wisdoms of artisans' problems. I am somewhat concerned that CEPAZE may end up "re-inventing the wheel" - repeating the most obvious of what we know about this sector. I would like to see some evidence that they have reviewed current developments, projects, etc. For example, there are at least three studies of Mali's artisans plus several of the tax and regulation system, in addition to one consultant's report. They should, if they can, build on this work and not repeat it.
- 2) I am not sure what can be accomplished in three weeks in each country with such a broad set of objectives. It's a bit of a fishing expedition and, while some interesting insights might evolve, no coherent program of development is likely.

3. In sum, I would recommend:

- a clearly defined preparation plan for each country, to avoid repeating existing work;

- a clearly defined set of objectives, i.e. specific problems on which to focus and recommendations for their solution.
- either a longer initial period in each country or a more clearly focused (both intellectually and geographically) program within, or perhaps reduction to one or two rather than three countries;
- a clearer definition of the products to be produced by this study, perhaps integrated into our project preparation/implementation activities.

Although generally, while all insights into this problem are useful, I do not have high hopes for any practical benefits from this study as presented.

Those Listed Below

April 4, 1979

Suman Bery, VPD

Workshop discussion of research proposal:
"Programming Models for Project Design"

You are invited to a workshop discussion of the attached draft research proposal, submitted by the DRC. The workshop will be held in Room K-3700 at 3:00 p.m. on Monday, April 9th.

Attachment

Distribution:

Messrs: J. Cleave
G. Donaldson
A.C. Egbert
J. Linn
P. Naylor
R. Picciotto
I.J. Singh
H. van der Tak
P. Zuckerman
A. Ray

cc: Messrs. Balassa, Candler, Duloy, Kutcher

SKBery:bf

WORLD BANK RESEARCH PROGRAM

Project Proposal

Date of Submission

3/22/79

*EAPED
files
Research General
w/covering memo 4/30/79*

PART I. PROJECT IDENTIFICATION

1. Title: A Comparative Study of Labor Market Consequences of Educational Expansion
2. Department(s) Responsible: Development Economics
3. Staff Participation
a. Principal Supervisor: R. H. Sabot
b. Others Responsible:
4. No. of Contracts:
5. Estimated Total Cost: \$78,020
6. Estimated Total Staff Time Required (weeks): 65
Professional: 65 Assistant:

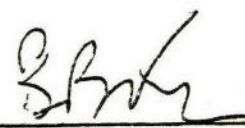
PART II. COORDINATION AND APPROVAL

1. Interdepartmental Coordination:

<u>Department</u>	<u>Name and Signature</u>	<u>Support Project</u>	<u>No Objection</u>	<u>Do not Support Project-Comments Submitted</u>
a. Education				
b. E. A. Projects				
c. E. A. Programs				

2. Departmental Approval:

Division Chief (signature)


Department Director (signature)

PART III. IMPLEMENTATION

1. Date Work to Start: September 1979 2. Date First Draft Expected: August 1980
3. Date Final Report Expected: June 1981
4. Implementation Method: _____ Names: _____
- a. Bank Staff..... ☒ R. H. Sabot
- b. Individual Consultants..... ☒ J. B. Knight, P. Collier,
M. J. Bowman
- c. Developing Country Contractor/Institute.. ☒ Economic Research Bureau
University of Dar es Salaam
- d. Developed Country Contractor/Institute... ☐ _____
- e. Conference or Seminar..... ☐ _____
5. Proposed Liaison with Operating Departments: _____

6. Reports Expected in the First Year:
- Drafts of each of the country studies, including preliminary results of the
econometric analysis of changes in the structure of wages in Tanzania between 1971 and 1979.

PART IV. FINANCIAL AND STAFF RESOURCES

1. Dollar Costs (Estimated Disbursements by Fiscal Year):

	Fy 80	FY 81	FY	After FY	Total
a. Consultant Fees	11,250	11,250			22,500
b. Travel	15,860	6,660			22,520
c. Data Processing	2,000	1,000			3,000
d. Other Contractual Services	26,500	3,500			30,000
e. Contingencies					
Total	55,610	22,410			78,020

2. Staff Requirements (Estimated staff-weeks by Fiscal Year):

	FY	FY	FY	After FY	Total
a. Professional	32	33			60
b. Assistant	32	33			
Total					

SUMMARY

1. Many developing countries have experienced rapid expansion of educational enrollments over the last couple of decades. Though various economic rationales have been found for such expansion, government policies have no doubt been influenced by the pressures for educational provision which arise from high private rates of return to education. The answer to the policy question of whether educational expansion is too great, or too little, requires a measure of the social value of additional education. Empirical knowledge of the relationship between education and labor productivity is derived mostly from one-shot surveys of modern wage employment. Little is known about the impact of education on labor productivity in agriculture or in non-agricultural self-employment. Even less can be said about how the relationships between education and labor productivity have changed over time. There is research underway or planned to fill the first two gaps. The study we are proposing here is designed mainly but not exclusively to begin the process of filling the third gap, namely: as the education level of the labor force increases, how does the additional education affect labor productivity?

2. Whereas for competitive labor markets economists have a simple method of estimating marginal benefits, in uncompetitive labor markets a knowledge of the destinations in the labor market of the additional school-leavers is required. Mean earnings of the existing labor force of a particular educational category are then a poor guide to the earnings of additional members of that educational category, who may "filter down" into lesser jobs in the formal sector, enter the informal sector or the agriculture sector, or become unemployed. We are not proposing fully fledged social rate of return studies. Our concern is with the process of adjustment in the labor market to educational expansion. We are interested in the extent to which labor markets are competitive or uncompetitive, have flexible or fixed wages, are unified or segmented, and in the consequences of such labor market characteristics for the absorption of the newly educated. However, the project should have useful methodological and practical implications for the value and refinement of social rate of return analysis.

3. The analytical framework developed for this project introduces the concept of occupational specific production functions, a generalization of the observation that the relation between education and earnings (productivity) depends on occupation. The framework is mainly clarificatory rather than operational. It does, however, fulfill three important functions in the empirical analysis of the impact of a shift in the supply curve of educated labor:

- a. It shows that labor markets with different characteristics will adjust differently to similar increases in the supply of educated manpower. It also shows why and how judgments regarding the social benefit from additional education must take account of differences in labor market characteristics.
- b.. The framework suggests two sets of indicators: one set to examine whether the supply of educated job seekers is increasing relative to the demand, the other to examine how the labor market adjusts to an increase in relative supply.
- c. The framework is an interpretative tool. Differences among countries in the pattern of adjustment indicators suggest differences in the underlying labor market mechanisms at work. The framework can be used to specify these latter differences.

4. Among other tasks such as documenting trends in the quantity and quality of education, the empirical analysis will involve the construction of labor market adjustment indicators, noted above, for each of the countries. Trends in the educational composition of the labor force in different sectors, of participation rates, of the unemployed, in the education-occupation matrix of employees, in the occupational and educational structure of wages, in the relationships between education level, length of job search and entry wages for labor-force entrants, to name a few, will be documented. Our focus in much of this analysis will be on the labor market as a whole. For some of the analysis, however, our focus will be on one urban sub-sector for which there is a particularly rich data lode (see 7 below). Within the framework of this more narrowly focused analysis we will be able to "test" econometrically a variety of hypotheses regarding the influence of education expansion changes over time in the structure of wages.

5. There is interest in the labor market consequences of educational expansion among those in the Bank concerned with lending for education and among country economists. The latter are often called upon to assess the impact of educational expansion on economic growth, on the distribution of income and on the efficiency with which labor is allocated, and to advise governments on the optimal rate and structure of future expansion. The need for improvements of the analysis of the linkages between education and the labor market as a basis for the assessments made by country economists has recently been emphasized. Their clearer analytic framework, their greater depth, their comparative orientation and their goals of identifying priorities for research on external efficiency and for changes in the economic work programs of the regional departments as they relate to education and the labor market, distinguishes the proposed case studies from current work done in the regions.

6. It is important that, in the countries selected for study, the analysis should not be unduly constrained by either a lack of data or initial ignorance of the workings of the labor market. Moreover, some of the questions to be raised are best answered by comparing one country with another. Tanzania is rich in relevant data and the principal researchers have previously analysed other dimensions of its labor market. Kenya is a natural comparator of Tanzania. Their economies possess many characteristics in common, but since Independence they have increasingly diverged in their rates of educational expansion and in the extent of government intervention in the labor market. A preliminary examination of the evidence suggests that in Kenya the supply of post-primary leavers has outstripped demand in occupations where earlier cohorts were employed, while in Tanzania the opposite is the case. The research on Kenya will extend ongoing work in the Bank and can be accomplished with the application of limited additional time and funds.

7. A premise underlying this proposal is that in each of the countries included in the study there is an abundance of data, generated perhaps for other purposes, that has not previously been exploited for the purpose of analyzing the adjustment of labor markets to educational expansion. This premise is based on the assessments of data availability made by the participant researchers who have extensive experience in these countries working on labor market and related issues. In Tanzania existing sources will be supplemented by the collection of new data. A sample survey of 1,000 manufacturing employees administered by Sabot in 1971 will be duplicated. The original survey has been used by Knight and Sabot for an intensive cross-section econometric analysis of earnings. Administering the survey in the same establishments eight years later will enable the examination of changes in the structure of wages over time. The opportunity to make precise time series comparisons of this sort may well be unique for developing countries.

8. Interest in improving the comprehension and analysis of the labor market consequences of rapid expansion of the educational system is strong among staff engaged in project preparation and country economic analysis. The comparative advantage of Bank staff members, however, in conducting such research is less marked. Thus it seems advisable to have much of the research conducted by consultants. Also it is our intention to associate with the project a staff member of the Economic Research Bureau of the University of Dar es Salaam or of the Manpower Planning Division of the Treasury. He will collaborate in the administration of the sample survey of wage employees and on aspects of the subsequent research. The team of interviewers for the 1971 survey was comprised of economics students of the University; we intend to make similar arrangements for the new survey.

Contents

Contents	i
Summary	ii
I. Objectives and Strategy	1
II. Design	11
III. Organization	39

Appendices

A. Job Competition, Occupational Production Functions and Filtering Down	
B. Why Wages Differ in the Manufacturing Sector of Tanzania	
C. References	
D. Sampling Procedures and Sample Characteristics of the Tanzania Survey in Greater Detail	

I. Objectives and Strategy

1.A. Objectives and General Problem

We propose to comprehend and analyse in some detail the experience of several developing countries which have pursued policies of educational expansion. In the first phase of the project, for which we are currently seeking financial support, we will focus on Tanzania and Kenya. Assuming the results of these studies fulfill our expectations, a proposal to replicate the study in other countries will be submitted. Alternatively we leave the door open for a proposal for more research in these countries if phase one suggests that that is the right way to go. Our main objective is to determine how labor markets in these countries have adjusted to an increase in the domestic supply of educated labor. This positive analysis should assist both labor market and educational policy making.

Many developing countries have experienced rapid expansion of educational enrollments over the last couple of decades.^{1/} Various economic rationales have been found for such expansion: that more education increases the productivity of the labor force, that it reduces inequality in the distribution of labor incomes, and that it reduces dependence on foreign sources of skills and educated manpower. However, government policies have no doubt been influenced by the pressures for educational provision which arise from high private rates of return to education. It is an increasingly common view that educational expansion has gone too far in some developing countries, and that

^{1/} Between 1950 and 1970 school enrollments in Africa increased four-fold at the primary and tertiary levels; seven-fold at the secondary level.

The rate of growth of total enrollments was markedly higher than in Asia and Latin America and more than 3.5 times the growth rate in developed countries.

there is danger of it going too far in others. Evidence such as is found in Kenya, of sharp declines in the ratio of modern sector job openings to labor market entrants with secondary or higher education, of marked changes in the occupation-education matrix, and of high rates of unemployment among school leavers is used to corroborate this view. In other countries such as Tanzania, these trends are not apparent.

Such evidence is, moreover, consistent with there still being high social rates of return to education. ^{1/} The answer to the policy question of whether educational expansion is too great, or too little, requires a measure of the social value of additional education. Whereas for competitive labor markets economists have a simple method of estimating marginal benefits, the existence of uncompetitive labor markets requires a knowledge of the destinations in the labor market of the additional school leavers. Mean earnings of the existing labor force of a particular educational category are then a poor guide to the earnings of additional members of that educational category, who may 'filter down' into lesser jobs in the formal sector, enter the informal sector, or the agriculture sector, or become unemployed.

We are not proposing fully fledged social rate of return studies. Our concern is with the process of adjustment in the labor market to educational expansion. We are interested in the extent to which labor markets are competitive or uncompetitive, have flexible or fixed wages, are unified or segmented, and in the consequences of such labor market characteristics for the absorption of the newly educated. However, the project should have useful methodological and practical implications for the value and refinement of social rate of return analysis.

^{1/} An increase in the proportion of employment opportunities going to workers with post-primary education may not be "credentials inflation": it could be interpreted as a manifestation of human capital deepening. Likewise the unemployment of school-leavers may be seen as due to predictable lags in the adjustment of expectations, of education-occupation linkages and of the occupational structure of wages to the rapid increase in the supply of educated labor, in which case its social costs may be negligible.

By examining the determination of the earnings of the educated, and the importance of market and institutional forces in that determination, it will be possible to show the effects of educational expansion on the distribution of labor income. It is relevant to ask whether and how an increase in educational supply relative to demand compresses the structure of earnings.^{1/} The study will therefore have implications for the formulation of incomes and distributional policies.

1.B Origin of Interest in the Problems Within the Bank

The Bank's first education project was presented to the Executive Directors in 1962 after it had "become clear that the lack of qualified manpower in developing countries was a serious obstacle to the successful implementation of many of the Bank's own projects in particular and to the process of development in general."^{2/} Lending for education has increased from \$5 million in 1963 to \$352 million in 1978. Forty seven percent of all education loans made during this period were to African countries. Lending for education is a larger component of the lending programme in the African regions than in any other region.

Interest in the labour market consequences of educational expansion originates from those in the Bank concerned with lending for education. Project staff now recognise the need to view education projects

^{1/} In the industrial countries educational expansion is credited with the steady compression during the twentieth century of the occupational structure of wages.

^{2/} "Education Sector Working Paper," 1974.

in a wider context. In the "Annual Review of Project Performance Audit Results"^{1/} it is emphasized that "the Bank remained preoccupied with the risk of unemployment of secondary school graduates and the recurrent and social cost implications of expanding (education) systems too rapidly." The primary concern of education project staff is, however, naturally with the internal efficiency of educational systems.

The interest in the issues we propose to examine is greater among staff engaged in country economic work. Country economists are often called upon to assess the impact of educational expansion on economic growth, on the distribution of income and on the efficiency with which labour is allocated, and to advise governments on the optimal rate and structure of future expansions. They consequently give greater emphasis to the external efficiency of the education system. The need for improvement of the analysis of the linkages between education and the labour market as a basis for the assessments made by country economists was recently emphasized in the "Functional Review of Employment in Country Economic Reports." There it was noted that "reports tended to deal separately with education and employment. While the division of labour in report preparation is inevitable, there is scope for improving the linkage between the employment and education sections. The determination

^{1/} World Bank, November 1978.

of the size and content of the education investment programme should emerge inter alia from an analysis of the skilled manpower situation and a review of the country's training needs. The reports' discussion of these issues was frequently weak." The External Advisory Panel on Education recommended an increase in research on various aspects of the internal and external efficiency of educational systems, in effect suggesting the need for the type of macro-economic evaluation of recent educational experience that we are proposing.

1.C Relationship to Other Current and Planned Research

In the Bank, education research accounts for only 5% of the allocations of the Research Committee and roughly half of all education research projects focus on internal efficiency issues. ^{1/} The proposed project will be concerned primarily with the external efficiency of educational systems.

Until recently empirical knowledge of the relationship between education and labor productivity was derived solely from scattered one-shot surveys of modern wage employment. Little was known about the impact of education on labor productivity in agriculture or in non-agricultural self-employment. Nor could much be said about how the relationships between education and labor productivity have changed over time.

Dean Jamison's DEDPH research in rural Nepal is designed to partly fill one of these gaps in our understanding of the impact of education on labor productivity: his work is concerned with the extent to which and how the formal

^{1/} "Education Research and the Bank," paper prepared for the External Advisory Panel on Education, 1978.

schooling of farmers affects their efficiency as farm managers. A proposal for research applying to non-agricultural self-employment production function techniques of analysis similar to those being used by Jamison in his agricultural sector study is currently in the early stages of preparation in DEDPH. The study we are proposing here is designed mainly but not exclusively to begin the process of filling the third gap, namely: as the education level of the labor force increases, how does the additional education affect labor productivity?

A substantial part of the research now underway in the DEDER is concerned with the structure and operation of labor markets. The project on wage and employment trends and structures ^{1/} and the proposed project are both concerned with the evolution of labor markets in the course of development. They overlap to a certain extent, but the emphasis is different. The wage study is concerned with the whole range of factors determining wage trends and changes in wage structures, among which is educational expansion. The education study is concerned with the labor market consequences of educational expansion, among which are the level and structure of wages and their change.

An increasing number of Bank country economic reports have focused on labor market, education and employment issues in the context of an overall analysis of country economic performance and policies. This work complements the proposed research on the adjustment of labor markets to the

^{1/} M. Leiserson, et. al., "A Proposal for Research on Wage and Employment Trends and Structures in Developing Countries," November, 1978.

increased supply of school-leavers. Indeed, the issue of the adjustment of the labor market to the expansion of educational opportunities is on the agenda of a forthcoming special human resources mission to Egypt.

Tracer studies also overlap with the proposed project. A tracer study collects, with survey techniques, information on students at two or more points in time: when they are in school and subsequently, when they are in the labor force. Since data is often generated in successive years such studies are potentially of great value for detecting changes in labor market conditions over time. The Bank has recognized the contribution tracer studies can make to the assessment of the impact of individual educational projects. To facilitate evaluation 48 Bank education projects to date are scheduled to have tracer components.^{1/} The Bank has sponsored tracer studies in Egypt (as part of Credit 681) and in Tanzania (as part of Credit 607). In addition there is a large scale tracer study (not limited to one education project) of post-primary leavers in Kenya and another of university leavers in Tanzania sponsored by other institutions. Not only will the proposed research benefit from the existence of these studies (see below) but the project, in turn, will contribute to the development of analytic methods for exploiting what is currently an untapped data lode.

1.D Choice of Countries

We propose to carry out the work in two phases. In the first phase, two countries will be studied. Assuming the results fulfill our expectations, a proposal to replicate the study in other countries will be submitted.

Because of the coverage of the topic by the human resources mission, the other research on Egypt already underway in DEDPH and the labor market research planned by DEDER, Egypt is the strongest candidate for inclusion in Phase II and/or in a subsequent phase of DEDER's RPO 671-84.

^{1/} S. Heyneman, "Status of Tracer Systems in Education Projects," December 1979.

On the other hand, we leave the door open for a narrower study, collecting more original data, if phase one suggests that that is the right way to go.

Clearly the extent to which the results of these case studies can be generalized is limited. However, the methods of analysis which we intend to pioneer may well be capable of being used more generally. It is an aim of the study to provide country and sector economists with a useful framework for analysis in other countries. The first step is to refine in two countries the methodology outlined in the proposal. A task of this research will be to try to establish the minimum data requirements for such an analysis.

Tanzania and Kenya have been selected for the first phase, so permitting an interesting comparative dimension. Tanzania and Kenya are natural comparators. Their economies possess many characteristics in common, but since Independence they have increasingly diverged in certain relevant respects. There have been interesting differences in their rates of educational expansion and in the extent of government intervention in the labor market.

It is important that, in the countries selected for the first phase, the analysis should not be unduly constrained by either a lack of data or initial ignorance of the workings of the labor market. Tanzania and Kenya are both rich in relevant data, and the project is made more manageable by the fact that Richard Sabot and the consultants to be employed are familiar with the economies. The Tanzanian labor market has been intensively analyzed by Richard Sabot, who conducted a large-scale urban

household survey of labor market conditions in Tanzania in 1971.^{1/}

A more recent analysis of labor market conditions in Tanzania was undertaken by Paul Collier as part of the Basic Economic Report on Tanzania.^{2/} Moreover, Richard Sabot and John Knight are jointly

completing an econometric analysis of earnings in the manufacturing sector of Tanzania using 1971 data; a study which provides a good cross-section basis for comparisons over time.^{3/} Nor is Knight a

stranger to Tanzanian education.^{4/} We shall therefore begin the Tanzanian case study from a basis of knowledge and evidence.

The choice of Kenya was influenced by the fact that the DEDER project 'Wage and Employment Trends and Structures' contains a case study of Kenya which overlaps with our project. The DEDER work on Kenya by Paul Collier means that part of the Kenya case study for our project will be funded by that means. The DEDER work includes as components the role of education in explaining the trends and structure of urban wages of different urban groups, and the construction of rough balances of the demand and supply for different types of educated labor. With the application of limited additional time and the use of limited additional funds, Paul Collier, as the main consultant on Kenya, will be able to address the same questions in Kenya as Knight and Sabot address in Tanzania.

^{1/} Bienefeld, M.A. and Sabot, R.H., The National Urban Mobility, Employment and Earnings Survey of Tanzania, Economic Research Bureau, University of Dar es Salaam, 1972; Barnum, H.N. and Sabot, R.H., Migration, Education and Urban Surplus Labour, OECD Development Centre, Paris, 1975; Sabot, R.H., The Social Costs of Urban Surplus Labour, OECD Development Centre, Paris, 1977; Sabot R.H., Economic Development and Urban Migration, Clarendon Press, Oxford, 1979.

^{2/} Tanzania Basic Economic Report, 'Annex III - Labor Market Allocation and Income Distribution', December 1977.

^{3/} Knight, J.B. and Sabot, R.H., "Why Wages Differ", DEDPH, January 1979.

^{4/} Knight, J.B., The Costing and Financing of Educational Development in Tanzania, IIEP, Paris, 1966.

II Design

II.A The Analytical Framework

The analytical framework on which much of the study is to be based^{1/} was developed as an outgrowth of a DEDER Division research project now nearing completion.^{2/} Data from an earnings survey showed that occupation was very important in the determination of earnings: the relation between education and earnings depended on occupation, and the relation between education and occupation differed according to the cohort of workers. This suggested the need for the concept of an occupational production function. The outline below summarizes the underlying notions of the analytical framework within which the project will be conducted.

What is the effect in the labor market of exogenous educational expansion? In strict human capital theory, this is not a sensible question because education is an endogenous variable. The demand for educated manpower determines the supply, and earnings differentials based on education depend simply on the cost of acquiring education and the discount rate. Retaining the assumption of competitive labour markets but introducing the capital market imperfections which exist in African conditions, an increase in public education shifts the supply curve of educated manpower to the right and reduces the wage until the marginal product of educated manpower is again equated with the supply price. The extent of the fall depends in part on the shape of the marginal productivity function, itself

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- ^{1/} The framework is elaborated in greater detail in J.B. Knight, "Job Competition, Occupational Production Functions and Filtering Down" to be published in Oxford Economic Papers, July 1979, a copy of which is attached as Annex I to this proposal.
- ^{2/} See J.B. Knight and R.H. Sabot, "Why Wages Differ in Tanzania's Manufacturing Sector."

influenced by the degree of substitutability between educated manpower and other factors. The fall in the relative earnings of the educated implies a fall in the private and social rates of return to education.

The effects of educational expansion in the labour market depend on the way in which the salaries paid to educated manpower are determined. If earnings are determined by the forces of supply and demand, conditions of shortage put a pressure on educated manpower: there is a bidding up of salaries by employers who compete with each other for the limited supplies. Educated manpower is able to earn a 'scarcity rent.' According to another explanation, salaries were set in the past at the level necessary to attract expatriate staff from the colonial power to its colony, and these were taken over, in the name of equality, by local staff. Since the public sector is the main employer of educated manpower - the argument runs - there is no free market for its services. Instead, salaries are determined by the balance of political forces, which favours the vocal and powerful educated elite.

The choice between these two types of explanation is not simple to make. If salaries in the private sector exceed those of public servants with the same level of education, this might suggest that the private sector acts as a pace-setter, i.e., competitive bidding by the private sector forces the public sector to pay high salaries. However, where the public sector is dominant, it is unlikely that competitive forces from outside can determine its salaries. Firms may rationally choose to pay whatever the public sector pays plus an addition to attract staff of high calibre. The implication is that a cut in public service salaries

would lead to a corresponding cut in private sector salaries. Even where public sector salary scales are institutionally determined, there is room for the operation of market pressures. Some competitive bidding can occur even among sections of the public sector. The symptoms are a high rate of turnover in posts, an increase in the proportion of high scale posts, and the upgrading of posts so as to command higher scales. When both market and institutional forces influence the earnings of the educated, it is possible that neither public sector salary cuts alone nor expansion of supply alone would be sufficient to reduce educated earnings generally.

There is good reason for distinguishing between the cases of wage flexibility and wage rigidity. A corresponding distinction is that between wage competition and job competition, i.e., competition for jobs on the basis of wages and competition for jobs on the basis of personal characteristics such as education. It is helpful to introduce the concept of an occupational production function, showing non-linear occupation-specific relationships between education and productivity.^{1/} It permits substitutability between education levels within an occupation but recognises that the relation between education and productivity is different for each occupation. It can give theoretical precision to the commonly expressed notions that certain levels of education are 'insufficient', 'appropriate' or 'excessive' for a particular job. The

^{1/} See Annex I, pp. 2-5.

occupational production function is consistent with perfect competition but comes into its own in the presence of market imperfections.

An expansion of the stock of educated manpower at one level of education can generate a chain process by which some of this educated manpower filters down into occupations previously performed by persons with less education, and some of these in turn filter down into lesser occupations, and so on down. Given wage flexibility, all persons of the same education will be paid the same wage even if they are not in the same occupation. If there is job security, the incumbents of existing posts are protected against new entrants: wages are not bid down. New entrants are absorbed as jobs at the normal or at a lower level become available, receiving preference over the less educated. The fix-wage case of filtering down (in which wages are determined institutionally) differs from the flex-wage case in that persons in the same occupation but with different education receive the same pay, but persons in different occupations but with same education receive different pay. Where there is job security pay is likely to be positively associated with the length of employment: the incumbents of good jobs hold on to them.

This theoretical framework can be modified and complicated in a number of ways. Whenever wages are inflexible and markets therefore fail to clear, the probabilistic nature of obtaining employment can give rise to voluntary unemployment. Expansion from below, with surpluses appearing first at the lowest educational levels, can generate private demand and public pressures at ever rising educational levels. The occupational production function analysis can be adapted to the case of educational screening, in which education simply identifies ability: this also can give rise to filtering down. The case of 'credentialism', i.e., payment

according to the education of a person, can also be accommodated. A reason for the wages not falling, and one which retards the process of filtering down, is the possibility of brain drain from the country.

II.B Specific Research Tasks

The analytic framework will be the same in each of the case studies, as will the agenda of issues to be examined. Differences between countries in data availability and economic conditions mean, however, that the issues researchers choose to emphasize may vary a little. In certain respects the case studies will be similar in approach to the country economic work conducted in operational departments.

Both rely on existing sources of data; both emphasize the judicious evaluation of information of varied quality gathered from a variety of sources, rather than the precise statistical testing of hypotheses. The country studies will, however, involve more in-depth research of issues relating to education and the labor market than is generally possible with the resource constraints and specific operational and policy purposes that shape the economic work programs of the regional departments. Moreover some of the work will involve vigorous econometric analysis. The aim of the studies is not to produce definitive statements on all the relevant issues, but rather to provide a reconnaissance of these issues as a basis for further research in these and other countries and for the comparative analysis of the impact of educational expansion under varying conditions. Their clearer analytic framework, their greater depth and statistical sophistication, their comparative orientation and their goal of identifying priorities for future research on the external efficiency of education systems distinguishes the case studies from the economic work on education done in the regions.

The theoretical framework developed for the project is mainly clarificatory rather than operational. It does, however, provide a guide for the empirical analysis of the impact of a shift in the supply curve of educated labor. The framework fulfills three important functions:

a. It shows that labor markets with different characteristics will adjust differently to similar increases and declines in the relative supply of educated manpower. It also shows why and how judgments regarding the social benefit from additional education must take account of differences in labor market characteristics. In the flexible wage case, the problem is to estimate the elasticity of the mean earnings of a particular educational category in response to a non-marginal change in supply. In a fixed wage case, the problem is to estimate the destinations of the additional educated manpower and their mean earnings at each destination. Therefore it is important to know how the educated are absorbed into the labor market; into which occupations, at what wage, into the wage-employment or the self-employment sector, into employment or unemployment?

b. The framework suggests two sets of indicators: one set to examine whether the supply of educated job seekers is increasing relative to the demand, the other to examine how the labor market adjusts to an increase or decrease in relative supply. These are normally not fully exploited in conventional analyses of employment conditions in developing countries, despite the availability of relevant data.

The following indicators of relative supply are suggested; normally it is their movement over time that is revealing: 1/

- (i) The educational composition of the labor force and the educational structure of participation rates.
- (ii) The education-occupation matrix of employees.
- (iii) The educational composition of the stocks and flows of internal and external migrants and the educational structure of rates of migration.
- (iv) The rates of expansion of the supply of school leavers at various levels and of the increase in labor demand (employment plus vacancies) for occupations in which previous cohorts of school-leavers were employed.

The second set of indicators might include:

- (i) The occupational structure of wages.
- (ii) The educational structure of wages.
- (iii) Mean earnings categorized by both occupation and education.
- (iv) The educational composition of the unemployed.
- (v) The relationships between education level, length of job search and entry wages for labor-force entrants.
- (vi) The relationships between education level, length of time on job, rate of mobility between jobs, and wage rates.

1/ It should be emphasized that these indicators do not reveal whether expansion of supply is too fast or too slow. This depends on the net social rates of return to additional investment in education relative to other sectors. We have noted above the difficulty of estimating these returns where labor markets suffer from significant imperfections.

c. The framework is an interpretative tool. Differences among countries in the pattern of adjustment indicators suggest differences in the underlying labor market mechanisms at work. The framework can be used to specify these latter differences. For example, consider two extreme and relatively clearcut cases of countries in which the growth of supply of post-primary leavers exceeds by a wide margin the growth in labor demand in the relevant occupations. In one there is evidence of some filtering down of educated workers into lower level occupations but also of growing educated unemployment and lengthening periods of job search among school-leavers. Also the occupational structure of wages remains roughly constant and differences among occupations in wages of workers with the same educational level appear or widen. In the other case, filtering down also occurs, but educated unemployment remains low and roughly constant, as does the length of the period of job search. There is also evidence of the compression of the occupational structure of wages and rough equality, or at least no significant change in the differences, among occupations in the wages of workers with the same education level.

The indicators in the second case all point to a smooth adjustment to the shift in the supply curve of educated labor. The evidence is consistent with the predictions of the theoretical framework (see Annex I, page 9 and figure 6) for the case in which the labor market is competitive. The indicators in the first case suggest an adjustment process that is seriously impeded by labor market imperfections. The evidence is consistent with the predictions of the theoretical framework (see Annex I, page 10 and figure 6) for the case in which wages are downwardly rigid or subject to significant adjustment lags.

In terms of the six indicators of the adjustment process mentioned above (the second set of indicators), the following loose predictions of the effects of rapid increase in relative supply might illustratively be made, corresponding to the competitive and uncompetitive cases:

<u>Competitive</u>	<u>Uncompetitive</u>
(i) Occupational wage structure narrows	Occupational wage structure does not narrow
(ii) Educational wage structure narrows through both filtering down and reduced premium on education.	Narrowing, insofar as it occurs, is due only to filtering down.
(iii) Mean earnings are similar across occupations for a given educational level.	Mean earnings differ across occupations for a given educational level.
(iv) Little unemployment of the educated, and no tendency for it to rise.	High and rising unemployment, either of the more educated or of the less educated 'bumped' out of jobs.
(v) No pattern	Job search long for educational cohorts filtering down and faced with a range of occupation prospects.
(vi) Mobility falls as value of 'job hopping' declines.	Existence of uncleared labor markets keeps mobility rates below the competitive case.

Where there is evidence of a decrease in the relative supply of educated workers it is relevant to ask the following questions. Are there signs of shortage of educated manpower, for instance competitive bidding for educated manpower by employers, high mobility of the educated between jobs, and competitive upgrading of jobs by different branches of the public sector? Is there an attempt by government to direct manpower and control earnings in the face of manpower shortage? How

important is the public sector as an employer of the educated? Does government act as a wage leader for the earnings of the educated? Does the employment of expatriates affect the earnings of citizens? Is there a brain drain, and if so, what effect does it have on local salaries?

The relationship between the analytical framework and the empirical analysis can be either interpretive or predictive. The framework can clearly be used to interpret the analysis; alternatively, where the wage determination process is sufficiently well understood and the empirical evidence sufficiently sound, the adjustment indicators can be used to 'test' the predictions of the framework. The wage determination process will be examined both by estimating earnings functions and by studying the institutions of the labor market.

One of the research tasks less easy to specify and yet important not to overlook is the examination of possible socio-political influences in the adjustment of demand and supply of the educated. Government policies might best be viewed as a predictable but non-optimising response to imbalance in the labor market. For instance, the expansion of education might be explained as a political response to private demands for the provision of additional subsidised education, based on perceived high private rates of return to education. The government reaction to the emergence of educated unemployment may be to create public sector jobs providing services of very low additional social value. Such relationships are not easy to research. 1/ Never-

1/ There is evidence of overmanning in manufacturing enterprises in Tanzania. The data on enterprises collected as part of the manufacturing sector survey (which is to be replicated) may allow us to trace the impact of this phenomenon on productivity. We have discussed with regional economists the possibility of a cooperative effort on this sub-topic.

theless, it is important to understand the reasons for government educational and manpower policies before attempting to prescribe changes in such policies.

Another important consideration in the analysis of labor market adjustments to an increased supply of educated labor concerns the quality of education. Increased total expenditures may increase flows of graduates, but may at the same time reduce the quality of graduates. Shifts in the supply curve must therefore be described in constant quality terms, and if the increases in supply are not homogeneous they should be adjusted accordingly. As the education "plant" is expanded and the number of graduates of a given level of schooling increases, the quality of graduates in the short-run may tend to fall. In the short run, enrollment ratios can probably be increased only by educating children from progressively weaker socio-economic groups. These children have less and less of the outside training (say, in the family) which could help them succeed in school. An increasing amount of resources per pupil, or possibly different kinds of resources, will have to be used therefore in order to produce a "constant quality marginal graduate." If the amount of resources per pupil declines then the decline in the quality of graduates would of course be accentuated. We will attempt to determine the trend in the quality of graduates of particular education levels by adding a standard ability test to the questionnaire to be given to wage employees. We can then compare the scores on the test of workers with the same educational attainment from different cohorts. Also in our interviews with employers we will address this issue. It may be possible to utilize other methods of assessing quality trends such as measuring trends in standardized school

exams, measuring trends in schooling inputs and duplicating a small ability survey administered in several Tanzanian schools in the 1960s.

II.C. Nature of the Data

The success of the project depends in part on the availability of pre-existing sources of data relevant to the issues we propose to analyze. A premise underlying this proposal is that in each of the countries included in the study there is an abundance of data, generated perhaps for other purposes, that has not previously been exploited for the purpose of analyzing the adjustment of labor markets to educational expansion. This premise is based on the assessments

of data availability made by the participant researchers who have extensive experience in these countries working on labor market and related issues.

A list of sources for each country is appended as Annex 3. The following are types of data sources available which can be used to estimate labor market adjustment indicators:

1. Manpower surveys and plans: education-occupation matrices for middle and high level manpower; planned increases in educated manpower; planned allocations of educated manpower.
2. Education Ministry Data: enrollments, costs of education; methods of financing.
3. Census data: population, labor force, education, migration and employment data and, in some instances, information on incomes.
4. Annual employment and earnings surveys: education and occupation wage and employment structures; aggregate wage and employment information.
5. Labor force surveys: unemployment rates; wage and employment structures; private rates of return to education; education-occupation matrices; employment histories, etc.

6. Annual surveys of industries: labor turnover, wage and employment data (by firm size and type of industry).
7. Tracer studies: wage and employment histories; education-occupation matrices; length of periods of job search. 1/
8. Household income and expenditure surveys: demographic, labor force, employment and income data for individuals and households. 2/
9. Public sector staff lists: public sector wage structures; extent of upgrading of jobs; extent of labor mobility within the public sector.
10. Miscellaneous sources of data such as government external migration statistics, minimum wage and other wage legislation.
11. Specifically designed earnings surveys: of the type previously conducted and now to be replicated in Tanzania and in Kenya.

1/ No large scale Tracer study of secondary school-leavers has been administered in Tanzania. The East Africa Education Division has attempted to persuade the Tanzanians of the desirability of such an undertaking. We have agreed to advise on the design of the survey and analysis of the data if plans for such a study progress. Kenya does have a study and we plan to ask its designers, P. Kinyanjui and A. Somerset to do some analysis for us.

2/ The evaluation of the Kigoma integrated rural development project is one potentially valuable source of data on education and labor productivity in the rural sector. Unfortunately education variables were omitted from the initial surveys. We have agreed with the East Africa Education Division that if this lapse can be corrected we will participate in the analysis of the data.

II. D. The Country Studies

The country studies will have four stages within phase one of the project. The first stage involves fieldwork in each country: the gathering of data and the assessment of their quality. As complete and as accurate a set of labor market adjustment indicators as is possible will be constructed from existing published and unpublished data. The researchers will also attempt to get the 'feel' for the important considerations through interviews with manpower planners, educational planners, civil service commission members, university appointments officers, employers, etc. In Tanzania new data will also be gathered by means of a sample survey which will duplicate a 1971 survey and so permit time series analysis. We are also planning to replicate the 1968 wage survey designed and administered by Thias and Carnoy in Kenya.

The second stage will consist of processing the data. For example, to determine the change in the educational structure of earnings, earnings functions will be estimated; to assess the extent of filtering down, techniques to measure differences between occupation-education matrices in various years may be used. The third stage will involve the writing up of the country studies, including the drawing out of policy implications. The final stage of the project will be the comparative analysis of the experience with educational expansion in the three countries. The case studies will form the basis for this analysis and for generalizations on methodological, theoretical and policy matters.

Tanzania

During the colonial period per capita expenditure on education and the percentage of school-age children in publicly financed schools were among the lowest in Africa. After Independence in 1961, school

enrolments increased dramatically, as the following figures reveal:

	<u>1961</u>	<u>1970</u>	<u>1974</u>
Primary (000)	471	828	1320
Secondary (000)	13	41	50

The priority given to post-primary expansion during the 1960s (when secondary enrolments grew by 13.8% p.a., and primary by 6.5% p.a.) was reversed in the 1970s (12.4% p.a. for primary and 4.8% for secondary enrolments). The chances of a child of relevant age being enrolled in primary school in 1969 were 69% in Dar es Salaam and 36% elsewhere; in 1974 the chances had risen to 87% and 64% respectively. The government has set an early target date for universal primary education though neither the productivity benefits of such a policy for the rural sector nor its consequences for the wage labor market have apparently been assessed. The reduced rate of expansion of post-primary education in the 1970s reflects a policy of restricting post-primary outputs to projected 'manpower requirements'.

The Tanzanian government, being the employer of the majority of educated manpower - in the public and parastatal sectors - has attempted to implement a policy of reducing inequality in earnings. In 1962 the minimum wage in the modern sector was well above the level which would have been determined by competitive forces. It declined slightly in real terms during the 1960s, but rose between 1970 and 1974, only to fall sharply after 1974 in the face of accelerated inflation. Salaries in the public sector were pegged for long periods despite inflation, and such percentage increases as were given were far greater at the lower

than at the higher levels. This attempted tight wage control by government suggests that wage rigidity rather than wage flexibility is the appropriate assumption. However, wage rigidity may well have taken the form of holding skilled and educated salaries below, and unskilled wages above, the market clearing levels. The consequent need for a rationing of educated manpower has been met by means of manpower direction.

Despite the emphasis on post-primary expansion during the 1960s, it was at the bottom of the educational ladder that the labor market became saturated. For instance, in 1971, 73% of manufacturing sector employees with upper primary schooling and with 12 or more years of wage employment experience were in white collar or skilled jobs and only 7% were in unskilled jobs; of those with fewer than 5 years of employment experience, the proportions were 28% and 30% respectively. As the primary school leavers filtered down into the unskilled jobs, the uneducated young were virtually squeezed out of the urban modern sector labor market.

The 1971 survey showed rural-urban migration to be a positive function of education: the rural-urban income differential and the probability of employment both increased with education level.^{1/} In 1971 the urban informal sector was still fairly small: 68% of the urban male labor force were in regular wage employment, 6% were unemployed, 9% were in casual employment and 17% were non-wage earners; and only part of the last two categories constituted the free entry sector. However, the growth in numbers of primary school leavers and the increase

^{1/} Barnum, H.N. and Sabot, R.H., 'Education, employment probabilities and rural-urban migration in Tanzania'. Oxford Bulletin of Economics and Statistics, May 1977.

in the real value of the minimum wage induced rapid rural-urban migration in the period 1969-75. This produced a trebling of the number of unemployed and self-employed in low income activities and a 40% fall in mean real incomes in the urban free entry sector.^{1/} There was a fall in the private return to primary education: a completed primary education was no longer enough.

It is fairly clear that there has been a persistent shortage of manpower with post-secondary education, partly as a result of the replacement of expatriates. The case of secondary school leavers is more problematical. A high private rate of return to secondary education was perceived. When government restricted the growth of publicly financed secondary school places, an excess demand for secondary education built up: in response to that demand, the proportion of private in total secondary enrolment rose to 29% in 1974. However, it is unclear whether the growth of supply has been falling behind or has exceeded the growth of demand for secondary school leavers in recent years. The periodic manpower surveys suggest a remarkable expansion in level C posts (those requiring secondary education but no post-secondary education or formal training): recorded employment at level C grew from 23,000 in 1968 to 90,000 in 1974. If these figures are correct, demand clearly outstripped supply.

There is some reason to doubt whether the figures are at all accurate. The growth of level C posts is explained in the Basic Economic Report as the result of the proliferation of parastatal organisations and of the

^{1/} Tanzania Basic Economic Report, Annex III, p. 1.

decentralisation policy, but also as the result of in-service promotion and job reclassification which was intended to circumvent the incomes policy. The reclassification of posts as level C posts may thus have exaggerated their educational 'requirements'. Indeed, the Basic Economic Report went so far as to suggest that the apparent shortage of appropriately qualified labor might conceal an emerging surplus of secondary school leavers.^{1/} However, there is another, quite different, possible explanation of internal promotion and job upgrading. If there were shortages of educated manpower and imposed upward rigidity of pay scales employers might compete for scarce manpower by offering better posts, i.e. creating posts with higher pay attached:

A subsequent Bank study of manpower statistics in Tanzania concluded that the rapid growth in level C posts was due not only to the expansion of public sector activities but also to a bureaucratic tendency to create unnecessary jobs.^{2/} It suggested a statistical reason for doubting the estimated growth of level C employment. A level C job which could not be filled was frequently divided and performed by two unqualified persons. This might be recorded in the survey returns as 'level C employment: 2, level C vacancy: 1'). The author found a consensus that some occupations should be downgraded, and he suggested that the recorded number of level C posts was some 40% too high. He noted that, although many level C posts were occupied by unqualified persons, the 'industrial relations code' and prior administrative decisions would prevent such

^{1/} Annex III, p.4.

^{2/} P. A. Weinstein, 'Report on Manpower Statistics and Planning in Tanzania', July 1978.

incumbents from being replaced as qualified manpower became available. The most important conclusion for our purposes is that the manpower survey data and projections based on them are question-begging and require critical scrutiny.

In addition to the 1971 surveys of the manufacturing sector and of urban households, we expect to tap other more recent surveys. A research project completed at the International Institute for Educational Planning is complementary to our study.^{1/} It included a questionnaire tracer survey of Tanzanians with post-secondary education, and a survey of employers of such labor. The analysis was disappointing in that it did not pursue very far the questions which interest us. However, the data themselves - to which we expect to obtain access - hold out great promise. Information is available on age, type and subject of education, year of graduation, period of employment search, method of recruitment, occupation, sector, type of employer, extent and reasons for mobility, parental characteristics, and current and initial salary. The employer questionnaire can throw light on recruitment methods, the perceived value of education, and screening. The estimated earnings functions are unsatisfactory, but some of the results obtained, for instance, suggest that parastatals pay more than government which pays more than the private sector, and that mobility raises earnings. We hope to show whether there has been a process of filtering down by examining occupation and wage at entry for different cohorts, to measure changes in the search period of graduates over time, and to investigate changes in the structure of earnings by estimating earnings functions for different cohorts.

^{1/} B. C. Sanyal and M. K. Kinunda, Higher Education for Self-Reliance:
Tanzania's Experience, IIEP, 1977

A second source of survey evidence involves the collection of new data. This - our major field task in Tanzania - will be the duplication of the sample survey of 1,000 manufacturing employees administered by Sabot in 1971. The original survey has been used by Knight and Sabot for an intensive cross-section econometric analysis of earnings in the manufacturing sector. An outline of the monograph "Why Wages Differ", the second draft of which is substantively complete, is attached to this proposal as Annex 2. Administering the survey in the same establishments eight years later will enable us to examine changes in the structure of wages over time. The opportunity to make precise time series comparisons of this sort may well be unique for developing countries.

Of particular interest will be the change in the premiums paid for additional years of formal schooling (after controlling for other personal and firm characteristics which also influence earnings). The change in the gross returns to education can be related to change in the educational level of the manufacturing sector labor force. If indeed there has been an increase in the educational level and a decline in the returns to education, we shall be able to isolate the contributions to this decline of filtering down and of compression of the occupational wage structure. The relative influence of market and institutional forces on earnings will be explored.

In previous studies the relation between education and occupation has been documented indirectly, by using age, year of arrival in town, or year joined firm variables as a crude means of measuring time trends.

Such measures may be biased, depending on how the characteristics of departed workers differ from those who remain in employment. With comparable data for two points in time we shall be able to measure changes in the relation directly and without bias, e.g. by examining change in education/occupation matrices. Similarly we shall be able to measure change in the occupational structure of wages without having to rely on employment histories of currently employed workers.

The Tracer study of secondary leavers proposed by the region and the evaluation of the Kigoma project, noted above, may provide additional sources of survey data.

If we attempt to place the Tanzanian case within the theoretical framework of Annex 1, the preliminary analysis above would suggest the following. Within the modern sector, the fix-wage rather than the flex-wage assumption applies. There are still many occupations in which the educational level of incumbents is 'inadequate'. Filtering down has not yet occurred at all levels, so that the case of 'expansion from below'^{1/} is most appropriate.

^{1/} Annex 1, pp. 12-13.

Kenya

Kenya shares with Tanzania the same basic experience of rapid educational expansion, substantial income differentials both between smallholders and wage earners and among wage earners, and high rates of rural-urban migration combined with high urban unemployment. However, the trends in these phenomena are radically different from Tanzanian experience and this makes Kenya both an interesting study in its own right and a particularly revealing study for comparative purposes.

(a) Educational Expansion

There has been a great increase in education since Independence in 1964. In 1964/65 expenditure on education accounted for 10% of total government expenditure; in 1976/77 its share was 20%. The Bank's basic economic mission report concluded that 'in Kenya, education is the outstanding example of a service which has claimed an ever increasing proportion of the recurrent budget, and which now appears to absorb a disproportionate share of national resources'.¹ The following data show vividly the pace of expansion in enrolments:

	<u>1961</u>	<u>1970</u>	<u>1974</u>
Primary (000)	936	1,428	2,706
Secondary (000)	27	127	196

1. Kenya: Into the Second Decade, 1975.

As in the case of Tanzania, secondary enrolment grew more rapidly than primary in the 1960s (21.6% compared with 5.4% p.a.) but this was reversed in the 1970s (11.5% compared with 17.3% p.a.).

However, whilst in the last decade Tanzania has restrained the rate of growth of secondary education to being approximately equal to the growth of formal sector wage employment, in Kenya secondary education has continued to expand at more than double the rate of growth of wage opportunities. Thus, in the period 1969-74 the difference between the percentage annual growth rates of wage employment and secondary education was -0.6% p.a. in Tanzania and 6.5% in Kenya.

Further, the imbalance between the growth of secondary education and wage employment has varied substantially over time. In the period 1963-69 the excess of the former over the latter was almost 20% p.a., whilst for the new planning period the objective is zero expansion of secondary education which would imply a shortfall of about 5% p.a.

This substantial variability in the difference between the growth of education and wage employment provides the most appropriate context for studying the process of filtering down and displacement ("bumping"), in contrast to Tanzania where manpower planning has probably prevented the emergence of gross imbalances

at this level. The Collier-Lal study Poverty and Growth in Kenya produced clear evidence of filtering down in the urban labor market. Using the Rempel migration survey, the Census (1969), the Demographic Baseline Survey (1973) and the National Demographic Survey (1977) it was possible to construct age, sex and education specific migration flows for the periods 1964-68, 1969-73 and 1973-77. Filtering down appeared to be so powerful that there was net out-migration of those urban residents without at least primary education, whilst there was a rapid rise in the proportion of migrants with higher grades of secondary education. Two additional major data sources which were not available for the earlier study are now operational, these being the national ILO Survey (1974) and the National Laborforce Survey (1978). These will enable much closer study of the changing educational composition of the wage laborforce.

Of equal importance to the study of filtering down a second distinctive feature of the expansion of Kenyan education, this being the role of private education. Already by 1974 48% of secondary school enrolment was in private schools compared with 28% in Tanzania, the private secondary school sector being 6.5 times larger in Kenya than in Tanzania.

The output of secondary school leavers in Kenya is therefore to a large extent an endogenous market phenomenon based upon perceived private rates of return

to education. This contrasts with the Tanzanian system in which supply responses are largely based upon some implicit view of social rates of return. We propose to use the National Laborforce Survey (1978) to update the estimates of the private rates of return to education made by Thias and Carnoy. A bumping model will also be estimated, providing some guide to the marginal social benefits of education. The combination of the two approaches will yield some quantitative insight into any discrepancies between private and social benefits.

(b) Adjustment in the Labor Market

A striking difference with Tanzania is that in Kenya formal sector real wages have been subject to major adjustments both upwards and downwards. For example, the mean real wage rose 22% 1963-69 and then fell by 22%, 1971-77. Since smallholder incomes rose strongly in this second period this indicates a substantial closing of the smallholder-wage earner income gap. Further, skill differentials have narrowed rapidly. The differential between the means of the top quartile of wage earners and the remaining three quartiles fell from 5.9 in 1969 to 4.2 in 1974. In contrast the differential in Tanzania was constant at 3.8. A particularly revealing comparison is in the divergent trends in real wages during the oil crisis of 1974, with Tanzanian wage earners receiving a 20% real wage increase and Kenyans a 10% decrease.

The current Collier-Lal study of the evolution of the Kenyan labor market is investigating the changing process of wage formation in Kenya and an attempt is being made to distinguish between market and institutional responses. The proposed study will make direct use of these results. In addition we plan to collect new data. Our major field task in Kenya will be the duplication of the sample survey of 4,300 wage employees administered by Thias and Carnoy in 1968. The original survey was used by them for a cross-section econometric analysis of earnings in Kenya and for estimates of the rate of return to education. As in Tanzania, administering the survey in the same establishments 11 years later will enable us to examine changes in the structure of wages over time.

(c) Migration and Urban Unemployment

A naive comparison of Kenya and Tanzania, the former having faster educational expansion relative to employment and higher urban incomes, might suggest that Kenya would have experienced faster rural-urban migration and higher rates of urban unemployment. Both of these hypotheses appear to be false. Whilst migration has been very rapid in Tanzania (6-9% in the period 1969-75) in Kenya it slowed to under 2% by the mid-1970s. The urban unemployment rate (subject to measurement and definitional problems we realise only too well) rose sharply in Tanzania in 1969-74 but was falling in Kenya by the mid-1970s to a level below that in Tanzania. One explanatory hypothesis is that filtering down excluded major categories from the wage labor force in Kenya, which were still eligible for wage employment in Tanzania. It will be revealing to pose the question whether this divergent experience is due to current policy differences or whether Tanzania is reliving Kenyan experience with a lag of about one decade.

Phase II

Once the work on these countries is well advanced we shall be in a position to determine the other countries to be included in Phase II. It may be desirable to include countries from Latin America and Asia, as well as other African countries for which the data base is not as rich as in Kenya and Tanzania. Meanwhile we will continue with plans for research giving more attention to the relationship between education and productivity in the informal wage sector and in non-agricultural self-employment. Some of this planning too will contribute to the development of Phase II.

III. Organization

Interest in improving the comprehension and analysis of the labor market consequences of rapid expansion of the educational system is strong among staff engaged in project preparation and country economic analysis. The comparative advantage of Bank staff members, however, in conducting such research is less marked. Thus it seems advisable to have much of the research proposal conducted by consultants. The following researchers will be involved in the project; the components of the research for which they will be responsible and their relevant research experience are listed against their names:

J. B. Knight will be responsible with R. H. Sabot for the case study of Tanzania and will contribute to the comparative analysis of the country studies. He has conducted research on the labour market and income distribution in a number of African countries over more than a decade. Knight's publications relevant to the project include, The Costing and Financing of Educational Expansion in Tanzania, I.I.E.P. (1966), "The Determination of Wages and Salaries in Uganda," Oxford Bulletin of Economics and Statistics, 1967, "Earnings, Employment, Education and Income Distribution in Uganda," Bulletin 1968, "Wages and Zambia's Economic Development" in C. Elliot (ed.) The Constraints on the Economic Development of Zambia (1971), "Rural-Urban Income Comparisons and Migration in Ghana," Bulletin, 1972, "Explaining Income Distribution in Less Developed Countries: A Framework and an Agenda," Bulletin, 1976, "An Analysis of Racial Wage Discrimination in South Africa," Bulletin, 1977, and "Job Competition, Occupational Production Functions and Filtering Down," Oxford Economic Papers (forthcoming). In conjunction with Sabot, he is completing an analysis of earnings functions in Tanzanian manufacturing.

P. Collier will have principal responsibility for the Kenya case study. Collier's relevant publications include "Labour Mobility and Labour Utilisation in Developing Countries", Oxford Bulletin of Economics and Statistics, 1975, "Migration from Rural Areas of Developing Countries: A Socioeconomic Approach", Bulletin, February 1978, and "Migration and Unemployment: A Dynamic General Equilibrium Analysis Applied to Tanzania", Oxford Economic Papers, July 1979. As a consultant to the Bank he conducted the labor market analysis for the Basic Economic Report on Tanzania, wrote (with D. Lal) the report, Poverty and Growth in Kenya, and is currently collaborating with D. Lal (DEDER) on the study of wage and employment trends and structures in Kenya. The proposed research will be an extension of his previous work for the Bank. Final decisions regarding other consultants who might work with Collier have not yet been made.

R. Sabot will work with Knight on the Tanzanian study. He will also contribute to the comparative analysis of the country studies and will assume overall administrative responsibility for the project.

M. J. Bowman will serve as senior adviser to the project. She has assisted in the design of the project and will be available as a consultant to the principal researchers during its initial phases. Also, she will comment on the preliminary drafts of the country studies and the comparative analysis and will participate in planning Phase II.

ments for the new survey. Likewise staff of the Institute of Development Studies, Nairobi, contributed to the design administration analysis of the Thias-Carnoy survey and we intend to make similar arrangements for the new survey in Kenya.

Richard Sabot was a visiting member of the staff of the Economic Research Bureau of the University of Dar es Salaam during 1970-71 and worked closely with the Manpower Planning Division which was then in the Ministry of Development Planning. It is our intention to associate with the project a staff member in one or the other of these institutions with an interest in issues pertaining to education and the labor market. He will work with Knight and Sabot during the administration of the sample survey of wage employees and will subsequently be responsible for several papers on aspects of the research. The team of interviewers for the 1971 survey was comprised of economics students at the University, a majority of whom were enrolled in the course on labor economics. We intend to make similar arrangements for the new survey.

Selecting countries in which considerable relevant work has been completed by the researchers ensures that the outlines of the proposed studies, as well as the nature of the data to be analyzed is relatively clear. Thus the man years required for the project are less than they would be in other countries. The consultants do, however, have teaching responsibilities; the research will have to be spread over a longer period than if it were a full time activity. The following stages indicate how we expect the Tanzanian study to proceed over time: (the Kenya study will follow a roughly similar schedule.)

Stage I (September 1979). Field trips of 2-3 weeks are planned for the purpose of collecting data, holding discussions with officials and academics, and preparing the ground for the surveys.

Stage II (December 1979-January 1980). Field trips are planned to administer the surveys, collect additional data and hold further discussions with local experts.

Stage III (October 1979-May 1980). The data will be processed and analyzed.

Stage IV (June-August, 1980). Preliminary draft of the study will be prepared and a proposal for Phase II of the project will be developed.

Stage V (November 1980-June 1981). Completion of analyses and preparation of final draft of the study; preparation of the essay comparing the findings of the Phase I country studies.

BUDGET SUMMARY

		<u>Manweeks</u>		<u>Estimated Cost (\$)</u>		
		<u>FY80</u>	<u>FY81</u>	<u>FY80</u>	<u>FY81</u>	<u>Total</u>
<u>Tanzania</u>						
Professional Staff:	Sabot	14	10	-	-	-
Consultants:	Knight	8	4	4,500	4,500	9,000
	Tanzanian			1,500	-	1,500
Survey				12,000	-	12,000
Travel		8	8	3,060	3,060	6,120
Expenses		8	8	3,600	3,600	7,200
search Assistance		26	26	4,500	4,500	9,000
				29,160	15,660	44,820
<u>Kenya</u>						
Consultants:	Collier	3	3	2,250	2,250	4,500
	Other	3	1	1,500	1,500	3,000
	Kenyan			1,500	-	1,500
Survey				12,000	-	12,000
Travel		6	-	2,760	-	2,760
Expenses		6	-	2,940	-	2,940
				22,950	3,750	26,700
<u>Senior Adviser</u>						
Travel		4	-	1,500	-	1,500
Expenses		4	-	2,000	-	2,000
				3,500		3,500
<u>Consultancy to Tanzania Tracer</u>						
<u>Tracer Study:</u>	Knight	-	4	-	1,500	1,500
Analysis of data generated by evaluation of Kigoma Rural Development Project						
			4	-	1,500	1,500
TOTAL				<u>55,610</u>	<u>22,410</u>	<u>78,020</u>

APPENDIX A
JOB COMPETITION, OCCUPATIONAL PRODUCTION FUNCTIONS,
AND FILTERING DOWN

1. Introduction

The rapid expansion of educational enrolments at particular levels or in general is a phenomenon common to many countries over the last couple of decades. In developed countries such as Britain (in the wake of the Robbins Report), there has been a remarkably rapid growth of higher education. In many less developed countries (particularly after the achievement of political independence), educational enrolments have been increased at unprecedented rates. It has frequently proved easier to expand an educational system than to expand an economy, and symptoms of shortage of educated manpower have given way to symptoms of surplus. How have labour markets adapted to these changes?

The object of this paper is to provide a theoretical framework within which to examine the process of 'filtering down'.¹ By this is meant the movement of educated people into lesser jobs as education is expanded, or - the reverse of the coin - the upgrading of the educational requirements for holding particular jobs. The essential contribution of the analysis is the introduction of 'occupational production functions', i.e. occupation-specific relationships between education and productivity. A distinction central to the paper is that between conventional wage competition and 'job competition'. It is a distinction between competition among workers for jobs on the basis of wages and competition for jobs available at fixed wages on the basis of personal

1. The term is used by Richard Sabot (Sabot, forthcoming); a particular form of the process has been referred to as 'bumping' (Fields, 1974).

characteristics. The ideas were evolved through the study of labour markets in certain developing countries (Knight, 1967, and work in progress) but the theory has more general relevance.

First, we introduce occupational production functions. This is done within the context of a neo-classical economy, and occupational production functions are shown to be consistent with such an economy. Secondly, we analyse the effect of educational rationing, or of an exogenous change in the discount rate or in the extent of government subsidization of education. The notion of job competition is introduced, by which workers compete on the basis of their education for jobs with given wages and associated productivity. It is possible to place job competition within the theoretical framework already developed. The effects of an exogenous increase in education can then be examined. This is done by stages: in turn we examine the cases of wage flexibility, wage rigidity, a mixture of the two, wage rigidity combined with job-determined productivity, wage rigidity combined with 'educational credentialism', i.e. payment simply on the basis of educational attainment, and the conditions for voluntary unemployment. Finally, we analyse the implications of filtering down for the social rate of return to education, both where education represents human capital and where it represents 'screening', i.e. the identification of ability.

2. Occupational Production Functions

Different occupations by their nature require different characteristics of a worker, the nuclear physicist and the circus strongman being merely extreme examples. Education is likely to be of some value in most occupations but its

value is unlikely to be uniform. For any one occupation the relation between years of education (E) and productivity (Y) can be illustrated by the occupational production function Y_1 in Figure 1. The function is shown on the assumption that inputs of other factors are held constant or are optimised at each level of E . Below some minimum level of education E_1 , productivity in the occupation is zero. As education is raised above E_1 , so productivity increases. The slope of Y_1 may decline continuously or rise to a peak and subsequently decline. Beyond E_2 the curve becomes horizontal: further education has no effect on productivity. A second occupation may have a production function with similar characteristics but quite different position and slope, e.g. Y_2 . The points E_1 and E_2 give theoretical precision to the terms 'necessary' and 'surplus' education. The concept of 'optimal' education can now be addressed within a neo-classical framework.

In a fully competitive neo-classical economy, there is a certain relationship between years of education E (a measure of human capital) and productivity Y . Assume that all individuals have the same ability and tastes, and face the same discount rate. Then there is the same relationship between education and income (equal to productivity) for all individuals. Jacob Mincer has shown that on certain assumptions (e.g. the only costs are time costs) the relationship is semi-logarithmic, i.e. $\ln Y_E = \ln Y_0 + rE$, where the subscript refers to years of education and r is the rate of return on a year of education, equal to the rate of discount (Mincer, 1975). This relationship is shown as I in Figure 1. Earning the same rate of return on education - equal to the rate of discount - at each level of education, the individual is indifferent between the points on I; the curve I can thus be thought of as an indifference curve. In practice the

indifference curve is influenced by monetary as well as time costs and by non-economic benefits and costs of education. Once the assumption of a perfectly competitive neo-classical economy populated by identical individuals is dropped, ^{all possible} it is no longer the locus of ~~individual~~ equilibria but the indifference curve can still be used to indicate the additional income necessary to compensate a/ ^{particular} individual for the costs of undergoing additional education.

The notion of an occupational production function is perfectly consistent with neo-classical theory. At a, the point of tangency between I and Y_2 , the individual is content with his income derived from education E_2 in the sense that the rate of return equals his rate of discount. However, he is better off at (say) b on Y_1 , which is above I: point b is chosen. Now assume that all individuals have identical economic characteristics: I, Y_1 and Y_2 are the same for all individuals. There is an inflow of persons into occupation 1 which depresses the wage. The lower wage encourages the employment of this occupation. It does so in two ways: one technical and the other through the market. First, there are diminishing returns to numbers in an occupation; secondly, there is a fall in the relative prices of products in the production of which the occupation is intensive. Factors are substituted until the marginal product of occupation 1 falls to equal the wage. This fall, in the marginal product of the occupation shifts the entire curve Y_1 downwards to Y_1' , such that Y_1' touches I at c. The point c is the equilibrium combination of education, productivity and wage in occupation 1.

By an extension of this reasoning it can be seen that the indifference curve I_1 (common to all individuals) forms an envelope of all occupational production functions (also

common to all individuals) as in figure 2. The optimal amount of education in any occupation is given by the condition that the occupational production function must be tangential to the indifference curve. Now introduce the assumption that education is rationed, owing to imperfections of the capital market. The effects of rationing can also be depicted in the figure. The production functions involving a lot of education are shown above I (the broken curves), and the predicted increase in numbers of well-educated ($E > E_1$) people which would depress the production functions, cannot occur. In these circumstances, education is likely to become a function of government provision.

Reverting to the tangency case, assume an exogenous fall in the rate of discount, or government subsidisation of education. The effect is both to raise vertically and to swivel downwards the indifference curve facing each individual, as in figure 3. At each positive level of education the private rate of return now exceeds the discount rate. This incentive to obtain more education increases the supply of educated people and reduces that of uneducated people, so reducing the wage at high levels and increasing it at low levels of education. Within a particular occupation, e.g. occupation 1 with production function Y_1 and education level E_1 ($E_1 > E_*$), there is an incentive to employ more persons at the lower occupational wage. Substitution between factors reduces the marginal product of this occupation and depresses the curve Y_1 (say) to Y_1' . Given that I_2 is flatter than I_1 and the concavity of occupational production functions, the new equilibrium is likely to involve every occupation in more education (e.g. $E_2 > E_1$).

3. Job Competition

The notion of job competition has recently been developed in a stimulating book by Lester Thurow (Thurow, 1971). It is based on the assumption that most cognitive job skills are acquired not before a worker enters employment but through on-the-job training after he has done so. In contrast to wage competition, where individuals compete on the basis of the wages they are willing to accept, job competition involves individuals competing for job opportunities at fixed wages, competition being based on the cost of being trained to fill jobs. The allocation of jobs and the corresponding training depends on a labour queue, in which workers are placed in order of preference by employers according to their background characteristics. Of these background characteristics, education is the most readily observable and the one relevant to our purpose. Productivity is assumed to reside in the job and not in the man, with the individual being trained to achieve the productivity of the job he holds. Employers select workers so as to minimise training costs, i.e. more formal education means that less training is required on the job. Education reduces training costs either because it is a form of human capital or because it is used as a screening device, i.e. indicating which workers possess the ability to be easily trained.

Thurow argues that the establishment of an 'internal labour market', i.e. the elimination of wage competition and the restriction of job competition to certain entry points, is a profitable strategy for employers. It facilitates training and achieves dynamic efficiency, albeit at the cost of some static efficiency. It is a necessary part of the job competition theory that training is firm-specific and is thus paid for by the employer: otherwise the firm would have no incentive

to minimize training costs. Training is firm-specific either because of the nature of the job or because of the institutional limitations placed on workers' selling their skills to other employers.

Wages are assumed to be determined by custom, feelings of relative deprivation, notions of fairness, and bargaining; they do not adjust to ensure that the wage plus training cost in a job equals the marginal product of the job. However, economic substitution can occur between jobs through alteration either in techniques of production or in the composition of products. Within each job category employment is adjusted so that the marginal product of the job net of training costs is driven into line with the exogenously determined wage.

These views may be formalized within our framework as follows. For a certain level of total employment in a job, its gross productivity is given and is independent of an individual's education (the horizontal line E , in figure 4). However, the benefit of a worker to his employer is equal to productivity less training cost. If training cost is a non-linear inverse function of education, then a curve such as T , indicates the benefit to the employer. The curve V , can be regarded as an occupational production function where product is defined net of training cost. The vertical distance AB in the figure represents the minimum, below which training cost cannot be reduced through additional education. In so far as education represents human capital, the slope of the occupational production function indicates the rate at which additional human capital reduces training cost in a particular occupation; in so far as education is a correlate of ability, the slope indicates the rate at which additional ability reduces training cost in the occupation.

Training is a form of investment by the employee, the return to which accrues throughout the length of employment. The equilibrium condition is that, over the period of employment, the marginal product in a job less training cost should equal the wage, all discounted to the present. The relevant period for the analysis is therefore the expected duration of employment. With the wage for that period given (w_1 in the figure), and the relevant

educational level (E_1) determined, numbers in the job are adjusted, so shifting E_1 and E_2 until E_1 equals w_1 .

4. Filtering Down

The analysis so far has merely been to provide a framework for the examination of filtering down. To simplify, assume that there are only 4 exit points from the educational system, 0 (no education), P (primary), S (secondary) and T (tertiary), although human capital formation in education is a continuous process. For the same reason, assume that there are only 4 occupations, M (managerial), K (white collar), H (skilled) and U (unskilled). The 4 occupational production functions are illustrated in figure 5, and the 4 educational exit points (entry points to the labour market) are marked on the horizontal axis.

The analysis can be conducted on either of two assumptions. In the case of a less developed economy, there is an abundant supply of uneducated labour outside the modern sector. A contraction in numbers of persons with education E_1 has no effect on numbers in occupation U (the figure refers only to modern sector employment). In a developed economy, by contrast, any expansion at one level can occur only through contraction in numbers at some other educational level and thus in some occupation represented in the figure.

(i) Flexible Wages

Initially, those with education E_T are employed in occupation M with production function V_M , those with E_S in H, those with E_P in K, and those with no schooling are employed in U, where productivity is independent of education (V_U is horizontal). In a competitive economy workers are paid their marginal products: wages correspond to points a, b, c and n respectively. The indifference curve I is assumed to pass

through M but to run below all three points a , b and c , i.e. educational rationing is in force.

Now assume an exogenous increase in the stock of people with E_1 and a corresponding decrease in numbers with E_0 . This is best analysed by concentrating on M and N , E_1 and E_0 (figure 6). The increased supply of E_1 workers is depicted on the right-hand side of the figure. The supply curve has a minimum wage corresponding to the wage available in occupation a (shown by d). The downward sloping demand curve reflects the substitution of M workers for other factors of production in response to a fall in w_M , the wage in M . The increased supply (S_1 shifting to S_1') depresses the wage to the level corresponding to e . All E_1 workers remain in M . However, if S_M moves to S''_M , the wage falls to a level corresponding to d , and Y_M falls to Y''_M . Not all E_1 workers can be employed in M : the remainder obtain employment at the same wage in N . Thus there is a filtering down of some E_1 workers into the next inferior occupation, but all E_1 workers receive the same wage. Employers are indifferent between paying E_1 workers a wage corresponding to b and E_0 workers a wage corresponding to d , as the wage difference corresponds precisely to the productivity difference in occupation N .

The process need not stop at that. The filtering down of persons with education E_1 into occupation N has the effect of increasing the supply of N workers. Precisely the same analysis as that of M and N shown in Figure 6 can be applied to N and K , the next inferior occupation. A filtering down of one individual with education E_1 and paid a wage d has the same effect on the supply of N workers as an increase of d/b individuals with education E_0 and paid a wage b : S_N shifts to the right. The wage W falls and a filtering down of E_0 workers into occupation K may occur.

In the less developed country case, the expansion of L_1 and contraction of L_0 need have no effect on the number of unskilled employees in the modern sector or on their wage. On the developed economy assumption, however, the contraction of L_0 reduces the supply of labour in L jobs. This raises the unskilled wage and, through substitution, the unskilled production function Y_0 . The depression of wages at the higher occupational levels is thus accompanied by their elevation at the lower levels.

There are general equilibrium interactions between markets but the conclusions are clear. An expansion of the stock of educated manpower at one level of education can generate a chain process by which some of this educated manpower filters down into occupations previously performed by persons with less education, and some of these in turn filter down into lesser occupations, and so on down. Given wage flexibility, it is clear that all persons of the same education will be paid the same wage even if they are not in the same occupation.

(ii) Fixed Wages

Now analyse the effect of an expansion of the stock of manpower possessing L_1 on a quite different assumption: that of occupational wage rigidity. The wages of M , W , K and U workers are fixed; those of M and W workers are shown as a and b in figure 6. Wage rigidity may arise because the incumbents of posts possess job security, or both wage rigidity and job security may be associated with an internal labour market. Alternatively, wage rigidity may exist without there being job security.

If there is job security, the incumbents of existing posts are protected against the new L_1 entrants. Only labour turnover and the expansion of employment enable the new L_1

workers to become employed on entering the labour market. In this way some are employed in M jobs and the rest receive preferential access to lesser jobs as these become available. In the absence of job security, E_1 workers are in a lottery for the limited M jobs. Those who do not draw an M job in the lottery, being more productive than the E_0 workers ($d > b$) but receiving the same wage b , are given preference in W posts. This creates a surplus of workers possessing E_1 who in turn receive preference in M posts, and so on down. The result at the end of the chain differs according to the type of economy. In a developed economy there is a fall in the number of those in unskilled jobs who are without education. In a less developed economy some persons without education are ousted from unskilled jobs (since the E_1 entrants did not have U posts) and become unemployed or absorbed into the traditional sector. This fix-wage case of filtering down differs from the flex-wage case in that persons in the same occupation but with different education receive the same pay, but persons in different occupations but with the same education receive different pay. Where there is some job security, pay is likely to be positively associated with length of employment: the incumbents of good jobs hold on to them.

The fix-wage case can be made more complicated. First, the occupational wage may be rigid downwards but flexible upwards. In figure 6, this implies that E_1 persons who enter the W occupation are paid not b but a wage commensurate with their productivity, d . Employers in that case are indifferent between employing E_0 and employing E_1 workers in W jobs. Only if the E_1 wage is less than d is there an economic reason for preferring the more educated workers. Secondly, the wage may be partly flexible and partly rigid. If in response to the shift of E_1 to E_1' , the wage in M falls but not sufficiently to clear the market for the occupation (say, to point a), the result

is a combination of the fix-wage and flex-wage filtering down process. The difference in wages among those of a particular education exists, but it is smaller than in the fix-wage case.

(iii) Expansion from Below

So far we have examined educational expansion at the highest level E_3 , but it is possible that expansion will initially be disproportionate at the level E_2 . It is commonly found in less developed countries that educational surpluses appear first at the lowest levels and then work up the educational ladder. The process can be illustrated by means of figure 5. In a flex-wage market, an increase in primary school leavers (E_2) reduces the wage in K, and so depresses Y_K . The process cannot go permanently beyond the wage \bar{r} , given by the intersection of the new production function Y'_K and I. At \bar{r} the individual is indifferent between having no education and receiving E_2 . At any wage less than \bar{r} , primary education would be valuable only as a necessary stage on the route to more education. Even at \bar{r} the private rate of return on E_2 is less than on E_3 and E_4 . In a fix-wage market, the wage remains at c and a surplus of persons with E_2 appears. The surplus may be absorbed into occupation U, although - given Y_U horizontal - there is no reason in terms of the model why E_2 workers should be preferred to those with no education. Preference would be given, for instance, where Y_U is upward sloping and the wage in U is fixed independently of education.

Whether a surplus of E_2 appears or its wage falls to \bar{r} , the attention of those with E_2 is turned to acquiring more education: the gain from converting from E_2 to E_3 has increased. This may be reflected either in political demands for subsidised provision of more secondary school places or in the private provision of secondary education to meet the increased

private demand. E_2 then expands, and so on "up the educational ladder" (Rado, 1973).

(iv) Job Competition

What are the effects of filtering down in Arrow's job competition model, involving wage rigidity and job-determined productivity unrelated to education? In figure 7 gross productivity in occupation X is given by G_M and can be seen to be independent of education. Y_M , the occupational production function net of training costs, indicates the value of an employee to the firm given that it pays for his training. Assume that workers with education E_T are employed in occupation M and those with E_0 in W.

Again assume expansion of education at the level E_T and contraction at E_0 . The wage in M (w_M) cannot fall nor employment rise. Although the wage is fixed, the cost of labour to Employers is variable. There is an incentive to recruit the more educated workers to vacant posts, but employers have no incentive to replace less educated employees in an occupation once their training costs have been incurred. Those E_T entrants who fail to get vacant M jobs receive preference over E_0 workers in hiring for vacant W jobs, because their training costs are lower ($c > b$). Assume that eventually E_T workers completely replace E_0 workers in W. With the rise in net productivity in this occupation, the profit motive induces an expansion in the number of W jobs. This depresses Y_W (and G_W) until, at Y'_W (where $d = b = w_W$), equilibrium is restored. E_0 workers filter down into X jobs with similar consequences.

In the job competition model the expansion of education at the higher levels leaves wage structure unchanged. However, it can induce the relative expansion of the higher-paying occupations, provided that education is a form of human capital which improves trainability and so reduces training costs.

That is the case which has been analysed. The alternative case - education as a screening device for identifying the more able or trainable workers - is examined below.

(v) Educational Credentialism

Consider the case of 'credentialism', i.e. payment according to the education of a person and not according to his productivity. Two versions can be distinguished: credentialism in the private sector, and the effect on the private sector of credentialism in the public sector. Credentialism in the private sector is inconsistent with profit maximisation. Reverting to figure 5, examine the case of expansion at the level E_T combined with wage rigidity at a . The surplus labour possessing E_T , by our definition, has to be employed at wage a even in occupation W . However, no employer will choose to employ E_T labour in occupation W at any wage greater than a . If the wage a is paid, it must be because employers place a non-economic value on employing E_T rather than E_S labour in W which exceeds the wage difference between a and e .

Where credentialism occurs in the public service and where the public service dominates the private sector - a feature of some less developed countries - the pay of each educational level in the public service can influence the pay of that educational level in the private sector. The case can be illustrated by means of figure 8. On the vertical axis are marked off w_1 and w_2 , the wages paid by government to workers with education E_S and E_T respectively. Private firms can employ as many E_S and E_T workers as they like provided they pay at least w_1 and w_2 . In the absence of ability differences, these wages therefore impose upper limits to private sector wages. The private sector occupational production functions Y_M and Y_W are drawn to correspond to

wages at these upper limits. Now allow the number of persons possessing E_T to expand. In a flex-wage private sector market, the wage for E_T falls, and may continue to fall to point c. Y_M can drop as far as Y_M' , when E_T workers begin to filter down into Y_M jobs at the same wage. The predictions of a model in which surplus labour is generated at the education-specific government wage are similar to those of the simple flex-wage case.

No account has been taken so far in the paper of differences in natural ability, either between persons of the same education or between persons of different education. Given that in practice there are ability differences between persons of the same education, private firms may have an incentive to pay above the government wage in order to 'cream off' the better workers. The extent to which this occurs depends on the power of firms to identify the high ability workers within a particular educational group. The size of the wage premium depends inversely on the degree to which employers' information is firm-specific. If Y_M falls to Y_M' , the private sector is liable to have the 'dregs', i.e. those E_T workers left over after the public sector has made its choice. The private sector wage does not fall below w_2 if the ability difference between the best and the worst E_T workers exceeds the wage difference produced by wage flexibility. Given that Y_M' applies to the dregs, there may be another curve Y_M'' which applies to the cream and which is above Y_M . In that case private employers choose to pay a wage between a and d rather than the lower wage c.

(vi) Unemployment of the Educated

Wherever wages are inflexible and markets therefore fail to clear, the probabilistic nature of obtaining employment at the fixed wages can give rise to voluntary unemployment,

(Piore, 1971). Unemployment can thus occur in the rigid wage case (discussed above in section (ii)), the job competition case (section (iv)), and in the case of educational credentialism (section (v)).

Consider the fix-wage assumption (figure 6). The entrants with education E_T face employment in M at wage a with one probability and employment in W at a lower wage (b) with another probability. The probability of obtaining employment in M will differ according to whether the entrant remains unemployed or accepts a lesser job. The probabilities and costs of search may be such that the entrant will choose unemployment rather than employment in W. The more persons with E_T who are unemployed, the lower the probability of such a person getting an M job. The equilibrium level of unemployment is reached when E_T workers are indifferent between being unemployed and taking a lesser job. As an excess supply of E_T workers appears, so unemployment rises until, when the equilibrium level is reached, the filtering down process into occupation W commences. Equilibrium unemployment is likely to be lower if there is job security than if there is not.

5. Private and Social Returns to Education

Our final problem concerns the question of whether a process of filtering down produces divergences between private and social benefits. In neo-classical theory the divergence between the private indifference curve (shown by I in the figures) and the social indifference curve creates a divergence between social and private benefits. Such a divergence may result from e.g. a private discount rate different from the social discount rate or government subsidisation of education. However, even if the private and the social indifference curves are the same, imperfection of the capital market/can keep in the form of inability to borrow

private returns above the social returns. Indeed, the case for educational subsidisation is generally based on the need to compensate for such a market imperfection..

Assume some form of educational rationing, with the private rate of return above the private rate of discount. Assume also that productivity as reflected in the occupational production functions indicates the social benefit of employing a person. Now consider the expansion of educational level E_T . In the flex-wage case all workers of a particular educational level are paid the same wage. Moreover, that wage is equal to their productivity, whatever their occupation. For instance, if E_T workers are spread over M and W occupations, their occupational production functions must intersect. In the fix-wage case - there being a given wage for each occupation - the process of filtering down makes workers actually more productive than their wage indicates. Thus, in figure 6, workers possessing E_T but employed in W are paid a wage corresponding to b but their productivity corresponds to d. If wages are rigid downwards but flexible upwards, the equality of wage and productivity is once more restored (at d).

The gestation period involved in the educational process means that planning must be for substantial rather than marginal changes. The dangers facing an empirical researcher attempting to estimate the returns to education are that in the flex-wage case, he will be unable to take account of the fall in Y_M , Y_W , ... resulting from the expansion of E_T , and that, in the fix-wage case, the average wage (and productivity) of those with a particular education level will prove to be a poor guide to the marginal wage (and productivity). With fixed wages, the expansion of E_T may well cause filtering down into lower-paying occupations W, K ... not previously entered. Where all surplus E_T labour filters down into

productivity
occupation W , the marginal ~~wage~~ corresponds to d
rather than to a . Once a probabilistic element in employment
productivity
is introduced, the marginal ~~benefit~~ is further reduced by
the creation of unemployment.

Finally, consider the case in which education merely performs the screening function of ordering the labour queue. In giving the educated preferential access to jobs even though education itself adds nothing to individual productivity employers rely on a correlation between education and other productive characteristics such as ability and trainability. The correlation is liable to arise if the more able face lower costs of education - the net psychic costs are less - or, in a system of educational rationing, if those successful in the competition for rationed places are more able. The more able may also acquire more education in order to distinguish themselves from the less able (Spence, 1976).

There is a substantial literature on the economic returns to screening: the object here is to place the basic theory within the framework developed above. There can be no expectation that the social and private benefits of screening will coincide (Arrow, 1973), nor can there be certainty about the direction of inequality (Stiglitz, 1975). If the optimal level of educational screening is that which maximises national income net of screening costs, there can be too little of it, e.g. where persons are screened to establish their comparative as opposed to absolute advantage, or where they are both uninformed about their ability and risk-averse. Alternatively, there can be too much screening, essentially because the private returns are redistributive. The latter possibility is explored below.

Where education is used to order the labour queue, individuals have a private incentive to invest in education. Education is a 'positional good', determining position in the

queue (Hirsch, 1977, ch.5). An individual gains from an additional year of education because he is liable to be allocated to a different job with higher pay. There is also a social rate of return to education: education performs the valuable function of allocating the more able people to jobs demanding more ability. But although some amount of education is required to order the labour queue, the social value of additional education is questionable. The marginal product of education is the additional output which results from the more efficient ordering of the queue. It is not obvious that a uniform expansion of education, or expansion at any particular level, will produce a more efficient ordering.

These arguments can be related to the theoretical framework. The occupational production function can again be used, but it takes on a new meaning (figure 9). Y_1 shows the production function for occupation 1, which is filled by persons of ability 1 who have education level E_1 and are paid a wage w_1 . Y_1 slopes upwards, showing that those with more education are on average more productive because they happen to be more able. Those in ability group 2 and with education E_2 are assigned to occupation 2 with production function Y_2 and wage w_2 . To simplify, assume a uniform increase in the education of the labour force (e.g. each worker has had one more year of education). The ordering of the labour queue is not altered, and Y_1 simply shifts rightwards (to Y_1') to an extent dictated by the increase in each worker's education. Thus the education of those in ability group 1 rises to E_2 , and that of those in ability group 2 rises to E_3 . The same ability group, despite their additional education, stay in the same job with the same productivity: even if the wage were flexible it would remain unaltered. The social rate of return to the added education is zero, but the private rate of return to an individual is positive.

Instead of imposing a uniform increase in the education of each worker, consider the private incentives which generate additional education. If a single individual in ability group 1 increases his education to E_2 , he passes for someone in ability group 2 and is allocated to occupation 2 with its higher wage. But everyone has an incentive to acquire more education: because they all do it, persons in ability group 1 move not from a to c as planned but from a to b, and those in ability group 2 move from c to d. The cost of not acquiring education is (for ability group 2) to move from c to b.

The rightward movement of the production functions ceases when individuals no longer have an incentive to move up the labour queue, e.g. if persons of ability group 1 are at point b, and their indifference curve I_1 passes to the left of d, they do not attempt to move to d. The move from a to b (and from c to d, etc.) has no social benefit unless the more extended educational system yields better signals of ability.

There is one other possible reason for a divergence between private and social returns. Where occupational wages are fixed, giving rise to a labour queue, and education has an effect neither on productivity nor on training costs, there is no economic reason why the educated should be given preference in the labour queue. Nevertheless, the educated do receive preference if employers choose to follow a "fairness in hiring" rule, i.e. if it seems fair to them that the more educated, who have made greater efforts to become employable, should be preferred (Bhagwati and Srinivasan, 1977). The examples cited - drawn from India - imply location on the horizontal sections of occupational production functions. In that case the private benefit of additional education is

P { Different ability groups are likely to have different indifference curves, the net psychic cost of education being less the greater the ability (Spence, 1975).

positive but the social benefit zero.

6. Conclusion

The rapid expansion of education in many countries is an interesting and important topic for research. How do labour markets respond and with what economic consequences? This paper provides a theoretical framework within which the phenomenon can be understood. In particular, the concept of an occupational production function is shown to have analytical value. An individual's occupation can significantly influence the extent to which he contributes through and benefits from his educational qualifications. The occupational production function gives precision to the commonly expressed notions that certain levels of education are 'necessary', 'appropriate' or 'excessive' for a particular job.

If wages are flexible and labour markets competitive, individuals who have the same education and are equally able receive the same wage even if they are in different occupations: the occupational production function is consistent with the story but not important to it. But if wages are rigid, the occupational production function is helpful in analysing the process of filtering down. It is a versatile tool, being capable of representing not only the effects of education on productivity in a human capital framework, but also the effects of a correlation between education and ability in a screening framework and the effects of education on trainability and thus on net productivity where gross productivity is determined by the job. It can also show how the private rates of return to education vary as education is expanded, and how the process can give rise to divergences between private and social rates of return.

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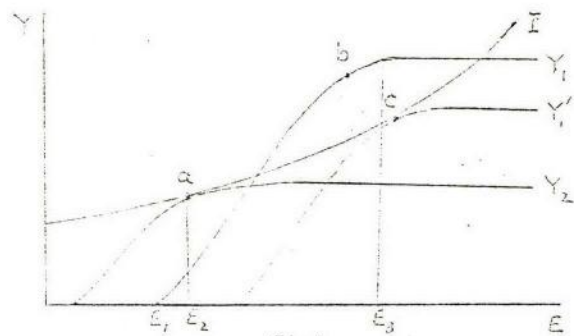


Fig. 1

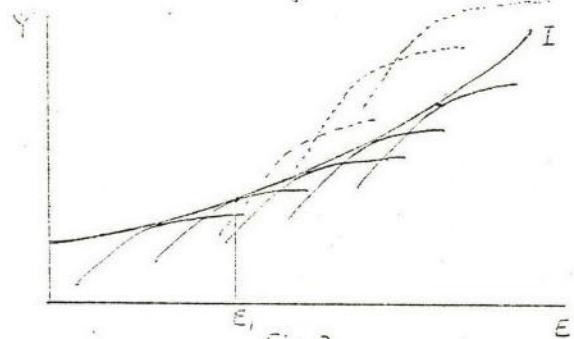


Fig. 2

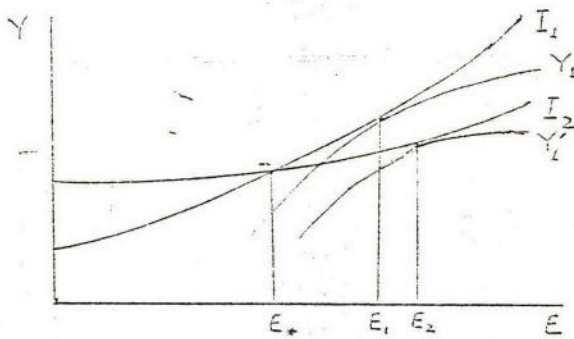


Fig. 3

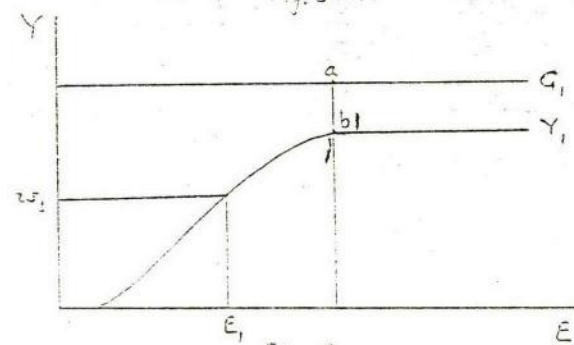


Fig. 4

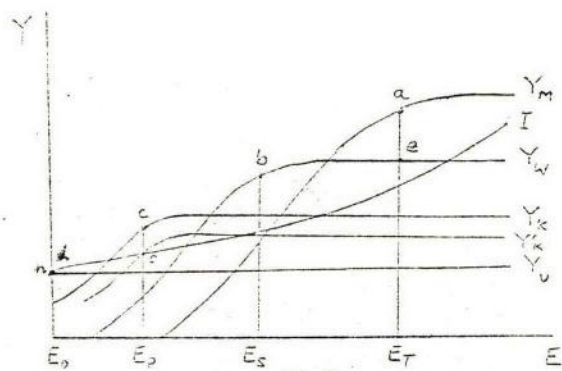


Fig. 5

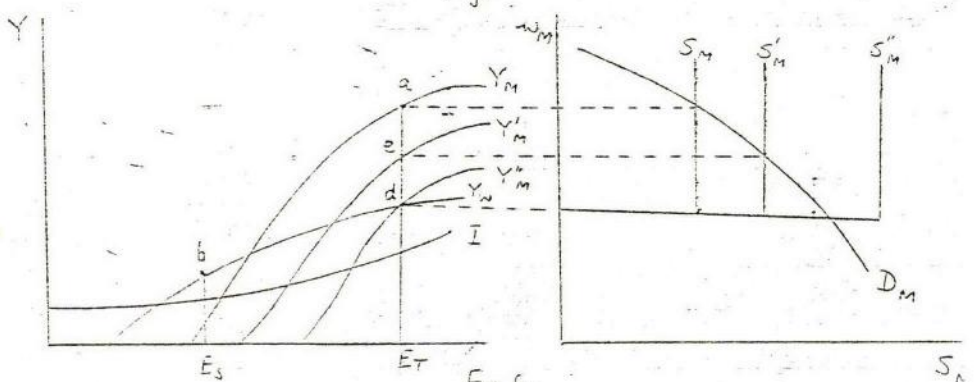


Fig. 6

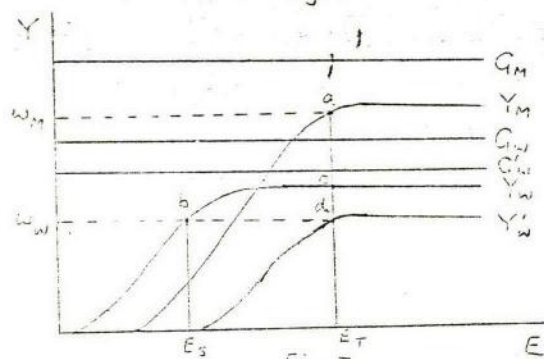


Fig. 7

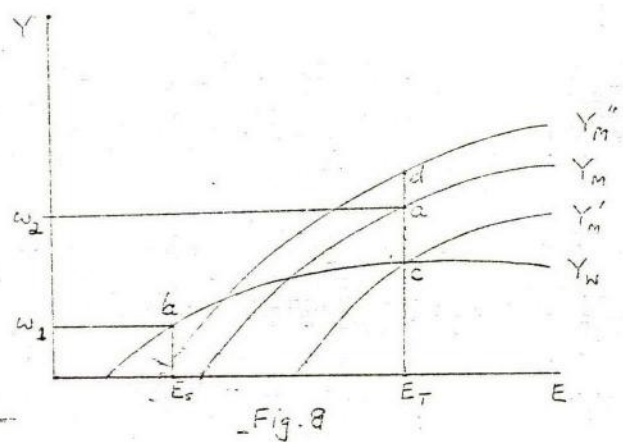


Fig. 8

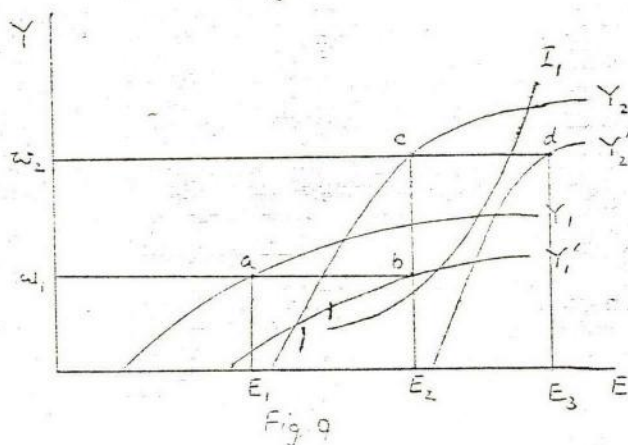


Fig. 9

APPENDIX B

WHY WAGES DIFFER IN THE MANUFACTURING
SECTOR OF TANZANIA: OUTLINE

The increasing use of multivariate analysis in the study of wage structures in developing countries does not mean only that techniques for the criticism and formulation of education policy, based on estimates of rates of return to investment in education, are now well-known in those countries. The study of rates of remuneration can yield important information on the interactions between sellers and employers of labour which determine those rates. This type of research reflects the growing interest of economists in labour market problems and the distribution of income.

Despite the cost constraints that limit sample size, most researchers have chosen to cover the entire urban labour market. Consequently they have had to limit the level of disaggregation to which their studies can be taken and the number of independent variables than can be considered. This study is unique in that a relatively large sample is drawn only from Tanzania's manufacturing sector, permitting an in-depth assessment of a variety of conventional hypotheses, and new hypotheses suggested by the study itself. These hypotheses cover the operation of labour markets, the relationship between personal characteristics of employees and their wages, and, the relationship of a firm's character to its wage level and structure. This last relationship is made apparent by integrating data on individuals with data on the firms for which they work.

The micro-data base was generated by a detailed survey covering 1,000 employees in 75 manufacturing companies in Dar es Salaam administered in 1970. For each employee, information is available on age, sex, origins, ethnicity, citizenship, schooling, employer, occupation, skill, formal training, trade union membership, wages, overtime payments and bonuses,

and supplementary sources of income. Data on his employment history include wage, type of work done, skill level and number of jobs over his working life. Data were gathered for each firm on length of operation, type of ownership, average earnings, capital intensity, cost structure, value added and value of output.

Such information enables us to investigate the role of human capital, labour market segmentation and discrimination in the determination of wages. The significance of individual variables, which can be regarded as human capital, and those which correspond to forms of segmentation or discrimination will be assessed, together with individual and firm variables. The relative importance of institutional characteristics (such as multinational status or degree of unionisation) and economic characteristics (such as capital intensity and profitability) in the determination of wages by firms will also be assessed.

There is information on how the worker's present job was obtained; news of it, method of application, income while searching, whether relatives work in the firm, other jobs applied for, and others turned down. In the case of migrants to Dar es Salaam, information is available on previous residence and occupation, date of arrival, degree of support on first arrival, length of time taken to find employment, and intended permanence of present stay. This information can be used to study the methods of access to and selection for the "labour aristocracy" (employment in large-scale manufacturing). It is of interest to know whether other forms of urban activity serve as a staging post on the way to a job in manufacturing, whether access is easier for those with particular characteristics, and whether the minimum educational requirements are being raised over time.

The method used in the explanation of earnings is O.L.S. multiple regression analysis. The following explanatory variables are normally regarded as denoting "human capital", that is, the acquisition of productive knowledge: education, years in current job, years of past employment experience, and formal training. The following are fairly clearly institutional variables: the sex, ethnicity, and status (regular or casual) of employees. In the case of some other variables - age, migrant status, and occupation - there may be both human capital and institutional elements. A problem faced is the possible collinearity between institutional and human capital variables: if earnings are determined institutionally, the quality of labour may adjust to earnings levels.

The extent of labour market segmentation or discrimination based on employee (rather than employer) characteristics will be examined by reference to the three institutional dummy variables. Their influence can be assessed by examining the dummy values of these variables in the unstratified equations, and, in the case of equations stratified by one or other of these characteristics, by examining the mean input values of different groups and the values of the coefficients of the human capital variables. Casual employees, women, or Africans may, other things being equal, receive less pay. These groups may tend to have less endowment of human capital, and the coefficients may also reveal that human capital is less important in raising their income (e.g. the return to education or experience may be lower).

It would fit with segmentation theory on dual labour markets for instance, to find, that casuals are paid less than regulars solely on account of being casual, that they possess less education and skill, and that what education and skill they possess is of less value to them. The reasons for racial discrimination can be explored by studying variation in the size of the dummy value for ethnicity according to different stratifications of the sample. For instance, our results are consistent with conventional theories of discrimination that predict greater discrimination in favour of non-Africans in occupations where they are few. The results also suggest that, while employment status and ethnicity are important determinants of wages, sex is not. In our subsequent analysis we therefore lay aside the two significant but small "pathological" groups and concentrate on the remaining bulk of the sample, African regular employees.

The data permit us to estimate the private returns to education, standardising for other variables by such means as holding other inputs constant at their mean values. Education can be measured either in terms of years of schooling or in terms of dummy values for different educational levels. More interesting is the exploration of the effect of the tightening of the labour market for the educated as the educational system has expanded. This is done in various ways, such as studying the returns to education for different age or experience cohorts, the effect of age or experience on earnings for different educational cohorts, and the occupational choices of different educational cohorts according to age or experience. For instance, when the sample is stratified by experience, different values of the education coefficients may be found. Coefficients falling with years of experience may suggest that education becomes

less important for productivity the more distant it is, or that education is used as an initial screening device. Rising coefficients may indicate that educated recent entrants to the labour market cannot use their education productively because they have had to accept lesser jobs, or that civil service pay structure determines manufacturing earnings.

Experience in wage-employment, as a proxy for skill-acquisition on the job, can be measured in various ways. For some purposes it is less appropriate to use the number of years in wage employment than its components, years with the firm and years of previous wage-employment. We can expect experience within the firm to have more effect on earnings than previous experience to the extent that skills are firm specific. Information on the number of jobs held during the period of wage-employment can also help to isolate the effect of mobility on earnings. The hypothesis that skill-acquisition is subject to diminishing returns can be examined.

The dummy variables for different occupations in the regressions indicate the contribution to earnings of the occupation itself. Different occupations may involve different amounts of on the job training, or the occupational earnings structure may be affected by custom, trade unions, the nature of the job, or pay determination in the public sector. Stratification of the sample by occupation may reveal interesting differences in the values of coefficients, reflecting differences in job content. For instance, we may find the influence on earnings of education and experience to be greater for white collar than for blue collar workers. Generally, the survey permits a deeper examination of the inter-relationships in a developing country between earnings, education, experience and occupation than was previously possible.

Our results suggest that the personal variables alone explain over half the total variation in earnings. Rather than including the firm variables along with the personal variables in the regressions, the following procedure was adopted. Each of the 24 firms was allocated a dummy variable, and the regressions were rerun with these added dummies. The inclusion improved the explanatory power of the equations. The values of the firm dummies were then made the dependent variable in O.L.S. regressions in which certain firm characteristics were used as the independent variables. They were found to explain more than half of the variation in the firm dummies.

An important determinant of inter-firm earnings differences is a dummy variable reflecting firm ownership. Five categories can be distinguished: wholly local and privately owned, foreign and privately owned, mixed local and foreign, and jointly owned by a private firm and by government. The multiple regressions help to distinguish the effect of firm ownership from the effect of variables associated with firm ownership on wages. We would expect that foreign firms, whether operating independently or in partnership with government or a local firm, would pay more than wholly local firms.

The effect of firm size on earnings can be explored in the same way. Reasons can be found for expecting earnings to increase with firm size, and simple evidence for developing countries, in which other variables are not held constant, normally bears out this hypothesis. Our method isolates the effect of firm size on its own, and the use of dummy variables opens up the possibility of non-linearity. It is possible that the heterogeneity of activities within the sample of manufacturing firms explains the U-shaped relationship suggested by preliminary results.

An obvious way in which institutional variables can influence the wages paid by a firm is through trade union pressures and collective bargaining. The most appropriate specification in the Tanzanian case is to enter union membership as a firm variable rather than as a personal variable. Unfortunately, it is by no means clear that the proportion of the firm's workers unionised can be taken as a good proxy for trade union bargaining strength. However, since the effect of trade unions and collective bargaining in the modern sector of African countries is much disputed, experimentation is warranted.

A number of other hypotheses concerning the effect of firm characteristics on earnings are tested. For instance, greater capital-intensity, which may be the result of high earnings, may also be their cause in that capital-intensive firms can better afford to pay high wages. High value added per man, with which capital-intensity could be correlated, may also be cause or effect of high earnings. An interesting test of Lydall's hypothesis that the precise shape of a firm's occupational pyramid influences earnings (which can be interpreted as a hypothesis regarding ability to pay) is the following: do firms with a higher proportion of employees in unskilled and semi-skilled occupations tend, other things being equal, to pay lower wages to such employees?

An introductory section of the study concerns the origin, selection and relative characteristics of the "labour aristocracy" employed in the manufacturing sector. A detailed descriptive picture can be painted from the survey, and an interesting comparison can be made with a broader survey of urban workers carried out roughly at the same time. In general, sufficient descriptive and institutional information and prior analysis of the urban labour market is available on Tanzania to prevent the econometric analysis from being a mechanical exercise or mere "data mining". It is possible to achieve

that blend of theoretical, institutional and statistical analysis which is likely to advance knowledge. It cannot yet be claimed that the study has important direct implications for policy, but an effort is being made, wherever possible, to relate the results to policy issues.

APPENDIX C

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"	"	"	"	"	National Labourforce Survey, 1978 unpublished, on tape.
Nairobi University:					ILO National Survey 1974 (unpublished, on tape at Bank).
Ministry of Labour:					Annual Reports (up to 1975).
Ministry of Education:					Annual Reports (up to 1976).
Thias H.H. and Carnoy M.C.:					<u>Cost Benefit Analysis in Education.</u>
Collier P. and Lal D.:					<u>Poverty and Growth in Kenya, (IBRD</u> January 1979).

Appendix D Sampling Procedures and Sample Characteristics
 of the Tanzanian Surveys

1. The 1971 Survey: Sampling Procedure

A sample survey of wage earners was specially designed and administered in 1971 ^{1/} to generate a micro data set that integrated information on the wages of individuals with measures of a broad range of variables hypothesized to be determinants, or proxies for determinants, of wages.

The sample was stratified and selected in two stages. In the first stage twenty-five manufacturing firms were randomly selected from a comprehensive government list of firms in Dar es Salaam in each of three size categories: firms with less than ten employees; firms with ten to 49 employees; and firms with 50 to 499 employees. In each firm a sample of one third of the labor force or thirty workers, whichever was smaller, was randomly selected from a complete list of the firm's employees. In addition 60 employees were interviewed in three of the six firms in the Dar es Salaam area employing more than 500 people. In total 986 manufacturing sector employees were interviewed. Table 1 provides a basis for assessing whether the sample of employees is representative, hence whether the findings of our study can be generalized to the manufacturing sector as a whole. Columns 1 and 2 present the size distribution of income and the average wage in the manufacturing sector as measured, respectively, by the sector in 1971, on which we base our study, and the National Urban Mobility Employment and Income Survey, a considerably larger household survey administered later in the same year. There is very little difference between them; the only significant differences are within

^{1/} By R. H. Sabot in collaboration with M. A. Bienefeld, currently of the Institute of Development Studies, University of Sussex.

the individual respondent can provide. Thus it is generally not possible to integrate the assessment of the influence on wages of the characteristics of firms with that of the influence of worker characteristics.

This wage survey is perhaps unique in that the sample is drawn only from among manufacturing sector employees and in that it is an establishment rather than a household survey. For a conventional labor force survey to have as many respondents among manufacturing employees, its total sample size would have to be more than ten times the size of the sector survey. 1/ The fact that firms were selected in the first stage of the sampling procedure and that interviews were conducted at the place of work facilitated the acquisition of information on the characteristics of firms, both by limiting the number of firms in the sample and by clearly specifying by which firms workers were employed. This information subsequently became an integral part of the data set; an individual's file contains data both on his personal characteristics and on the characteristics of his firm.

These features of the data set increase the range of issues we can examine and the depth of our analysis. Not only are we able to "test" for segmentation of the labor market between firms, and to assess various hypotheses regarding its causes, but we can weigh the influence of variables denoting human capital, relative to the influence of other variables, on the urban distribution of wage incomes. Also, because of the large number of respondents from a small sector we are able, when appropriate, to disaggregate the analysis. This is important because two rather different hypotheses may have the same prediction for the sign of a particular variable in the aggregate wage

1/ NUMEIST was comprehensive in its coverage of the urban population; total sample size is nearly six times that of the sector survey, yet it had less than half the number of manufacture sector respondents.

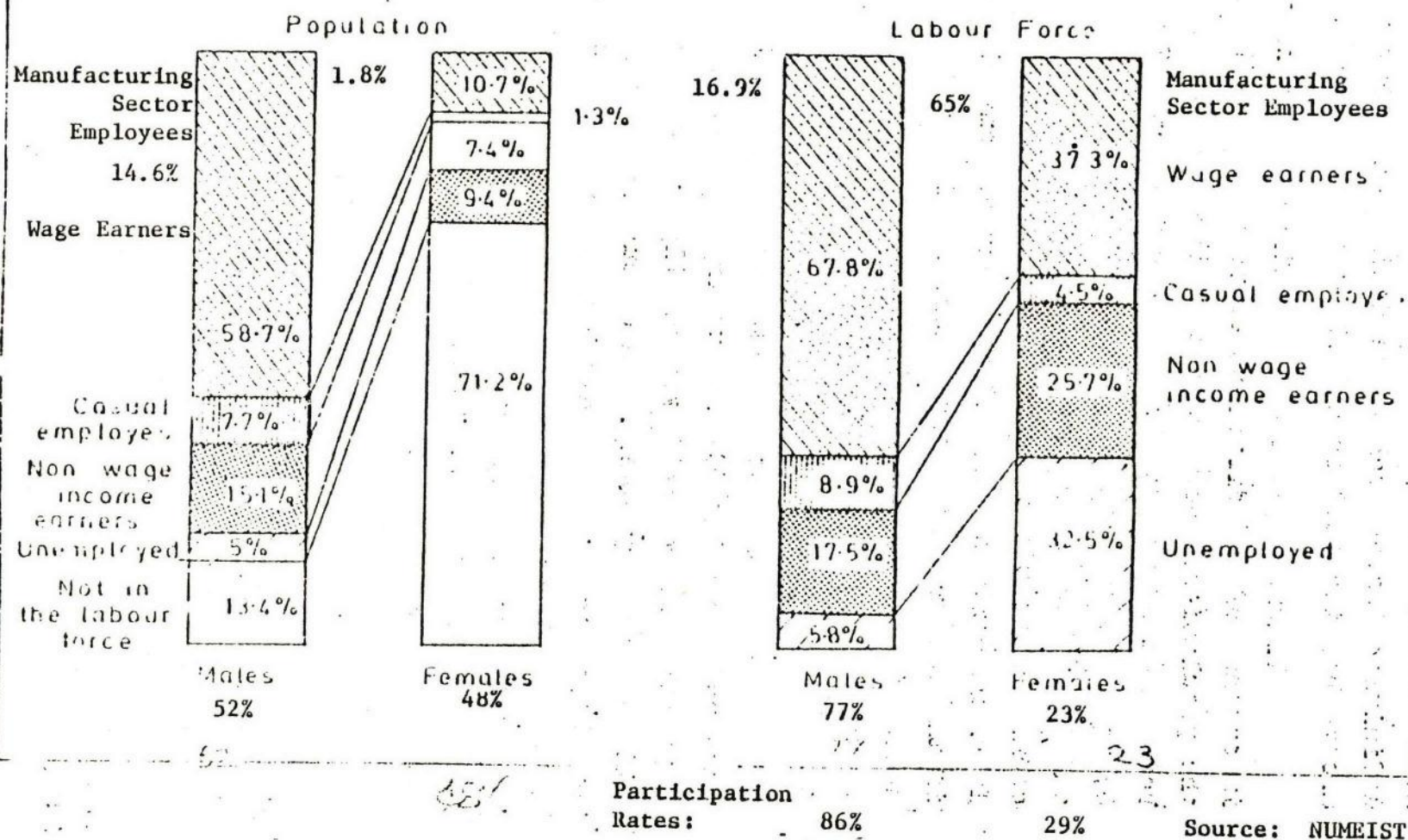
the 150-250 shs. categories. The differences in average wages is only 1.7%. Columns 3 and 4 present the industrial structure of urban wage employment as measured by NUMEIST in 1971 and by the Central Statistical Bureau's Survey of Employment and Earnings in 1968, which is actually a census of the wage sector. Again the distributions are very similar, 1/ demonstrating that NUMEIST is a good benchmark against which to measure the quality of data generated by the manufacturing sector survey. These comparisons suggest that we can, with considerable confidence, generalize the findings of the sector survey to the urban manufacturing sector as a whole.

2. Some Advantages of Interviewing in Firms and Focusing on One Sector

Despite the cost constraints that limit sample size, most researchers generating data for the estimation of wage functions in developing countries have chosen to cover the entire urban labor market. Moreover, they have generally selected household surveys as their instruments, thereby including within the sample a high proportion of individuals who do not participate in the labor market, are unemployed or who have non-wage sources of income. Consequently, the number of wage earners in a particular sub-sector of the urban economy, as a proportion of the total sample is generally small and researchers have had to conduct their analysis of wages at a high level of aggregation: estimates of separate wage functions for different strata of the sample are often precluded by the small number of observations within cohorts. Also, in household surveys the range of information gathered is limited to that which

1/ The only non-trivial differences appear in construction, where the high figure of the C.S.B. Survey reflects an extraordinary expansion of employment in that sub-sector in 1968, and in services, where the higher figure of NUMEIST reflects the inclusion of domestic servants, who are excluded from C.S.B. statistics. Comparisons of the findings of NUMEIST and of the 1967 Population Census confirm the accuracy of the former. See R. Sabot (1979).

Fig. 1: CLASSIFICATION OF THE URBAN ADULT POPULATION OF TANZANIA BY ECONOMIC ACTIVITY - 1971



function but different predictions for the pattern of coefficients, when separate equations are estimated for occupational, firm size, or other sub-groups of the sample. Thus disaggregation increases our ability to discriminate between competing hypotheses; more generally it allows us to illustrate the complexity of the wage structure in Tanzania, the interactions between various determinants of wages, and the differences between sub-groups in the influence of a particular determinant.

3. The Generality of Findings

We have emphasized the benefits of focusing our analysis on one sector of employment. There is, however, a potential cost, the loss of generality of findings. Our analysis of differences in income is confined to a small proportion of the urban population. Figure 1 indicates that roughly only one of seven urban adult males and one of fifty adult females is employed in the manufacturing sector. Viewing manufacturing workers as a proportion of the urban labor force,^{1/} a category more relevant than population to the analysis of the distribution of labor incomes does not alter the picture much for males because of their high participation rate. Roughly, one of six male labor force participants is a manufacturing sector employee. For females, who have a participation rate only one third that of males, the shift in perspective does have a marked impact on our perception of the relative size of the manufacturing sector labor force. Roughly one of every fifteen female labor force participants is a manufacturing sector employee. Likewise, because markedly higher proportions of female than male workers are either unemployed or self-employed, viewing manufacturing employees as a proportion

^{1/} The labor force is defined throughout as comprising all earners of monetary income (thereby excluding subsistence producers) together with all active sectors of wage or self-employment.

of all wage employees, the category relevant to the analysis of the market for wage labor and the distribution of wage incomes, has a greater impact on our perception of the relative size of the female than the male manufacturing sector labor force. Roughly one of every four urban male wage earners and one of every six urban female wage earners is employed in the manufacturing sector.

Nevertheless the usefulness of this study depends on whether its findings can be generalized to the urban wage sector or must be confined to the manufacturing sector. The relevant question is whether the manufacturing sector labor market is representative of the urban wage labor market. To say that a sample is representative generally means that the distribution of individual characteristics is roughly the same in the sample as in the population from which it is drawn. We have seen that our sample population is representative, in this sense, of the manufacturing sector labor force as a whole.

According to this definition, however, manufacturing workers are clearly unrepresentative of the urban population, the urban labor force and of urban wage employees, though not to the extent sometimes suggested by those who view workers employed in modern manufacturing enterprises as a "labor aristocracy."

Table 2 presents the rates at which various demographic sub-groups of the urban population participate in the urban labor force, and in two of its components, the urban wage sector labor force and the manufacturing sector labor force. For the latter categories two participation rates are presented. In the first, p.r., the size of the relevant sub-group of

Table 2

RATES OF PARTICIPATION OF VARIOUS DEMOGRAPHIC SUBGROUPS
OF THE URBAN POPULATION AND LABOR FORCE IN THE WAGE AND MANUFACTURING SECTORS

	Urban Labor Force						Urban Wage Earners						Manufacturing Sector Employees					
	Males		Females		Total		Males		Females		Total		Males		Females		Total	
	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index	p.r.	Index
<u>Education</u>																		
No. education	.86	100	.20	100	.42	100	.56	100	.65	100	.05	100	.24	100	.22	100	.52	100
St. 1-4	.92	107	.21	105	.62	148	.68	121	.74	114	.09	180	.44	183	.43	195	.69	133
St. 5-8	.89	103	.37	185	.70	167	.71	127	.79	121	.21	420	.56	133	.53	241	.75	144
Post-Primary	.78	91	.47	235	.69	164	.67	120	.86	132	.39	780	.83	345	.59	268	.86	165
<u>Age</u>																		
14-24	.78	100	.27	100	.52	100	.59	100	.75	100	.14	100	.50	100	.36	100	.68	100
25-34	.96	123	.27	100	.65	125	.80	136	.84	112	.15	107	.58	116	.51	142	.79	116
35-49	.95	122	.26	96	.65	125	.70	119	.74	99	.09	64	.34	68	.43	119	.67	99
50 & over	.77	99	.21	78	.48	92	.42	71	.55	73	.03	21	.16	32	.22	61	.46	68
<u>Race</u>																		
African	.88	100	.27	100	.59	100	.68	100	.78	100	.12	100	.44	100	.41	100	.70	100
Asian & other	.81	92	.22	81	.51	86	.45	66	.56	72	.12	100	.56	127	.29	71	.56	80
<u>Migrant Status</u>																		
Migrant	.91	100	.25	100	.61	100	.73	100	.80	100	.13	100	.53	100	.45	100	.75	100
Non-Migrant	.78	86	.29	116	.52	85	.50	68	.64	80	.10	77	.34	64	.29	64	.55	73
<u>Status in Household</u>																		
Head	.95	100	.57	100	.88	100	.75	100	.79	100	.32	100	.56	100	.67	100	.76	100
Wife of head			.13	23	.13	15			.05	16	.41	73	.05	7	.41	54		
Other b/	.74	78	.34	60	.55	63	.50	67	.67	85	.14	44	.40	71	.33	49	.60	79

a/ p.r. is the sectoral participation rate calculated with the labor force as the denominator.
b/ Son, daughter, other relative or boarder.

Source: NOMEIST, 1971

the urban population is the denominator; in the second, p.r., the denominator is the size of the relevant sub-group of the urban labor force. The labor force is selective of some, e.g. educational, sub-groups of the urban population. The wage sector and its component, the manufacturing sector, may be further selective of labor force members with particular (education) characteristics. The second participation rate in the table isolates the effect of this latter type of selectivity and allows us to determine in what ways and to what extent manufacturing workers are unrepresentative of the wage labor force as a whole.

The index of p.r. in column 9 indicates that urban adults with education are more than three times as likely to hold a wage job in the manufacturing sector than uneducated urban adults. The participation rate does not rise consistently with education, however. The manufacturing p.r. for post-primary leavers breaks the trend; it is actually lower than that for St.5-8 leavers. The educational selectivity of the manufacturing sector is, in significant part, accounted for by the positive relationship (in column 3) between educational attainment and the labor force participation rate, a relationship explained almost entirely (in column 2) by the marked tendency for the rate of participation of urban females to rise with their level of education. Controlling for the education selectivity of the urban labor force reveals that the manufacturing sector is, nevertheless, independently selective of educated labor force participants. P.r. (in column 9) is markedly higher for the educated than the uneducated. But, the point to emphasize is that a comparison between the wage sector as a whole and

its manufacturing component of the educational structure of p.r.' (in columns 6 and 9) does not reveal marked differences in the pattern of selectivity. The principal difference is that the manufacturing sector is rather more selective of workers with primary education.

Likewise the inverted U shape of the relationships between age and the p.r. in the wage sector (column 6) and the p.r. in the manufacturing sector (column 9) are only partly explained by a similarly shaped relationship between age and the rate of participation in the labor force (column 3). The relationships between age and the p.r.' for the urban wage sector (column 6) and the p.r.' for manufacturing (column 9) are also inverted U-shaped: first the rate increases with age and then declines. While the pattern of age selectivity in the wage sector and its component are broadly similar it is apparent that the manufacturing sector is less selective of workers 35 and over.

The relationship between race and the p.r. is roughly the same in the wage and manufacturing sectors: Africans in the urban population are more likely to be participants than Asians and others (columns 6 and 9). The greater selectivity of Asian female labor force participants by the manufacturing sector (p.r.' in column 8) than by the wage sector as a whole (p.r.' in column 5) does mean that in total in the manufacturing sector the p.r.' of both groups are the same (column 9) while in the wage sector the p.r.' of Africans is higher (column 6). The urban labor force is selective of migrants (column 3). Despite differences between the wage sector and the manufacturing sector in the selectivity by migrant

status of females (columns 5 and 8), in total (columns 6 and 9) the relationship between migrant status and the p.r. ' is roughly the same: both sectors are selective of migrant labor force participants. Labor force participation rates are highest among heads of household and lowest among wives of heads (column 3). Similarly, both the wage sector and the manufacturing sector are most selective of labor force participants who are household heads and least selective of wives of heads (columns 6 and 9).

In sum, though there are significant differences in the details of the patterns of demographic selectivity by the two sectors, the manufacturing sector labor force is broadly representative of the urban wage labor force as a whole. Most important perhaps, while because of their educational attainment, manufacturing employees may be considered an elite relative to the urban and, in particular, to the rural populations,^{1/} they are not an elite when compared to other urban wage earners.

There is another, economic rather than statistical, sense of the term "representative" which is more appropriate for the assessment of our ability to generalize to the urban wage sector as a whole the findings of the analysis of why wages differ in Tanzania's manufacturing sector. The market and non-market processes determining wages in the manufacturing sector, rather than the characteristics of the sector's labor force, may be representative of the wage sector. Indeed given differences between sub-sectors such as manufacturing, public utilities, construction and commerce in the nature of their output and in production technology it would be surprising not to find considerable variance in the skill composition of their labor forces, hence in mean wage rates and in the

^{1/} While only 15% of manufacturing employees were uneducated, 37% of the the total urban population had no formal schooling, and the comparable figure for the rural areas was 68%.

distribution of wage incomes. The relevant question is whether these latter differences are entirely accounted for by the differences in labor force composition. This will be the case if the manufacturing labor market is an integral part of the urban market for wage labor. Differences between sub-sectors in wages for workers with the same economic characteristics will have been eroded by the competitive interactions of buyers and sellers of labor services. If, however, the manufacturing sector labor market is an isolated segment, protected by institutional or other barriers from the forces of competition operating elsewhere in the urban market for wage labor, then substantial differences between sub-sectors in wage rates and their distribution may remain even after controlling for intersectoral differences in labor force composition. If the manufacturing sector labor market is fully integrated with the larger market for urban wage labor then it is legitimate to generalize the findings of our analysis of why wages differ. On the other hand if the manufacturing sector is an isolated segment of the labor market and its processes are unrepresentative then findings pertaining to why wages differ within it should only be generalized with extreme caution.

Table 3 presents the size distribution of wage income in the various urban sub-sectors, together with a measure of the degree of inequality within each sub-sector. The manufacturing sector is grouped with government services and public utilities roughly at the unweighted mean of the gini coefficients of the seven sub-sectors. The distribution of income is markedly more equal in two of the sub-sectors and markedly less equal in the other two sub-sectors. The two sectors in which wage income is most

Table 3

URBAN WAGE SECTOR : SUB-SECTORIAL DIFFERENCES IN THE INEQUALITY OF PAY
AND THE OCCUPATIONAL STRUCTURE OF EMPLOYMENT

Sector	All wage earners	Non- government services	Commerce	Government Services	Public Utilities	Manufac- turing	Transport/ communica- tions	Construction
Income category Shs. per month	%	%	%	%	%	%	%	%
150	8	17	10	2	3	3	2	1
150-199	19	20	18	13	18	23	8	15
200-249	20	16	15	24	32	21	19	25
250-299	11	9	8	6	17	16	12	15
300-349	10	8	10	8	12	8	15	17
350-499	12	9	10	12	3	12	22	16
500-999	12	10	18	22	9	10	16	8
1000 & +	7	10	10	13	6	7	6	3
Gini Coefficient	.383	.410	.407	.352	.352	.349	.311	.303

Source: NUMEIST

unequally distributed are characterized by higher than average (for the wage sector as a whole) proportions in the two highest and in the two lowest income categories. The two sectors in which wages are most equal are characterized by lower than average proportions in the two highest and lowest income categories. Casual empiricism suggests that the differences in degree of inequality between the manufacturing sector and the high inequality and low inequality sub-sectors are largely explained by differences in their occupational structures of employment. Though non-government services and commerce, the two sub-sectors in which incomes are highly unequal, have roughly the same proportions of unskilled workers as the manufacturing sector, the proportion of their workers in white collar occupations is much higher and the proportion of their workers in semiskilled and skilled manual occupations is much lower than in the manufacturing sector.^{1/} By contrast the construction sector in which incomes are more equally distributed has an accentuated version of the manufacturing sector's occupational structure: a higher proportion of workers in semi-skilled and skilled occupations and lower proportions in unskilled and white collar occupations.^{2/}

^{1/} The manufacturing sector has 57% of its labor force in semiskilled and skilled manual occupations and only 17% in white collar occupations. The non government services and commerce sectors have 61% and 56%, respectively, of their labor forces in white collar occupations and only 14% and 9% in semiskilled and skilled occupations. Source: NUMEIST - 1971.

^{2/} The transport sector is the odd man out in this assessment. The higher proportion of workers in that sector earning above 350 sh. can, perhaps, be explained by the markedly higher proportion of transport than manufacturing workers in white collar occupations. The occupation structure of employment does not, however, explain the low proportion of transport workers earning less than 200 sh: a higher proportion of transport than of manufacturing workers is unskilled. The explanation may be in the high proportion of transport workers employed by the government which pays premium rates to workers at the low end of the occupational spectrum.

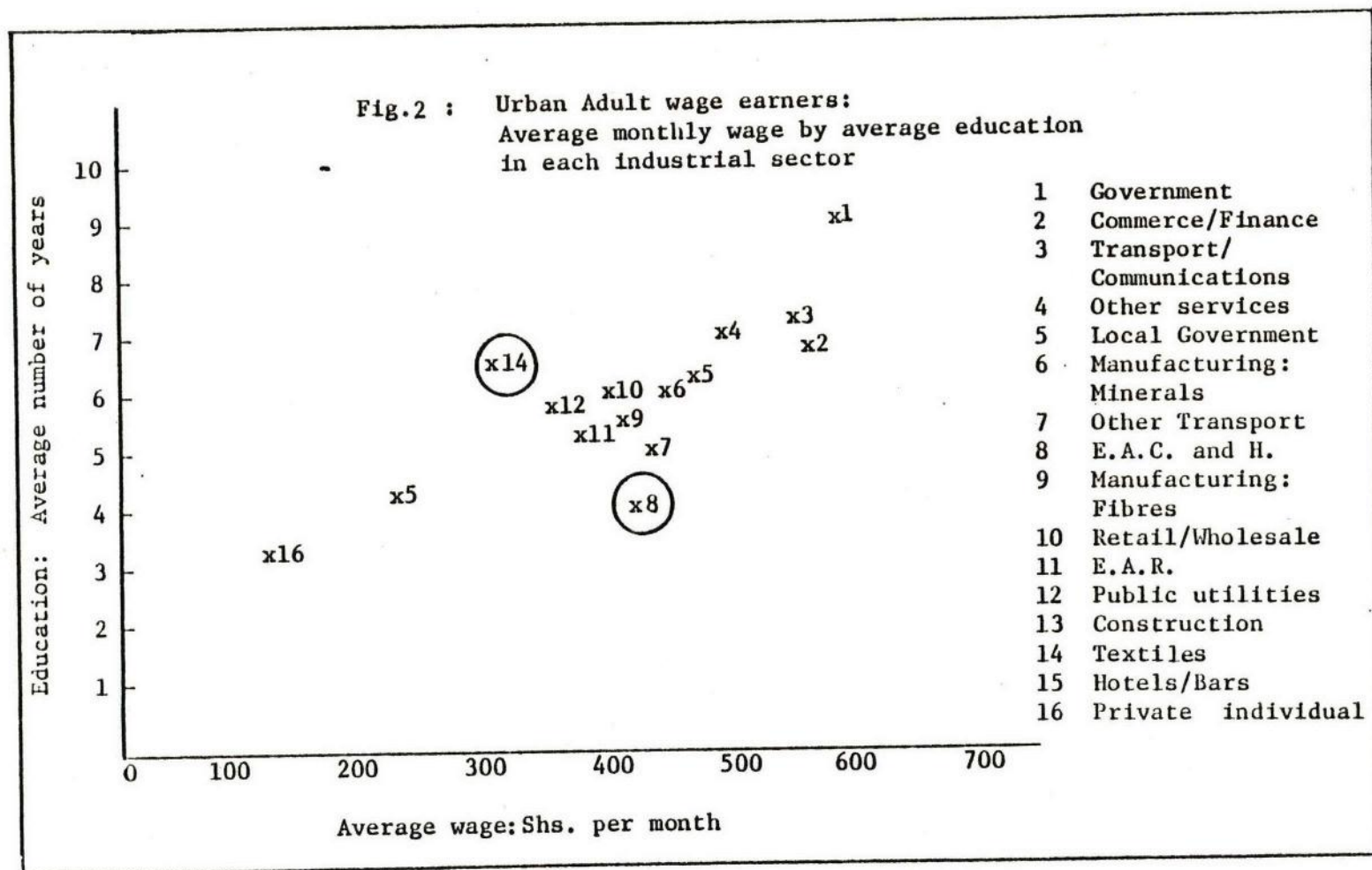
A more rigorous way of assessing whether the labor market is segmented by industrial sectors and, in particular, whether a worker's affiliation with the manufacturing sector, has a large independent impact on his wages, is to compare the wages in several sectors of workers with the same economic characteristics (and other characteristics that influence wages). Controlling for these characteristics would require multivariate analysis of the entire wage sector of the type we undertake in subsequent chapters for the manufacturing sector. Even a simple comparison between sub-sectors in average wages and the average years of education of the labor force does, however, substantiate the impression that the market for manufacturing labor is an integral part of the urban wage labor market. We saw above that the educational structure of the labor force was roughly the same as the educational structure of the wage labor force viewed in the aggregate. Table 4 disaggregates the urban wage sector into fifteen subsectors (including three manufacturing sectors) revealing considerable variance among these subsectors in educational attainment and a strong positive relationship between average wages and average education. This relationship is illustrated in Figure 2 which plots wages and education for each industry. The correlation coefficient between the two variables is 0.84. Omitting textiles and harbor services, the two "atypical" industries, raises the coefficient to + 0.94.^{1/}

^{1/} Marked differences from the norm in the average seniority of the labor force of these sectors appears to explain both why textile workers have rather low wages, given their educational attainment and why dock workers have relatively high wages, given their education attainment. Because the two largest textile mills in Tanzania were established relatively recently, textile workers were on their present job an average of 38 months, as compared to an average for all wage earners of 55 months. Dock workers, by contrast, work in a long established industry and their average level of seniority, 88 months, is well above the norm.

Table 4 : Urban Adult Wage Earners:
Average Wages and Education by Industry.

	Total Number	Average Wage:* Shs. per month	Average Education Years
1. Government	174	591	9.4
2. Commerce/Finance	111	558	7.2
3. Transport/Communic.	88	550	7.4
4. Other Services	178	508	7.4
5. Local Government	60	476	6.6
6. Manufacturing:Minerals	132	460	6.2
7. Other Transport	64	441	5.4
8. E.A.C. & H.	93	424	4.1
9. Manufacturing: Fibres	149	423	5.9
10. Retail, Wholesale Trade	128	422	6.1
11. E.A.R.	109	407	5.6
12. Public Utilities	76	384	5.9
13. Construction/Comworks	204	358	5.7
14. Textiles	148	333	6.7
15. Hotels, Bars	97	223	4.0

* Assumes Standard 1 to 4, Standard 5 to 8, and Post-Primary, have 4, 7 and 13 years of education respectively.



This suggests that if sector of employment does have an independent influence on wages it is unlikely to be large and that we can, with considerable confidence, generalize our findings regarding why wages differ in Tanzania's manufacturing sector to the urban wage sector as a whole.

4. The Coverage of the Flexible Income Sector

The relationship between education and earnings in "free entry" or "flexible earnings" sectors can be important for the evaluation of the benefits of additional investment in schooling. It is thus relevant to ask whether the manufacturing sector survey includes workers in the flexible wage sector. Previous analysis in Tanzania suggests that the urban free entry sector is comprised only of casual wage earners and a portion of the self-employed. Figure 1 indicates that among male labor force participants some 9.7% are casual employees and less than 20% are self-employed. Casual employees are included in the 1971 survey; table 5 indicates they comprise 11% of the sample. They will be included in the new survey as well. The relationship between education and wages among casual employees in 1971 has been examined and we plan to analyze changes over time in that relationship.

The only portion of the free entry sector from which we will not sample for the planned survey is comprised of the self-employed. Of course not all self-employment is free entry: capital, skills, etc., pose significant barriers in some activities and this is reflected in the structure of incomes within the sector. 1/ We fully recognize the importance of analyzing the relationship between education and earnings (productivity) among the self-

1/ See R. Sabot, "The Meaning and Measurement of Urban Surplus Labor," OEP, 1977.

Table 5: DEFINITIONS OF VARIABLES
AND COMPOSITION OF SAMPLE

<u>Symbol</u>	<u>Description</u>	<u>% of Workers in Sample</u>
R1*	Employment status	casual employee 10
R2	dummy:	regular employee 90
S1	Sex dummy:	male 89
S2		female 11
T1*	Race dummy:	African 91
T2		Non-African 9
E	Years of schooling	
E1*	Education dummy:	no education 15
E2		standards 1-4 19
E3		standards 5-8 52
E4		forms 1-6, university 15
F1	Formal training	3 months or less 9
F2	dummy:	more than 3 months 3
F3*		no formal training 88
L1	Experience:	years in current employment
L2		years of wage employment experience
L3		number of past and present jobs
L4		years of previous experience (L2-L1)
A1	Age dummy:	age 15-19 years 7
A2*		age 20-34 years 71
A3		age 35-49 years 20
A4		age 50 or more years 3
O1	Occupation dummy:	supervising 4
O2		clerical 12
O3		headman/skilled 28
O4		semi-skilled 32
O5*		unskilled 24
M1	Migrant status	migrant 67
M2*	dummy:	non-migrant 33
Q	Firm size:	number of employees 0-53 27
G		gross output 54-78 18
V		value added 79-139 20
		140-299 18
		300- 17
J1	Ownership status	wholly local and government owned 18
J2	dummy:	wholly foreign and private 22
J3		part local/foreign and private 22
J4		part local, mixed ownership 16
J5*		wholly local and private 22
VE	Value added per employee	
K	Capital intensity	
P	Rate of profit	
U	Proportion of workers unionized	
Q1, Q2, Q3* ... Q24	firm dummy	

Note: An asterisk to a symbol indicates that it acts as the base in a dummy analysis.

employed. In the proposal (summary paragraph 1 and page 5) this is noted as a significant gap in our knowledge regarding the impact of education on productivity. The issue of how best to measure this relationship is not a simple one. Clearly wage function analysis is inappropriate because no wages are paid. Dean Jamison and I have begun to explore the possibility of adapting the production function techniques he has used to assess the affect of schooling of farmers on their efficiency as farm managers. It looks as though Gary Fields will be contributing to this effort over the summer by surveying the existing literature on education and productivity in non-agricultural self-employment. We are not yet sure how severe will be the methodological problems we encounter in preparing for such an adaptation. What is certain is that the empirical work involved will be substantial. Jamison's project in Nepal is costing \$90,000 and is now in its third year. This type of research will be done in due course, but it cannot be done properly within the context of Phase I of this project.

There is, however, quite detailed existing data on the self-employed which we intend to exploit. This data was generated by NUMEIST and will permit a crude assessment of the relationship between the incomes of own-account workers and their level of education.

5. The New Survey

The new survey will duplicate as closely as possible the 1971 survey. Respondents will be randomly selected from the same firms. Additional firms will be sampled to compensate for the "death" of some firms since 1971 and for the "birth" of others. The same questionnaire will be used, though in a somewhat expanded form. The data on the characteristics of the firms, their size, capital intensity, etc., also will be updated. Two such comparable data bases will permit a unique documentation of changes over time in the composition of the wage labor force and in the structure of wages.

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: April 30, 1979

FROM: Suman Bery, VPD *JSB*

SUBJECT: A Panel to Review a Research Proposal:
"A Comparative Study of Labor Market
 Consequences of Educational Expansion"

1. The panel consisting of Messrs. D. Turnham (Chairman), M. Ahluwalia, R. Gulhati, J. Maas, G. Tidrick and M. Zymelman will be reconvened to review the attached proposal on Thursday, May 3 at 3:00 p.m. in Room K3700. *See behind the folder*

<u>Proposal</u>	<u>Staff Responsible</u>	<u>Amount Requested</u>
A Comparative Study of Labor Market Consequences of Educational Expansion	R. H. Sabot	\$78,020

2. The panel is expected to consider issues such as:
 - (i) Is the proposed research of interest to the Bank?
 - (ii) What contribution are the research findings expected to make to the Bank's operations?
 - (iii) Are the hypotheses to be tested and the methods of analysis well defined? Will they yield robust conclusions?

Guidelines designed for the preparation and submission of research proposals are attached to assist you in the review.

Attachments

Distribution:

Messrs. D. Turnham, M. Ahluwalia, R. Gulhati,
 J. Maas, G. Tidrick, M. Zymelman

cc: Messrs. B. Balassa, B. King, T. King, R. Sabot

RHSabot:mh

OFFICE MEMORANDUM

-A files

Research - General

TO: Mrs. Ann O. Hamilton, Chief, ASADB
FROM: A. Pinell-Siles, ASADB *APS*
SUBJECT: INDIA - Economic and Sector Work Program

DATE: April 16, 1979

IN - Programs Economy

cc NRIC.

1. A meeting was held in Mr. Waide's office on April 10, 1979, to take advantage of the presence of Messrs. Yenai and Baird to discuss the economic and sector work on India for the next two or three years. The meeting was chaired by Mr. Waide and attended also by Mrs. Hamilton, Mrs. Hong, Messrs. Jansen, Wall, Grawe, McGregor and Pinell-Siles.

2. In relation to the 1980 Economic Report, Mr. Yenai suggested three topics: a) Current Developments, b) Report on research studies on India and c) Case Studies of one or two Indian States (Bihar and perhaps Orissa). The second part could report on some of the following: i) Small Scale Industry Studies (Dipak Mazumdar et al), ii) Basic Needs in Kerala (B. Minhas), iii) T.N. Srinivasan's research project if results become available on time, iv) I.J. Singh on Small Farmers and the Landless, v) Tax Efforts of States (R.Chelliah), vi) Deepak Lal's research on agricultural wages and labor markets, vii) Zachariah's study on fertility decline in Kerala and Tamil Nadu. DPS would be consulted in order to ascertain whether DPS would be able to provide interim reports on at least some of these research projects in time for the economic report (October 1979). The case studies of specific States would concentrate on Plan Implementation, Budgeting, Project Execution, Basic Needs and Resource Mobilization.

3. Other topics suggested for treatment in next year's economic report are:

- a) Trade Policy Questions: related to both exports and imports and changes in the incentive structure.
- b) Transportation: There is need for a study identifying the main economic issues in this sector (involving both policy and analytical questions). Several GOI Reports on the subject are expected to be finished soon and could be a useful input for this study. The regional transportation projects division or CPS Transportation Department could contribute to this task.
- c) The use of better modeling tools for macroeconomic analysis was recommended. DPS could contribute to this task.

4. Other studies which could be of relevance for next year's Economic Report, but which may have a longer time horizon, are the following:

APR 18 1979

April 16, 1979

- a) Industry: Mr. Waide will prepare detailed terms of reference for future work on Industry.
- b) Power Studies should remain high in our research agenda because of the importance of this sector. It was agreed that Mr. Yenai would contact Mr. Ralph Turvey for possible involvement in this sector.
- c) Agriculture: Several topics were suggested under this heading.
 - i) Irrigation: World Bank experience in relation to efficiency issues, technology and organization. (This would be a contribution from Projects Department primarily.)
 - ii) Analysis of supply and demand and of pricing policies for four or five major crops (especially cash crops). Studies already begun by NDO on Cotton (LeBreton) and Sugarcane (P. Dax) should prove useful in this regard. Oilseeds may be another area where Project Department could contribute. Mr. McGregor (YP) is presently working on demand patterns for non-food crops.
 - iii) Fertilizers: patterns of use by crops and by categories of farmers.
 - iv) Employment generation in Agroindustries. (Mrs. Hong to finish paper in about a month)

5. In view of the extensive list of topics suggested for further study, there is need to narrow these down. Projects Department should be consulted as soon as possible in relation to their contribution to economic and sector work, especially in agriculture. John Wall suggested that the work on urban issues and the education sector in the FY80 ESWP indicative statement be dropped from the FY80 program to accommodate the lower number of manweeks now available.

6. Finally, it was agreed that Mr. Yenai would prepare an annotated outline of next year's Economic Report for discussion during Paris' meetings in June, and John Wall would take the above points into consideration in revising the ESWP for FY80.

cc and cleared with: Messrs Waide (ASNVP), Wall (ASADB)

cc: Messrs. Wiehen (ASADR), Rajagopalan (ASP), Rowe (ASP), Jansen (ASADR), Yenai, Baird, Harison (NDO), India Division Economists

APSiles:nc

Mr. Graham Pyatt, DRC

April 13, 1979

Wilfred L. David, AGREP

Research Proposal

Enclosed is a revised version of the research proposal which we recently discussed. In terms of the adaptation of the SAM framework to agricultural and rural sector work, our tentative plans are to consider the following countries during the initial phase: Ghana, Upper Volta, Trinidad and Tobago and possibly Yugoslavia and China. This should provide a good mix of country experiences. However, at a later stage we may also want to try other cases of interest to the Regions and/or OED (as per our discussion).

Your assistance is grateful appreciated, and we look forward to further collaborative efforts as the project gathers momentum.

Enclosure

cc: Messrs. Pasquale Scandizzo
Graham Donaldson

WLD:vau

Class of Service: **TELEX OR FULL RATE**Date: **APRIL 13, 1979**Telex No.: **BOOK OF FIVE**Originators Ext: **74948***LC4*0 **START
HERE**1 **TO** **BOOK OF FIVE***Research - General
(Sri Lanka - Material Allocation
and Info. system)*

CITY/COUNTRY

MESSAGE
NO.:*954-1232: FORAID: PLS DLVR*

DR. W. M. TILAKARATNA
SECRETARY
MINISTRY OF FINANCE AND PLANNING
AND SECRETARY TO THE TREASURY
COLOMBO, SRI LANKA

Cable: **FORAID**
954-1176 **COLOMBO, SRI LANKA**

MR. T. SIVAGNANAM
SECRETARY
MINISTRY OF MAHAWELI DEVELOPMENT
COLOMBO 10, SRI LANKA

Cable: **MAHAWELI**
COLOMBO, SRI LANKA

MR. JAMES H. LANEROLLE
SECRETARY
MINISTRY OF POWER AND HIGHWAYS
COLOMBO, SRI LANKA

Cable: **FORAID**
COLOMBO, SRI LANKA

DR. S. VELAYUTHAM
DIRECTOR
EXTERNAL RESOURCES DEPARTMENT
MINISTRY OF FINANCE AND PLANNING
COLOMBO, SRI LANKA

Cable: **FORAID**
COLOMBO, SRI LANKA

MR. DAVID THOMAS
RESIDENT REPRESENTATIVE
COLOMBO, SRI LANKA *#134*

Cable: **INTBAFRAD**
COLOMBO, SRI LANKA

*954-1232*21 **END
OF
TEXT****APR 17 REC'D****NOT TO BE TRANSMITTED**

SUBJECT:

DRAFTED BY:

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

DEPARTMENT:

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Class of Service: TELEX OR FULL RATE Date: APRIL 13, 1979Telex No.: BOOK OF FIVE Originators Ext: 74948

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END
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ADDRESSED TO DR. W. M. TILAKARATNA, COPIED TO MR. SIVAGNANAM,
MR. LANEROLLE, DR. VELAYUTHAM, AND MR. THOMAS. REFERENCE MATERIALS
ALLOCATION AND INFORMATION SYSTEM. ALPHA FURTHER TO OUR DISCUSSIONS
DURING YOUR RECENT VISIT TO WASHINGTON, I AM PLEASED TO INFORM YOU
THAT MR. CANDLER PROPOSES TO ARRIVE COLOMBO ON MONDAY, APRIL 30, AT
11.35 HOURS ON FLIGHT SQ49 TO DISCUSS THE ABOVE REFERENCED WITH YOU
AND YOUR COLLEAGUES. MR. CANDLER WILL BE JOINED BY MR. KITE,
CONSULTANT, WHO PLANS TO ARRIVE MONDAY, APRIL 30, AT 14.00 HOURS
ON FLIGHT SU543. THEY WILL DEPART COLOMBO ON WEDNESDAY, MAY 9, AT
23.00 HOURS. GRATEFUL YOUR ADVISING CONVENIENCE OF THESE
ARRANGEMENTS.

BETA MESSRS. CANDLER AND KITE REQUEST AN OPPORTUNITY TO MEET ON
TUESDAY MORNING, MAY 1, WITH DR. TILAKARATNA AND OTHER OFFICIALS
FROM HIS MINISTRY WHO WILL BE RESPONSIBLE FOR INFORMATION SYSTEM.
THEY WOULD SPEND BALANCE OF TUESDAY MORNING WITH THESE OFFICIALS
AND TUESDAY AFTERNOON WITH INTERDEPARTMENTAL OFFICIALS RESPONSIBLE
FOR SUPPLYING DEPARTMENTAL INPUTS TO SYSTEM AND WHO WILL BE USING
SYSTEM RELATED REPORTS. A VISIT TO COMPUTER FACILITY, MEETING
WITH THE PROGRAMMER/SYSTEMS ANALYST WHO WILL WORK WITH INFORMATION
SYSTEM, AND MEETINGS WITH INDIVIDUAL MINISTRIES TO ASSESS CURRENT
INFORMATIONAL STATUS AND NEEDS WOULD BE HIGHLY DESIRABLE AND
/c

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SUBJECT:

DRAFTED BY:

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DEPARTMENT:

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Class of Service: **TELEX OF FULL RATE** Date: **APRIL 13, 1979**
Telex No.: **BOOK OF FIVE** Originators Ext: **74948**

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GREATLY APPRECIATED. THANKS AND BEST REGARDS, SHIBUSAWA

CITY/COUNTRY

**MESSAGE
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**END
OF
TEXT**

NOT TO BE TRANSMITTED

**SUBJECT: Materials Allocation &
SRI LANKA - Information System**

**DRAFTED BY:
B Travis**

CLEARANCES AND COPY DISTRIBUTION:
cc: Mr. Hopper (ASNVP)
cc: Messrs. Wiehen (ASADR)
Duloy, Candler (DRC)
Lateef, Ahmed (ASADC)

**AUTHORIZED BY (Name and Signature)
A. H. Shibusawa, Division Chief**

**DEPARTMENT:
South Asia Department**

**SECTION BELOW FOR USE OF CABLE SECTION
CHECKED FOR DISPATCH**

✓ Research - General
cc DPA - General

Mrs. Helen Hughes, EPD

March 28, 1979

Bela Balassa, VPD

Real Product and Purchasing Power Comparisons

The Research Committee discussed the above proposal at its meeting on March 16. Given the ambiguities and uncertainties on the scope of the intended work and its objectives, the committee requested the proposal's sponsors within the Bank to convey the following points to Professor Kravis:

- (i) The Research Committee was not willing to entertain a request for pure budgetary support and would require a clear statement of research objectives, work program and intended output.
- (ii) The interest of the committee was in making better use of available data in refining reduced information techniques and validating them against full information estimates. It was not interested in financing further country studies or substantial primary data collection.
- (iii) The committee would review a submission from the Kravis team on its merits and was not willing to make any commitment at present on the likelihood or scale of possible financial support.

cc: Mr. R. McPheeters

SKBery:lt

Research General

Those Listed Below

March 27, 1979

Bela Balassa, VPD

Specialized Panel Reports

I enclose a summary of the evaluation of past research and recommendations for future research directions contained in the reports of the specialized panels. This summary has been prepared for the use of the General Research Advisory Panel that may include it as a chapter, or as an appendix, in its report.

To the extent possible, direct quotations from the reports of the specialized panels have been used or statements made in the report have been paraphrased. Nevertheless, at some points the specialized panel reports might not have been correctly interpreted. To avoid this possibility you are asked to provide comments, preferably with suggested changes in wording. Your comments should reach me on March 29 c.o.b.

Distribution:

Messrs. J. Duloy/G. Pyatt
B.B. King/T. King/M. Leiserson/L. Westphal
Ms. H. Hughes/Mr. S. Singh
C. Willoughby/C. Harral
Y. Rovani/P. Munasinghe
K. Kanagaratnam
H. Aklilu/M. Hultin
M. Yudelman/G. Donaldson

BBalassa:lt

OFFICE MEMORANDUM

TO: Mr. Bela Balassa
FROM: Kevin Cleaver, EMPA2
SUBJECT: Project Design

DATE: March 22, 1979

Research - General
(Proj - Design)

1. I was talking to Wilfred Candler recently about the research proposal being advanced by Gary Kutcher, on modelling in Project Design; and Will showed me a draft table of contents for a monograph which would emerge from the project. This looks like an interesting and exciting project. I would like to see the DRC's, and Bank's, experience with modelling as a part of project design brought together in one place. Certainly, if this monograph had existed when I first entered the Bank, it would have been a most useful professional introduction to the work I am now involved with.

2. I think you can be assured that there would be a receptive audience in the project departments for this type of book, since there is a growing realization that many of our projects emerge from an examination of only two or three project configurations, with many alternatives remaining unexamined.

cc: Messrs. Candler, Duloy, Kutcher

OFFICE MEMORANDUM

TO: Files

DATE: March 21, 1979

FROM: Ardy Stoutjesdijk, DED *AS*SUBJECT: Operational Support and the Dissemination of Research: The Case of TSKB

1. During the Summer of 1978, a mission from the Turkish Industrial Development Bank (TSKB) visited the Bank. At that time, at the suggestion of the Regional Office, Mr. Meeraus (DRC) and I met with Mr. Tolgay Cavusoglu to discuss a study that the TSKB was planning to undertake of the chemical sector, in an attempt to provide a basis for rationalizing the existing industrial plants in that sector, and to identify promising expansion possibilities. Given our experience with industrial sector planning, he expressed an interest in collaboration with the Bank. We expressed guarded interest in such collaboration, indicating that time availability on our part was a serious problem. The Regional Office was informed that we had reached tentative agreement to visit TSKB and review the study in more detail as a basis for a concrete proposal to collaborate.

2. Early October, 1978, I visited TSKB (at DPS expense), reviewed the work done so far, discussed alternative analytic approaches, and made recommendations on organizational requirements. It became clear that the TSKB team needs help on the analytic and computer aspects of the study, but that internal organization and data collection are well in hand, and that financial resources for local expenditures are ample. However, as our involvement and that of consultants with special expertise requires foreign exchange, which the World Bank would presumably have to provide, I could not commit myself to any particular degree of assistance until agreement had been obtained from the relevant Regional Office, EMENA. At the same time, based on previous experience with other, similar technical assistance efforts, I expressed the expectation that, at a minimum, periodic review and advice on our part would be possible. TSKB management subsequently approved the total budget for the study, in part I believe as a result of my expression of probable support, shortly after my departure.

3. Upon return to Washington, I reported the state of affairs to EMENA and was asked to produce a tentative budget. Including a contingency for consulting services that may not prove to be necessary, I estimated that the budget for two years would amount to a maximum of \$30-35,000 (in comparison to the equivalent of \$1 million from TSKB sources). In spite of keen interest on the part of EMENA staff (including Messrs. Dubey, Zaidan and Maniatis), I have now been informed that the Region is unable to finance this technical assistance effort.

4. This experience provides a good illustration of the difficulties that Bank staff currently encounter in efforts to disseminate relevant research expertise in the form of operational support that is not programmed and budgeted in the conventional manner, i.e., generated through Forms 700. Staff time devoted to such efforts does not get reflected in budget documents as operational support. Financially, they are beyond the scope of the Research Budget, and it is only to a very limited extent that DPS or Regional budgets can accommodate them. Nevertheless, it is frequently precisely this

type of operational support that is sought by member countries, as it provides an effective vehicle for institution-building and transfer of technical know-how. Recently, there has been discussion regarding the desirability of delegating authority over a proportion of the Bank's research resources to the Bank's Regional Offices. Instead of, or perhaps in addition to, thought might be given to the introduction of a modest Regional technical assistance budget that can be used to finance dissemination of research directly relevant to the Bank's developing member countries.

cc: Messrs. A. Karaosmanoglu
B.B. King
V. Dubey
J. Duloy

AStoutjesdijk:crs

Research - General

The World Bank / 1818 H Street, N.W., Washington, D.C. 20433, U.S.A. • Telephone: (202) 477-1234 • Cables: INTBAFRAD

March 16, 1979

Mr. Assar Lindbeck
Director Institute for International Economic Studies
Fack
S-10691
Stockholm 50
Sweden

Dear Assar:


I wish to thank you for the excellent report you and your colleagues have prepared on Bank research on Industry and Trade. I very much appreciate all the efforts you have made to arrive at a balanced and fair evaluation of the research program in this area. Also, the recommendations for future research and on the application and dissemination of research will be very useful for us in shaping the future program.

I would also like to thank you for the efforts you have made to respond to our many queries and comments on earlier drafts. This has not been an easy task, given that views on a variety of matters differ within the Bank. An example of this difference is shown in the enclosed memos by Messrs. Waide and Westphal on the research generation process in the Bank.

I enclose some further memos that contain comments by several researchers at the Bank. I do not wish myself to make any further comments on your text at this stage. However, I would like to ask that you write a short summary not exceeding two or three pages, in which you summarize your recommendations that are contained in chapters 1 and 2. Such a summary would be of great assistance to the management of the Bank as well as to the General Research Advisory Panel.

I look forward to receiving the appendices dealing with the individual research areas.

Yours sincerely,


Bela Balassa
Acting Research Adviser

Enclosures

cc: Panel Members

Messrs. Chenery and Bery

The Research Committee

March 14, 1979

John A. Holsen

Supplementary Comments on Proposals for Further ICP Studies

1. As noted in the addendum to the panel's previous memorandum, the February 16 review was followed by a March 2 meeting with the sponsors of the subject proposals to discuss how they might be revised to respond to the concerns expressed by panel members. Revised proposals were submitted on March 6 and the panel met to consider them on March 12. The documents on the revised proposals have been distributed to the members of the Research Committee.
2. Regarding the proposal for work by Professor Marris, \$88,000 is now requested for a program consisting of research related to (a) service sector estimates and index number problems and (b) reduction of "noise" in short-cut estimates along with (c) the use of the resulting real-product estimates in non-linear models of economic growth. In addition, arrangements will be made to incorporate the data used and developed in the above work into the Data Bank-Fund and Professor Marris will prepare some notes on uses and abuses of ICP data. The panel recommends the approval of this revised proposal, which identifies reasonably clearly defined research activities which fit within the EPD/DPS work program related to ICP data.
3. A revised proposal has also been submitted which requests \$150,000 to finance "Continuation of the Bank's Association with the Kravis Team" (\$50,000 annually for three years). In its present form this proposal remains more a request for "budgetary support" than a concrete research proposal which could be reviewed by the panel. The Kravis team is expecting to receive funding from the National Science Foundation which will permit them to undertake analytical work with the ICP data now available. The proposed project for which Bank support is requested would finance research on short-cut and reduced information methods and also the collection of data related to limited information estimates, but the specifics are yet to be worked out. The EPD/DPS believes that, if Research Committee approval in principle is obtained, it will be possible to work out with Professor Kravis a satisfactory three year work program (including identification of the principal outputs and their delivery times) which could then be submitted for the Research Committee's approval.
4. In the absence of a more complete submission from Professor Kravis, the panel does not have sufficient information to conduct the usual sort of review and to make a definite recommendation with respect to this proposal. It recognizes, however, the general desirability of some continuing association with the work of the Kravis team. In these circumstances, the panel believes that the Research Committee should choose among the following alternatives:
 - (a) Approval of the \$150,000 essentially as a form of "budgetary support" for the Kravis team, leaving the specific work program to be negotiated and approved by EPD.

- (b) Approval in principle of the \$150,000, but with final approval subject to completion of a specific work program which would have to be approved by the Research Committee. (The work program would be concerned primarily with improvement of and data collection for limited information methods.)
- (c) Postponement of any decision until such time as a more conventional and detailed work program has been submitted and reviewed by the panel.

5. In the February 16 meeting of the panel Mrs. Hughes proposed the creation of a "user-cum-steering" committee to guide the Bank's continuing involvement in ICP work. The panel suggests that (a) the establishment of such a committee be a "condition of effectiveness" for continuing support from the Research Committee's budget for ICP work and (b) the Research Committee be represented on this committee.

JAHolsen/ddm

Distribution

Mrs. Hardy
Mr. Isenman
Mr. Pyatt o/r
Mr. Balassa
Mr. Bery

March 16, 1979

Mr. Sudarshan Lal
B-2 'Dhanastra',
Wodehouse Road,
Colaba,
Bombay-400 005
(India)

Dear Mr. Lal:

Your letter of January 30, 1979 has been referred to me by Mr. Chenery for handling.

While the topic you propose to study is clearly one of importance, I regret that the Bank presently has no allocation of funds for direct support of research by outside scholars. I shall however, circulate your letter to the relevant departments in the Bank, who may be interested in your proposal and ask them to contact you directly.

Yours sincerely,

Suman Bery
Secretary to the
Research Committee
Development Policy

cc: Messrs. Westphal, Anderson, Gordon (attachment)

Mr. Chenery (w/original incoming letter)

OFFICIAL FILE COPY

The Research Committee

March 6, 1979

John A. Holsen

Proposals for Further ICP Studies

1. A Research Committee Panel met on February 16, 1979 to review proposals presented by EPD/DPS for further financing for work related to the International comparisons of real product and purchasing power project (ICP). The request included (1) \$150,000 to finance continuing work by Professor Kravis and his associates and (2) \$79,600 to finance ICP-related work by Professor Marris. Panel members included Ms. C. Hardy and Messrs. P. Isenman, G. Pyatt and J. Holsen (chairman). The proposals were presented by Ms. Helen Hughes and Mr. R. McPheeters. Messrs. Balassa and Bery also participated in the meeting; Professor Marris attended part of the meeting.

2. Professor Kravis' request, as outlined in his letter of last October 5, involved (a) continuing work on short-cut and reduced information methods to expand country coverage and (b) studies of the international economic structure based upon data from Phase III (being completed this year). Ms. Hughes, however, indicated that she had talked to Professor Kravis and that he would be agreeable to concentrating on data collection for reduced information estimates. Professor Marris' proposed work included (a) developing real product time series covering over 100 countries for the EPD data bank, (b) writing a "guide" to ICP data and (c) projecting the level and distribution of world GNP.

3. Ms. Hughes introduced the discussion by noting that ICP work was now entering the applications phase and that much depended upon continued Bank support to encourage the adoption of practical and efficient procedures. She proposed the establishment of a "user-cum-steering" committee to guide the Bank's involvement. Regarding the researchers for whom support was requested, she pointed out that it was important to keep the Kravis team together while at the same time one wished to introduce new ideas (as could be done by Professor Marris). Ms. Hughes said she wished to increase her in-house capacity for ICP work, but faced serious budgeting restrictions; the work that might be done by Marris would partially compensate for this.

4. Panel members expressed doubts as to whether the proposals before them were really research proposals; in many ways they were more like requests for budgetary support. In the case of the work to be done by Professor Kravis, there was a difference between what he proposed in his letter and what he apparently had agreed to in conversation with Ms. Hughes. Some participants in the meeting expressed doubt as to the Bank's ability to greatly influence the content of Professor Kravis' activities, especially in the present case where we would be providing only partial financing. In any event, panel members felt that what they had before them was not really a research proposal.

March 6, 1979

5. Insofar as Professor Marris' proposed work involved drafting a "guide" to ICP data and analysis, although this looked like something that was worth doing, it did not meet the normal research project requirements. The same might be said of the preparation of information for the data bank; here, however, it was recognized that some new approaches would be employed for the service sector estimates.

6. Panel members agreed that further support of ICP work was desirable, that individuals such as Professor Marris should be encouraged to become involved, and that ICP work had now reached the stage where much of it should be internalized as part of regular DPS activities. They concluded, however, that the particular proposals before them did not meet the normal requirements for financing by the Research Committee. The panel thought that it should be possible to identify, within the EPD/DPS work program related to the ICP, particular activities that would be suitable for support by the Research Committee. (Work on alternative techniques for services sector estimates could be an example.) It consequently is recommended that (1) EPD be asked to revise and re-submit the proposals for research work related to ICP and (2) the Research Committee provide guidance on the extent to which it would be willing to provide some form of budgetary support for Professor Kravis' work if it were not possible to work out a conventional type research proposal. In the case of Professor Marris, either the "guide" should be dropped or the case strengthened for using research funds for this purpose. In the case of Professor Kravis, panel members expressed the hope that it would be possible to work out a revised research proposal which emphasized limited information methods. The proposals should be presented in the broader context of how the Bank sees its role in further development of the ICP approach (including how relevant data and analysis will be available for use within the Bank).

JAHolsen/ddm

cc: Ms. Hughes / Ms. Hardy
Messrs. Isenman
Pyatt
McPheeters
Balassa
Bery

Addendum: Panel members held a second, informal, meeting with Ms. Hughes, Professor Marris and Mr. McPheeters on Friday morning, March 2; Mr. Balassa also participated. During that meeting the views of the panel members were discussed and ways of responding to them were considered. Revised proposals are now being prepared and another panel meeting will be held as soon as they have been submitted.

OFFICE MEMORANDUM

TO: Mr. David Gordon - IDFDR

DATE: March 2, 1979

FROM: Hans Fuchs - IPDDR

SUBJECT: Research Proposal for Industrial Statistics

1. One basis for the research proposal is the alleged shortcomings of the U.N. Yearbook of Industrial Statistics, in particular:

Lack of comparability of national statistics. e.g., with respect to coverage, relationship to data used in national accounts, etc.;

Lack of data at the 4-digit level.

2. The need for better data is said to be important for the following aspects of IBRD work: measuring broad magnitudes of industrial output, measuring export market penetration (at the 4-digit level), identification of the informal manufacturing sector and, as an "anchor" for more specific industrial project data.

3. The Industrial Division of the U.N. Statistical Office is a highly competent group that has been engaged for a number of years in trying to improve the quality of industrial statistics in developing countries as well as the international comparability of such statistics. For reasons of economy of effort and widest possible dissemination of results, attempts at improving the data base should by preference be channelled through the U.N. Statistical Office. May I suggest that a meeting with the U.N. Statistical Office to discuss this matter where all interested parties in the Bank would be represented would be highly useful.

4. In such a context, it would be important to define what might be some of the remediable shortcomings of the U.N. system of industrial statistics in relation to our stated needs. On this, I have the following observations:

a) In terms of measuring broad industrial trends, U.N. statistics are reasonably adequate and probably the best that can be expected.

b) There are two related reasons why data at 4-digit industrial classifications are not more generally available. First, they assume a degree of industrial and establishment specialization that is characteristic only for the largest industrial nations. Second, where such specialization occurs in a smaller country, only one or two units may be involved and structural data cannot be published under statistical disclosure rules. Some of these problems can be met by increased activity reporting (e.g., a large integrated forest industries firm would supply separate data on its forest output, its pulp production, newsprint production, etc.). This has been

March 2, 1979

a very long, hard row to plow in industrialized countries with respect to industrial census data and in the financial reporting has only recently been required in the United States for firms above a certain size. As an example of the problems in this field, it is very difficult to obtain a view of the profitability of ammonia manufacture in major producing countries.

c) I am not sure what is meant by the "informal manufacturing sector" which, as far as I know, is not a statistical definition. I interpret this as referring to establishments which are not covered by the industrial censuses. Yet, typically industrial censuses include even the smallest establishments on a sampling basis. In terms of broad trends, one would assume that establishments not included are not important. I realize that this is not strictly true, and that there would be a lack of comparability if we wanted to know about employment in the "informal sector" in different countries. Yet, I would think this problem could be tackled directly rather than by the all-encompassing statistical exercise that has been suggested.

d) In our experience, the proposed data system would not be useful in providing "anchor" data for project appraisal. Whether the purpose is market study, analysis of industrial structure or international comparisons of productivity, we have to use more direct and specific approaches.

4. In conclusion, it has not been demonstrated that the proposed project would achieve significant improvements in our data base or that the Bank would be the best agency for a research effort in this field. I therefore do not support the project.

5. I would, however, make a counterproposal. One of the problems in analyzing country industrial performance is the unreliability, conceptual horizons and lack of comparability of industrial production indices. As one example only, if a country establishes a basic industry which has a ratio of domestic resource cost to value added at international prices of 4:1 it would be accounted for in the production index at the domestic cost rather than the international cost. This, of course, also greatly falsifies such performance indices as capital-output ratios or manpower productivity data. Much analytical work based on available data is therefore of highly questionable significance. As a beginning, a sample study of comparable real increases in production in some developing countries would be of considerable interest.^{1/}

^{1/} I hope you will not regard it as petty criticism when I mention that the "country industrial indicators" which would be generated under research project include value added, etc. at current prices but no similar data at constant prices. Why should the analysis stop at exactly the point where some interesting results are in sight?

cc. Messrs. Dewey, Walstedt, Moore (IDF), Richardson (CDD), Westphal (DED)
B. King (DED), Ms. Helen Hughes (EPD), Sang E. Lee, Panoutsopoulos

BWalstedt/cl

Research - General

International Bank for Reconstruction and Development
International Development Association

SecM79-110

FROM: Vice President and Secretary

February 28, 1979

WORLD BANK RESEARCH PROGRAM

Abstracts of Current Studies

- filed separately*
1. Attached for information is a booklet entitled "World Bank Research Program: Abstracts of Current Studies".
 2. In view of the ongoing work by the various Research Advisory Panels on the Bank's Research Program, a full-scale report on the Program is not envisaged at this stage, but an updating report will be distributed for information by March 30, 1979.
 3. The General Research Advisory Panel (chaired by Sir Arthur Lewis) is expected to issue its final report in the Fall, on the basis of which a Board discussion of the World Bank Research Program will be scheduled.

Distribution:

Executive Directors and Alternates
President
Senior Vice President, Finance
Vice President, Operations
President's Council
Vice Presidents, IFC
Directors and Department Heads, Bank and IFC

Mr. Purviz Damry, SEC

February 22, 1979

A. Karoasmanoglu, VPD

Information to the Board on the
World Bank's Research Program

1. As you are aware, Mr. McNamara agreed last July that no full-scale report on the research program be prepared this year, and that instead a short updating report be circulated to the Board for information (see memorandum from Chenery to McNamara, attached).

2. In transmitting the new version of the "Abstract of Current Studies" to Board members, you may wish to inform them that, in view of the documentation on Bank research being generated by the various Research Advisory Panels, a full-scale staff report on the Bank's Research Program is not planned for this year. Instead, a short updating report will be circulated to the Board for information by March 30th. The Board's discussion of the research program will be scheduled once the report of the General Research Advisory Panel (chaired by Sir Arthur Lewis) has been finalized, which is currently expected to be early in the fall.

Attachment

cc and cleared by Mr. B. Balassa

cc: Messrs. H.B. Chenery
S. Bery

February 16, 1979

Dr. James G. Ryan
ICRISAT
1-11-256 Begumpet
Hyderabad 500016
Andhra Pradesh
INDIA

Dear Jim,

I understand that I.J. Singh has talked to you about the research proposal that I have submitted to the World Bank's Research Committee. In addition I understand that Peter Hazell has talked to Hans Binswanger about the possibility of some cooperation between ourselves and ICRISAT on the risk side of farmers' adoption practices in northern Nigeria. I also think that Pasquale Scandizzo has been talking to Binswanger and John Dillon about the possibility of doing some joint work on risk but without tying down a location.

As you will see from the proposal I raised the possibility of collaboration with ICRISAT and at the request of the Research Committee, I am now writing to you formally to initiate discussions on the possibility of cooperation between our two institutions. A copy of the proposal is attached and, as you will see from the budget, we have built in some funds for possible collaboration with you. We would hope that it might be possible for Binswanger or one of those who have worked closely with him, to come over to Nigeria and help design the risk questionnaires and discuss methods of incorporating risk into ~~the~~ L.P. framework. I imagine this would be sometime early next year.

I look forward to hearing from you in due course.

Yours sincerely,

Paul S. Zuckerman
Agricultural Economist
Agricultural Projects 1
Western Africa Regional
Office

ENC: (1)

PSZuckerman:sg

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: February 15, 1979

FROM: Suman Bery, VPD *SKB**Research - General*SUBJECT: Forthcoming Research Committee Meetings

1. The next meeting of the Research Committee will be on March 16th. Following this meeting the Committee is expected to meet again in mid-May to consider requests for funding in FY80 and beyond. A further meeting may be scheduled in mid June if circumstances so warrant.

2. In order to be considered at the May meeting, draft proposals should reach this office by March 26th, in a form suitable for workshop discussion. Ten copies of the draft should be provided. Following the workshop, proposals would need to be submitted complete in all respects by April 9th. This office should be provided with five copies and the original of the final proposal.

3. I would appreciate it if those planning to submit research proposals for the May meeting could inform me of their intentions by March 2nd.

Distribution:

Research Committee Members
DPS, CPS Directors and Division Chiefs
Regional Chief Economists
DPS, CPS Administrative Assistants
Mrs. L. Cleave
Ms. M. Hazzah

SKB:bf

February 14, 1979

Professor Thomas A. Reiner
University of Pennsylvania
Regional Science Department
3818 Locust Walk CR
Philadelphia, Pennsylvania 19104

Dear Professor Reiner:

In Mr. Chenery's absence, I have been asked to respond to your letter to him.

I attach a copy of our booklet "World Bank Research Program: Abstracts of Current Studies" which appears to be the document you had in mind. In addition, I have passed on your letter to Mr. Douglas H. Keare, Chief of the Urban and Regional Economics Division of the Development Economics Department. This division is the locus of most Bank research in regional economics which I take to be your primary interest.

Thanking you for your interest,

Yours sincerely,

Suman Bery
Secretary to the
Research Committee
Development Policy

The World Bank / 1818 H Street, N.W., Washington, D.C. 20433, U.S.A. • Telephone: (202) 477-1234 • Cables: INTBAFRAD

February 9, 1979

Ms. Patricia L. Hartman
Assistant to the Director
Harvard Institute for International
Development
1737 Cambridge Street
Cambridge, Massachusetts 02138

Dear Ms. Hartman,

This is in response to your letter of January 11, 1979 inquiring about the World Bank's procedures for support of outside, independent research in the area of international development.

The research undertaken by the World Bank is intended to be closely related to its operations. As such, research is initiated by individual departments in the Bank to meet their specific needs. While much Bank research is carried out in collaboration with consultants or other research institutions, preference is given to institutions in developing countries. The Bank has no specific allocation of funds to finance independent research in other institutions.

The best procedure for your staff would be direct contact with individual research and operating departments in the Bank with the aim of generating a collaborative research proposal to be funded by the Bank's research budget. I enclose a set of the Guidelines we have prepared to assist Bank staff in formulating research proposals. These may serve to give you an idea of the format and scope of a formal submission. To be considered by the Research Committee, such a submission would have to carry the sponsorship of a Department of the Bank and identify a Bank staff member as primarily responsible for the conduct of the research.

To provide an indication of the sorts of research that the Bank is currently undertaking, I enclose a copy of our booklet "Abstracts of Current Studies". This will also

Ms. Patricia L. Hartman

-2-

February 9, 1979

serve to indicate the organizational units most directly involved in the various research areas.

I trust this information will prove helpful to you.

Your sincerely,

A handwritten signature in black ink, appearing to read 'S. Bery', with a long horizontal flourish extending to the right.

Suman Bery
Secretary to the
Research Committee
Development Policy

Enclosures (2)

SKBery:bf

Mr. Lars Jeurling, PAB

February 6, 1979

Suman Bery, VPD

FY80 Budget Requests - External Research

In response to your memorandum to Mr. A. Karaosmanoglu of January 12, I attach three copies of the FY80 budget request forms duly filled out. Since it is our understanding that the FY80 External Research Budget is to remain the same in real terms as that originally budgeted for FY79, our request is identical to your draft budget.

Attachment

c.c. Mr. B. Balassa
Mrs. L. Cleave

SKBery:lt

Mr. Mohan Munasinghe (EWT)

February 6, 1979

DeAnne S. Julius (EWT)

Research Panel Report: Proposed Research Program

As you requested I am attaching brief summaries of the four future research areas proposed in the Water subsector along with a revised table of staff and consultant requirements. You will note that despite your pleas to the contrary I have increased the total staff weeks from 72 per year to 108, because in my opinion this is the minimum we would require to carry out the research program described. The alternative of increasing consultant time is not a satisfactory solution: I do not think that we could adequately supervise a consultant input which is 2.4 times that of our own (as indicated in your provisional table) even with seasoned consultants.

If the Water subsector must be held to an additional 72 staff-weeks per year, then dissemination of RPO 671-46 results will be considerably slowed, the resource recovery and institutional and financial structures projects will be reduced in scope, and the policy guidelines on the economic evaluation of multi-city and multi-purpose projects will be delayed, resulting in additional problems with our yellow and green cover review work. A revised table showing these effects is also attached.

The main rationale for the 72 staff-weeks limitation seems to be an attempt to hold the Department total to 10 staff-years. Unfortunately, the effect of this is to force an implicit trade-off between subsectors rather than allowing research targets for each to be set in a Bank-wide context.^{1/} I feel that the latter is the more appropriate approach, and therefore would prefer defending the revised table to the Research Review Panel.

^{1/} A particular example of this is the comparison between Water and Energy. The incremental research input for the latter (including 3 energy-related projects listed under Power) is 180-186 staff-weeks per year or 2.5 times that of Water. Yet the increased lending programs for the two subsectors over the next five years are, in absolute terms, about equal. I would agree with Professor Prest's suggestion that proportionally more research effort needs to be expended on a new sector. However, just as it was agreed that the expansion of Energy lending should not be at the expense of the Bank's Urban Poverty Program, so I believe needed research in water supply should not be constrained by the new research issues arising from increased Energy lending.

cc: Messrs: Rovani, Warford, Kalbermatten (EWT)
Attachments
DJulius:sp

Ted Davis, AGR

February 5, 1979

C.G. Harral, TRP

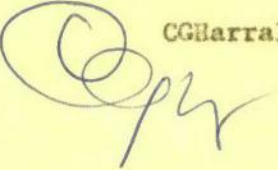
Possible Research Program on Rural Infrastructure Impacts

1. The external panel of experts reviewing the Bank's research in the transportation sector (TRRC) will meet for the third and final time February 26 - March 2 to complete their report and discuss their findings with Mr. McNamara. Probably the most important finding (tentatively) of the TRRC is the rather large need for basic research on the socio-economic impacts of feeder roads and other rural infrastructure investments. Predictive models used in appraisal operations for the more traditional sectors (including most of the other facets of transportation), while not perfect, are extremely good compared to the tools we have to predict the purely economic let alone social impacts of investments for rural development. While the TRRC thus foresees only a very modest need for further research in the traditional fields of transportation (where the main emphasis would be on support to implement the research completed), it foresees a potentially major program of research (over several years) to evaluate the impacts of rural infrastructure and improve operational tools for planning future projects. It is recognized, of course, that such an endeavour would involve other sectors besides transportation.
2. The TRRC has therefore asked Brigitta Mitchell and myself to prepare the outlines of a possible program along these lines. As you will see in the attached draft memo by Mrs. Mitchell, our thoughts very much center on involving ongoing and planned monitoring and evaluation efforts in various countries as primary vehicles for carrying out such a program jointly with local institutions. A small central research team in the Bank would work primarily to develop the methodologies (drawing on work already done in the monitoring and evaluation unit but extending this to a more specific research orientation), assist with the survey design appropriate to each case and provide specialized technical assistance as necessary to the local institutions which should, whenever possible, be responsible for the actual data collection.
3. Professor Daniel L'Huillier (University of Aix-en-Provence), the member of the TRRC responsible for this part of the panel's work, will be coming to the Bank February 15-16 specifically to discuss possible programs of this nature. We would very much like to have your comments on the attached draft - this week if possible, as we hope to prepare a revised draft for discussion with Professor L'Huillier -- who undoubtedly will want to meet with you again as well as other Bank staff concerned.

attached

cc: Messrs. Willoughby, Rahkonen, Mrs. Mitchell

CGHarral:BMitchell:ww



OFFICE MEMORANDUM

TO: Files

DATE: January 31, 1979

FROM: David Bovet, Economist, WA2DA *DMB*SUBJECT: Research on Perennial Crop Supply in West Africa

1. Mr. Michael Hartley, DEDDR, met with the West Africa region on 24 January to discuss his preliminary proposal for development of a model of perennial crop supply. The meeting was chaired by Mr. Westebbe, WA2DR, and was attended by Messrs. Stoutjesdijk (DEDDR), Green (WAPA2), Alibaruho (WA1DB), Phan (WA2DB), Lav (WA2DA), and Bovet.

2. The discussion covered the economic aspects of the model -- data requirements, the differences between the proposed model and earlier ones, and labor constraints in certain countries -- as well as the physiological questions. Mr. Green stressed the difficulty of preparing good short-term predictions of yield even when reliable data on solar energy and water deficit were available. He suggested contacting Mr. Brian Gray, the treecrop specialist in CPS, for further details. The meeting noted the distinction between short-term predictions and the longer-term response which this model would address.

3. The general response of the meeting was very favorable to Mr. Hartley's proposal. It was pointed out that cocoa was of particular interest in West Africa, and that, due to smuggling, it would be useful to focus on Cameroon, Togo, Ivory Coast and Ghana. Following Mr. Hartley's return from mission in February, he will therefore follow-up with the country economists to get a rough idea of the data availability and will touch base with CPS. He might also look at the West Africa economic and sector work program to see how his work would fit in. It should then be possible to begin data collection in one of the four countries (age distribution of trees, acreage, prices, production, labor force). Mr. Hartley will prepare a research proposal, for further discussion with the West Africa region, which will concentrate on the West African case, with Malaysia rubber as a possible fall-back position depending upon the data availability in West Africa.

Attachment: Research Proposal on Modelling the Supply of Perennial Crops:
An Overview, by Michael Hartley (draft), January 16, 1979.

Cl. & cc: Mr. Westebbe, WA2DR
cc: Messrs. Stoutjesdijk, DEDDR
Green, WAPA2
Redfern, WAPA2
Phan, WA2DB
Alibaruho, WA1DB
Lav, WA2DA
de Azcarate, WANVP (with attachment)
Chaffey, WA2DA (with attachment)

DMBovet:lw

RESEARCH PROPOSAL ON MODELLING THE SUPPLY OF PERENNIAL CROPS: AN OVERVIEW

The seminal work by Nerlove [6], on the problem of specification and estimation of the dynamics of the farmers' response to prices of agricultural products, has spawned a vast literature of country case studies for individual crops. A detailed survey of these contributions has been provided in the recent book by Askari and Cummings [3]. While the majority of this work has been concerned with extension of Nerlove's work on annual crops, the challenge of specification and estimation of a suitable model for perennial crops has unfortunately not been met and analysis has remained at a fairly primitive stage. It is the purpose of this study to attempt to rectify this deficiency. In particular, we propose the systematic study of problems connected with the statistical modelling of the supply of perennials. In addition to methodological problems of specification and estimation of such a model, we propose a series of individual case studies for particular perennial crop - country combinations to demonstrate not only the feasibility of our approach, but also the rich array of policy questions which may be quantitatively studied with the use of such a prototype econometric model of perennials.

The literature on econometric analysis of perennial crops has produced general agreement on the salient features which a suitable model should, in principle, attempt to capture. Of the many studies which could be cited, the more important contributions (at a methodological level) include the studies of West African cocoa supply by Ady [1], Bateman [4], Behrman [5] and Stern [7], as well as the innovative study on Brazilian coffee by Arak [2]. In addition to surveying this literature, Askari and

Cummings [3] also provide a useful summary of features which distinguish Nerlovian models of annual crops from those of perennials. They note that:

"Perennial crops may require special treatment and most every level of quantitative analysis. The basic reason for these departures from methods employed (for annual crops) is, of course, the longer time horizon that must be considered by cultivators of perennials..... (which) may affect the representation within the supply model of factors such as output, price and yield expectations, weather and technological inputs - each in a different way."^{1/}

In reviewing such departures, Askari and Cummings [3] view the following as relevant issues:

- (a) The decision to plant a perennial is analogous to the decision of an entrepreneur to invest in a piece of capital equipment
- (b) Price expectations condition not only the planting decision, but also the decision to cut-out or otherwise abandon older trees. Such expectations must be formed not only for the perennial at issue, but also for other perennial and/or annual crops which potentially compete for the use of the same land.
- (c) Perennials exhibit large variations in expected yields over their life cycle, so that information not only on total acreage, but also the distribution across vintages of the stock of trees affects per-acre yields, and thus total output in any crop-year.
- (d) Changes in the age-distribution occur over time as the existing stock matures, but maybe deliberately modified - not only by decisions to plant new seedlings, but also by decisions to cut-out older trees.

^{1/} Askari and Cummings [3], p. 219, emphasis and parentheses added.

These decisions involve the entrepreneur in a decision each year as to how to allocate his scarce land among alternative crops and requires balancing the present value of expected streams of future returns arising from alternative land-use decisions.

- (e) The yield curve for a typical perennial exhibits the following pattern: Zero output for several years after planting, followed by a rapid increase to "peak yields, a plateau at peak yield levels for several years, and finally a steady decline over many years until the tree ceases to bear.
- (f) Yields may be affected by the decision of the farmer to employ fertilizers, insecticides, new hybrids, irrigation systems, etc. as well as new advances in agricultural technology. In addition, changes in yields may result from climatological factors beyond the control of farmers.
- (g) Climatological factors may have either of two unintended effects on output. They may affect current output (through their effect on yields) without any affect on future output (by destroying part of the existing stock of trees) and/or may affect current and future output by depleting the stock of productive trees which may mature.
- (h) Magnitudes of current prices and wages may lead to a deliberate departure of actual harvest from potential output. Low relative prices may make it unprofitable to harvest the entire crop, whilst high prices may provide sufficient incentive for entrepreneurs to exert every effort to maximize output.

In principle, a "complete" model of perennial supply should exhibit, inter alia, each of the above features. We propose the development of an econometric model for perennials which captures all of these features. Such a model would embed a recursive sequence of decisions and/or effects of external factors over the crop-year from planting to eventual harvest within a conventional annual time-series model. In particular, we would explicitly model:

- (1) The intended age-structure of the perennial - including decisions to plant and/or cut-out older vintages.
- (2) The effect of extraneous weather conditions in producing unintended modifications in the desired age-structure in the form of stock depletion across various age-classes.
- (3) The determination of potential output, in light of prevailing weather conditions, the actual age-structure after depletion and the yield associated with each surviving vintage.
- (4) The decision of how much to market currently versus store as a "buffer
? stock," in light of current producer prices, transport costs, storage costs and expected future prices.

It will be noted that each of these decisions or events taken place in sequence over time through the representative crop-year and results in a recursive causal-chain within an annual time-series model.

Ideally, for estimation of such a model we would prefer time-series data on the following endogenous variables:

- (i) Age structure of the stock of trees, defined as the total acreage of each vintage, including new plantings,
- (ii) Harvested output, and
- (iii) Marketings and changes in inventories

as well as the following exogenous variables:

- (i) Producer prices of all crops ^{competing for} completing the same land
- (ii) Wages of labour and costs of planting and cultivation
- (iii) Monthly weather conditions over the crop-year including rainfall, temperature, humidity and barometric pressure
- (iv) Yields associated with each vintage under "normal" extraneous conditions
- (v) Transport costs

In the majority of cases (i.e., perennial-country combinations), these data are incomplete. In particular, only partial data on plantings and surviving age-structure are typically available -- often in the form of irregularly-spaced surveys for assorted years. While econometric methods appropriate in the case of complete data are reasonably straightforward, procedures to estimate all of the parameters when age-structure data are incomplete or simply unavailable are more complicated. A major methodological task of the research proposal is to devise estimation procedures to be applied to various types of incomplete data sets. Preliminary work on this issue is already encouraging.

We now turn to consideration of the types of case-studies which would be undertaken for an assortment of perennial crops in various countries.

Since much of the previous work on perennials has addressed the problem of cocoa supply in various West African countries (e.g., Ghana and Nigeria), this is a natural place to start. In addition, previous studies, using much simpler models and methods of estimation, afford us a basis for comparison of previous and currently proposed estimates. A major difficulty, however, is that only scant records are kept on plantings and age-structure so that these must be inferred statistically from their effects upon harvested output.

A second example, where apparently much more complete records on age-structure are systematically gathered, is the case of Malaysian rubber.

Other examples would be examined once a careful determination of data availability has been made and the extent of interest from the relevant Operational Staff has been ascertained.

We now turn to the potential uses of our model of perennials once reliable estimates of the various parameters have been obtained. Previous work has focussed principally upon the elasticity of supply with respect to producer prices, with careful distinction between short run and long run elasticities. In our model the effect of current and past prices on harvested output is defined in two ways: First current and past producer prices affect the desired age-structure of the perennial of interest (including both decisions to plant and/or remove older vintages). This arises as a consequence of the entrepreneurs' formation of price expectations over suitable planning horizon and affects potential output indirectly by conditioning the age-structure of existing productive trees. A second influence of current prices on observed output occur at harvest-time, when prices condition the

harvest decision. To the extent that most existing models fail to explicitly model the existence and timing of these separate influences, such estimates are likely to be biased. Long run and short run effects will be explicitly captured, with the former working through the effect of current prices on new plantings and hence output over future years as the process of maturation proceeds. Needless to say, reliable estimates of short and long-run price elasticities for the supply of perennials are an invaluable guide for establishing appropriate agricultural policies. Simulation of an estimated version of the model would permit, inter alia, the derivation of trajectories of changes in age-structure and harvested output associated with alternative levels of producer prices.

Similar analyses would also permit quantitative assessment of policies such as:

- (i) Subsidies to farmers for new plantings
- (ii) Subsidies to temporary labourers at harvest time
- (iii) Increased provision of (or subsidized terms of) credit
- (iv) Effects of changes in producer prices of other crops
- (v) Effects of subsidization for insecticides or fertilizers on age-structure and output
- (vi) Consequences of introduction of new hybrids with improved structure
- (vii) Optimal pricing of crops to maximize government revenues (obtained by setting producer prices below world prices)
- (viii) Optimal inventories of buffer stocks given prevailing world price expectations

etc.

In each of these simulations would require an assumption regarding future weather conditions. Here, one would either utilize expected weather conditions - mean levels based on data for previous years - or a variety of alternative scenarios (say plus or minus one standard deviation from the norm) to analyze the sensitivity of projections to weather variation.

Next, with regard to an examination of the effects of changes in the various policy instruments on "optimal" land - use decisions- i.e., how much of each crop(perennials and annuals) should be planted and/or cut-out over time - given the prevailing procedures for generating price expectations (determined from prior econometric analysis), a dynamic programming model will be formulated and solved to produce trajectories which maximize the discounted present value of net revenues accruing to famers.

Finally, by extending the supply side to encompass all major producers of a given perennial crop and by building separate models for principal consumers, the world price may be made endogenous. While this is a later phase of perennial-crop modelling, it would permit systematic approaches to the problem of forecasting world prices of perennials.

REFERENCES

- [1] Ady, Peter, "Supply Functions in Tropical Agriculture," Oxford Institute of Statistics Bulletin 30 (1968).
- [2] Arak, Marcelle, The Supply of Brazilian Coffee, Ph D Dissertation, Massachusetts Institute of Technology, 1967.
- [3] Askari, Hossein and Cummings, John T., Agricultural Supply Response: A Survey of the Econometric Evidence, Praeger, New York, 1976.
- [4] Bateman, Merrill, "Aggregate and Regional Supply Functions for Ghanaian Cocoa 1946-1962," Journal of Farm Economics, 47 (May 1965).
- [5] Behrman, Jere, "Monopolistic Cocoa Pricing," American Journal of Agricultural Economics 50 (August 1968).
- [6] Nerlove, Marc, The Dynamics of Supply: Estimation of Farmers' Response to Price, Baltimore, Johns Hopkins University Press, 1958.
- [7] Stern, Robert, "The Determinants of Cocoa Supply in West Africa," In African Primary Products and International Trade, edited by I.G. Stewart and H.W. Ord, Edinburgh University Press, 1965.

Mr. N. K. Rouhana, PAB

January 31, 1979

Mona A. Hazzah, VPA

Completed External Research Projects

1. The following External Research Projects have no financing for fiscal year 1979, and in most cases, are considered completed.

2. I would appreciate it if you could eliminate these projects from your monthly Report on Expense and Budget.

Project Nos:	670-03	670-43	670-91	671-22
	-05	-44	-94	-23
	-06	-46	-95	-25
	-07	-47	-96	-29
	-08	-67	-98	-33
	-10	-69	-99	-34
	-14	-75	671-01	-37
	-16	-76	-04	-39
	-20	-77	-06	-40
	-23	-78	-07	-41
	-25	-79	-10	-42
	-28	-80	-11	
	-29	-81	-12	
	-30	-83	-13	
	-34	-84	-14	
	-38	-85	-15	
	-39	-89	-16	
	-41	-90	-21	

MHazzah:tr

cc: Mr. S. Bery

(File - Fiscal '79 Budget)

Mr. Suman K. Bery, DEDVPD

January 22, 1979

Luis de Azcarate, Chief Economist, WAN

Wage and Employment Trends and Structures: India & Kenya
Country Studies

1. The review panel met on Friday, January 19 to examine the reformulation and clarification of these studies with the project sponsors. It concluded that, the two country studies were now acceptable to the Panel, and given the Research Committee's decision (para. 2 of Mr. Balassa's memo of December 27, to Mr. B. B. King), the necessary funds should be authorized for these studies as per the amounts itemized in the research proposal.
2. The explanation written and oral, provided on the Kenya project were found a sufficient basis to proceed with the research as soon as possible. For the India study Mr. J. Wall clarified the intent of Mr. Waide's memorandum (of January 18th), which was to provide continuous although informal review process by a group made up of concerned regional economists and those from DEDER. This proposal was accepted.
3. It was also agreed to subdivide the first stage of the India project, with an initial stage aimed at collating the available national statistics, and the second at collating and examining (in some detail) the comparability of regional data with that at the national level for one or two regions. This first stage was expected to take a year, at the end of which a report summarizing the national data and the comparability of regional with national data would be prepared. In the light of this report and of the discussions with the regions, and local collaborators, the most promising of the various analytical questions outlined in part (B) of the "Further Specifications" of the India Case Study, would be identified for research at the second stage of the project.
4. It was also agreed that Deepak Lal would maintain close contact with the local collaborators, in order to ensure that the local output was produced in time and followed the specifications to be jointly agreed with local collaborators.
5. Since the question of the "External Advisory Group and Seminar Workshop" (item 5 of the Research Proposal budget) was not properly discussed by the Research Committee and the Review Panel is not, at this time, fully convinced of the necessity of this part of the project and the "External Advisory Group" would in any case intervene at a later stage in this project, it was agreed that no decision on this was needed now. Correspondingly, the requested budget for this item (\$5,100 in FY79 and \$25,000 in FY80) was not approved, with the understanding that the Review Panel will submit the question to the Research Committee at an appropriate time, i.e. when the research project is sufficiently advanced to permit a judgment on the advisability of this part of the proposal.

cc. Messrs. Balassa
B. King
J. Wall

LdeAzcarate/js

ppc [initials]

Mr. A. F. Thys, EMP

January 22, 1979

R. Overby, Environmental & Health Affairs

Research Proposals: Your Memo December 1, 1978

1. I wish to express my appreciation for your emphasis on environmentally related and important considerations in the research proposed.

Under 1.A.i) I would suggest that increasingly (a) water quality demand requirements and forecasts will be important, (b) "war on demand be considered in the "appropriate" category (J. Kalbermatten, "Appropriate Technology for Water Supply and Waste Disposal in Developing Countries" Research Project.)

Under 1.A.ii) For reasons of resources conservation alone, the issue is important.

2. Environmentally, a very important issue indeed. Messrs A. Sfeir-Younis and M. Veraart would be interested, I think, to serve on a steering committee.

3. Stronger institutions as well as new and improved ones to cope more effectively, or at all, is badly needed for both industrial and municipal waste water management. In siting a new industry, how rare is it not that an existing organization can adequately assess the recipient absorptive capacity and/or associated needs for effluent management. However, our experiences on a big scale (Industrial Water Pollution Control in Finland, Sao Paulo, and now Mexico City and Rio de Janeiro) should provide you good ammunition against any opposition to your proposals.

cc: Dr. J. A. Lee, OEHA
Mr. Tikhon, OEHA
Mr. I. Hume, EMP

R

ROverby:OMc

January 16, 1979

Mr. Robert C. T. Lee
Chairman
Joint Commission on
Rural Construction
37 Nan Hai Road
Taipei 107, Taiwan
Republic of China

Dear Dr. Lee:

The purpose of this letter is to thank you and your staff for the courtesies rendered and assistance provided to Mr. Anthony Bottrall during his review of Taiwan irrigation projects in 1977, as part of a Bank research project on Management and Organization of Irrigation Projects. A copy of Mr. Bottrall's draft report on his Taiwan studies is enclosed. It was received in the Bank only this month.

We have found the report interesting and informative. Any comments on the report, or corrections to facts reported therein, which you would care to submit to us prior to finalization of the report would be sincerely appreciated.

Especially because the Taiwan experience is one of the best which can be found in the world, we would like to obtain permission in distribute the report outside the Bank to other countries. Eventually we might wish to include it as a case study in a comprehensive printed report for general public distribution. Could we have your permission to do so?

Again thanking you for your consideration and cooperation, and with very best wishes for 1979, I am

Very truly yours,

Frederick L. Hotes
Irrigation Adviser
Agriculture and Rural
Development Department

Enclosure: "Field Study in Taiwan -
Yunlin Irrigation Association"

FLHotes:rm

cc: Mr. ^{H.T.} Chang (ASP)

OFFICIAL FILE COPY

Mr. John M. Bamberger, DED

January 12, 1979

DeAnne Julius, EWTDR

Dr. Feachem's Comments on San Salvador Research Proposal

As you know, following our discussion last week of the methodology proposal for the research proposal "An Evaluation of the Effects of a Sites and Services Project on the Health and Nutrition Status of Low Income Families in San Salvador", the proposal was sent to Dr. Richard Feachem, Senior Lecturer at the Ross Institute of Tropical Hygiene for an informal technical review. Because of the tight time schedule he telephoned his comments to me yesterday. While he expressed several reservations about particular aspects of the study, he agreed that it is basically a sound design and has the potential for providing interesting and useful results. Those portions of the methodology which he questioned are things which could be discussed and revised if necessary once the project has been approved.

I have asked him to send his comments to you so that they can be relayed to your consultants for their consideration. In the meantime, I would like to support the basic design of your proposal. Because of our Department's continuing involvement in monitoring the social and health impacts of sanitation projects, in particular, we shall be very interested both in the method and in the outcome of your research.

cc: Messrs. Kalbermatten, Warford, Shipman (EWTDR)
Mr. Keare (DED)

DJulius:sp

Research - General S. Asia

Mr. I.J. Singh, DED
Mr. T.N. Srinivasan, DRC

January 9, 1979

J.D. Von Pischke, AGREP (X 73693)

Summary of Survey Results on Credit, Savings and Investment in
Indian Agriculture

Attached please find a list of hypotheses for a proposed literature survey to be undertaken by Professor C.H. Shah of Bombay University as a consultant engaged by AGREP. Also attached please find a December 21, 1978 memo by G.F. Donaldson sent to managers concerned with the topic. In responding to this memo, Mr. E. Bevan Waide indicated certain reservations regarding the proposed literature survey. In order to avoid misunderstanding or duplication, I would like your advice concerning how AGREP might proceed, and whether any modifications of Professor Shah's terms of reference are in order. Additional details of Professor Shah's proposals are provided in the other item attached.

Attachments

JDVon Pischke:ga

FEB 02 1979

SURVEY OF EMPIRICAL STUDIES OF SAVINGS
INVESTMENT AND CREDIT IN RURAL INDIA

Hypotheses to be Tested

1. The rate of investment in Indian agriculture
 - a. is below that in other major sectors in relation to the sector's capital stock,
 - b. is more responsive to changes in income than in other major sectors.
2. Land-substituting capital earns a higher return than labor-substituting capital in Indian agriculture. The risks of land-substituting investment are greater than the risks of labor-substituting investments.
3. Farm credit accelerates the rate of investment in Indian agriculture by enabling a transfer of resources to agriculture from other sectors.
4. Credit fills a resource gap at the farm level. This gap is created by the absence of a market for risk capital and the consequent failure to mobilize savings for investment in agriculture, and by limitations on the level of internal capital generation in agriculture imposed by low income levels. The agricultural sector fails to generate or attract sufficient capital from these two sources to exhaust possibilities for remunerative investment.
5. Without credit, the financial constraint to on-farm investment is inversely related to farm size.
6. Resource allocation may be improved in agriculture through access to credit markets. Borrower's transactions costs of credit are a determinant of access to credit, and one component of such costs is proximity of credit offices.
7. Credit rationing through the application of lending norms to highly decentralized and diverse activity in agriculture results in the suboptimal allocation of resources. Suboptimality occurs in terms of the investments undertaken as well as in terms of activities financed.

8. Farm credit allocation is suboptimal when it does not reflect absorptive capacity in agriculture. Absorptive capacity is a function of the potential returns to investment, which in turn reflects the change in technological and resource bases.
9. Loan interest rates which depart from real rates of return on capital stock in agriculture result in suboptimal resource allocation by favoring investments of suboptimal life and risk. Loan rates above real rates of return favor those with equity as opposed to those heavily reliant on debt financing. In this situation, those with greater levels of own resources are favored over those of limited resources.

Messrs. R. Rowe, G. Tibor, B. Waide, M. Leiserson,
V. V. Bhatt
G. F. Donaldson, Div. Chief, AGREP

December 21, 1978

Summary of Survey Results on Credit, Savings and Investment in Indian
Agriculture

1. We have received a proposal for a study of field survey results relating to credit, investment and savings in India's agricultural sector. A list of hypotheses around which this literature survey would be formally organized is attached.
2. The survey would be undertaken by Prof. C. H. Shah of Bombay University. Prof. Shah is an agricultural economist who has been interested in the subject for many years. He has produced several articles and also supervised research by Mrs. Tara Shukla which led to her 1965 work, Capital Formation in Indian Agriculture. The research proposal originated with Prof. Shah, who is presently on leave at the Harvard University Center for Population Research in Boston.
3. In my view the proposed research is topical and would be useful to the Bank. Prof. Shah is willing to undertake the work for a fixed fee of \$6,000 within the next six months, and with your support I will approach the Research Committee for these funds. This review could become the first phase of a more detailed study if the findings warrant it.
4. I would appreciate your reactions to this proposal.

Attachment

J. Von Pischke:sw

cc: M. Yudelman, AGR
D. Pickering, AGR
W. Spall, AGR

GVP
File

OFFICE MEMORANDUM

TO: Mr. G. Donaldson, AGR

DATE: January 5, 1979

FROM: E. Bevan Waide, ASNVP *EW.*SUBJECT: Summary of Survey Results on Credit, Savings and
Investment in Indian Agriculture

I have reviewed your note of December 21, as has the India Division. It is difficult to object to a modest \$6,000 literature survey but I would seriously question whether any researcher could get into much depth on all nine hypotheses to be tested within a period as short as six months. In some ways these hypotheses overlap with those on which I.J. Singh is undertaking a literature survey, or with those being examined by T.N. Srinivasan. There may well be merit in using Professor Shah's services: perhaps, however, we would all be better off if a more careful research proposal were put together, on a topic where, after reviewing ongoing studies, work clearly needs to be done.

cc: Messrs. Bhatt
Rowe
Wall

OFFICE MEMORANDUM

TO: Mr. G.F. Donaldson, Division Chief, AGREP DATE: December 22, 1978

FROM: J.D. Von Pischke, AGREP *JDP*

SUBJECT: Survey of Empirical Studies of Rural Savings, Investment and Credit in India - Proposal to Engage Prof. C.H. Shah as a Consultant

1. This memo is written to inform you of the results of discussions with Professor C.H. Shah in response to his interest in undertaking research for the Bank on credit and capital formation in Indian agriculture. I have spent approximately eight hours with Prof. Shah discussing this possibility during the last several days.

2. Professor Shah originally proposed a two phase study composed of a literature survey and of an analysis of survey data compiled by the Reserve Bank of India. You and I agreed that it would be advantageous to make each phase independent, which has been accepted by Prof. Shah.

3. Based on discussions, I propose that a literature survey consultancy be offered. Prof. Shah's assignment would be expected to yield a good summary of published field survey materials dealing with levels of agricultural credit provided to farmers in India and the rate of capital accumulation in the agricultural sector. The study is expected to be useful in determining the role of credit in capital formation. The study would be conducted from the perspective of agricultural economics rather than from that of financial market theory. It would deal with rates of investment in agriculture, rates of return on capital stock in agriculture, resource allocation under assumptions of credit provision and internal financing, credit rationing procedures and investment optima, and real interest rates. Prof. Shah's credentials include a long-standing interest in the question of capital formation in agriculture as manifested in Mrs. Tara Shukla's work under his supervision and several articles.

4. I propose that the following terms be offered to Prof. Shah:

- a) the task would be organized around nine hypotheses, which are attached.
- b) the literature survey should include a proposal for further study using field data.
- c) Prof. Shah would be willing to begin as soon as feasible on our part, i.e., January, 1979.
- d) the task would be expected to require two man-months from Prof. Shah for the production of a final draft suitable for publication as a Bank staff working paper.

- e) elapsed time from the initiation of the contract to our receipt of a draft for comments would be approximately four months.
- f) Prof. Shah would be paid \$6,000 for the study (50 days at \$120 per day). He would receive an advance of \$1,500 upon submitting a claim at the time of signing the contract, and would be paid at the rate of \$90 per day net of the advance thereafter, the final \$900 due Prof. Shah would be withheld until a final version is received.
- g) Prof. Shah's proposed fee is on a fixed basis. It is calculated on his assumption of a two month work program, his request for \$2,500 per month, and an additional \$1,000 nominally including \$500 for secretarial and research assistance and \$500 for travel to and from Washington. However, the disposition of the \$6,000 would be entirely at Prof. Shah's discretion, and the only claims to be submitted to the Bank under the proposed contract would be for days worked.
- h) Prof. Shah would be free to work wherever he wishes. Logical alternatives are Boston, where he is presently based, India, or Washington.

5. As discussed with you, I feel that there are some aspects of the proposed contract which pose certain potential difficulties. One is the editorial work which will no doubt be required on the draft we receive. Our budget should include funds for an editor for at least three weeks. Secondly, I imagine that Prof. Shah will attempt to obtain concessions and further assistance from us, such as office space and possibly secretarial help if he decides to undertake his work here in Washington, and probably more time than the four months elapsed time agreed. He may again suggest a trip to India to obtain unpublished survey data - a suggestion I rejected as premature. Rather substantial demands may be made on my time in dealing with Prof. Shah and his work.

6. Also as discussed with you, It was not entirely clear to me from discussions with Prof. Shah, and repeated questions, what his status is at the Harvard University Center for Population Studies, and whether it would have an adverse influence on his ability to deliver as contracted. I contacted the Center after asking Prof. Shah if he had any objection to my doing so -- he said neither yes or no and gave no name for reference. He is working with a Dr. Ripetti, a demographer, on the analysis of some field survey data from a particular thana in India. Dr. Ripetti indicated that Prof. Shah is a free agent. He has been involved in analysing the thana data in question for several years, and Dr. Ripetti was involved at a late stage, under Rockefeller Foundation auspices. For budgetary purposes Prof. Shah is attached to Dr. Ripetti's Rockefeller-funded activities at the Center, but has no formal relation with the Center. Prof. Shah is likely to be engaged in the research for some time to come, especially since data handling problems have arisen,

and is free to contract other work as he wishes. Prof. Shah indicated to me that he has immigrant status in the US, that his wife expects to come to the US in January as an immigrant, and that his son works in Florida.

7. Prof. Shah's initial proposal for analysis of Reserve Bank of India (RBI) all-India field surveys of rural households' assets and capital structure appears to be based on optimistic assumptions concerning the data. Mr. Surjit Bhalla (EDE) has been involved with attempts by the Bank to obtain the data in question for the 1971 survey. (The proposed literature survey by Prof. Shah should be useful to any analysis the Bank might undertake using the RBI data.) It is Mr. Bhalla's opinion that the data is of good quality. The problem lies in its accessibility. RBI has the data on over 100 tapes generated by a Honeywell computer of ancient vintage. It is doubtful whether useful analysis could be conducted at all economically on RBI's computer, and it is also questionable whether any capacity presently exists to transfer the data electronically to modern equipment, because the computer in question became a museum piece quite some time ago. Even if these obstacles can be overcome (Mr. Bhalla is trying to locate conversion capacity), the question remains whether or on what terms RBI would make its data available. Prof. Shah agrees that his chances of obtaining the data and getting it into usable form are no better and probably much worse than the Bank's through DED's initiatives. Therefore, Prof. Shah agrees that no further consideration of analysis of the RBI data is warranted until Mr. Bhalla's efforts to obtain the data in usable form have run their course. The contract offered Prof. Shah should not contain any allusion to further work.

8. The hypotheses suggested as a basis for the study should be circulated to the Project and Program Divisions concerned and to others who would have an interest in the proposed study, along with a memo asking for their support to obtaining research funds for the survey. A draft memo is attached for your consideration.

Enclosure

cc: Messrs. S. Bhalla, DED
V.V. Bhatt, DED

JDVonPischke:mnw

Members of the Research Advisory Panel

January 3, 1979

Suman Bery, VPD

Additional Materials

1. I attach the following materials for your consideration:
 - (i) Draft report of the Research Advisory Panel on Agriculture and Rural Development.
 - (ii) Suggestions by Bank staff on "Research Priorities".
2. I will be initiating travel arrangements for the March meetings toward the end of January. Additional draft reports from the specialized panels will be sent to you as received.

Attachments

SKBery:bf

*Pending Proposal
Research - General*

OFFICE MEMORANDUM

TO: Mr. B.B. King, DEDDR

DATE: December 28, 1978

FROM: Bela Balassa, VPD

SUBJECT: Mass-Media and Rural Education

1. In its discussion of the above proposal, the Research Committee raised questions on the usefulness and scope of the proposed survey papers, the importance of the evaluation methodology for Bank projects, and the size of the budget being requested. While there was greater interest expressed in the paper on Agricultural Extension than in the paper on Adult Education, it was felt that the terms of reference for the surveys were inadequately spelled out to permit a decision to be made on their funding. In addition, some members were dubious that the contribution of mass-media components to agricultural extension projects could be isolated or that it was important for the Bank operations to be able to do so. Finally, the Committee found that the amounts being requested for the preparation of the survey papers and the evaluation methodology was too high.

2. The Committee requested that the objectives, scope and terms of reference of the proposed survey papers be more precisely articulated by the sponsors, and reconsidered by the review panel. The panel would also approve the organizational arrangements and budgets appropriate for the papers approved, subject to an upper limit of \$25,000.

cc: Messrs. Jamison, Futagami, T. King, Akilu, Waide, Hazell,
Weiss, Farner, Cernea

BBalassa:bf



Record Removal Notice

File Title Research Projects - General - Volume 3		Barcode No. 30067330		
Document Date December 22, 1978	Document Type Memorandum			
Correspondents / Participants From: J D von Pischke To: G. F. Donaldson				
Subject / Title Survey of Empirical Studies of Rural Savings, Investment and Credit in India - Prof. Shah				
Exception(s) Personal Information				
Additional Comments		The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information or other disclosure policies of the World Bank Group.		
		<table border="1"><tr><td>Withdrawn by Ann May</td><td>Date August 04, 2022</td></tr></table>	Withdrawn by Ann May	Date August 04, 2022
Withdrawn by Ann May	Date August 04, 2022			

Messrs. R. Rowe, G. Tibor, B. Waide, M. Leiserson,
V. V. Bhatt
G. F. Donaldson, Div. Chief, AGREP

December 21, 1978

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4. I would appreciate your reactions to this proposal.

Attachment

J. Von Pischke:sw

cc: M. Yudelman, AGR
D. Pickering, AGR
W. Spall, AGR

FEB 02 RECD

OFFICE MEMORANDUM

yellow
Research - GeneralTO: Mr. Suman Bery (VPD), Secretary, Research Advisory
Panel

DATE: December 15, 1978

FROM: ^{RE} Per Eklund (AEPED)SUBJECT: Research Priorities

1. I am responding to your request to state research priorities. I find there is a need to establish skill profiles for target groups so that we may determine whether literacy and cognitive skills, over time, are measurably correlated with productivity achievements. For instance, in rural development projects, have the targeted groups of smallholders acquired literacy and a minimum of cognitive skills (in science) which are useful, and possibly necessary, prerequisites for effective absorption of extension services? In urban development projects for the small enterprises (SSE) sector, similar questions arise. To the extent that many or most of the SSEs in the target areas fall within the crafts sector (e.g., wood-working, bicycle repairs, etc., represent activities mentioned), the formal and informal training requirements would be different compared to a situation where the SSEs are already serving the modern sectors, e.g., as subcontractors. In the former case, the absorption of advice, e.g., in marketing and accountancy would seem to call for a minimum level of cognitive skills provided by more formal education. In fact, there may well be a threshold effect: a certain minimum amount of learning, in terms of literacy and cognitive skills in mathematics and science, may have to be obtained before small business extension services and support activities become fully effective.

2. Presently, it seems that when the productive units in the target groups are found to have a high degree of risk aversion and/or "resist" adoption of extension advice and improved practices, we do not know whether this behaviour can or should be linked to a lack of literacy and basic cognitive skills rather than, for instance, insufficient material incentives and/or past defaults in input supply. Often a main assumption of poverty-oriented development projects is that the economic and social infrastructure is underutilized and that prospects exist for rapid and significant improvements. However, we do not seem to know enough about the extent to which literacy and skill levels of particular target groups impede or contribute towards rapid and significant productivity increases.

3. The implications of an improved monitoring and evaluation of literacy and skill profiles for the Bank's operational work seem beyond doubt. For instance, such an evaluation may well confirm that there is a need for additional formal training of the target groups, for example, in evening classes and/or that a differently-designed delivery system for extension advice, would be desirable.

Reference: Risto Harmer "Farmer-Entrepreneur and His Prerequisite Prior Education in Agricultural Development" - Draft World Bank Staff Working Paper, June 1978.

cc: Messrs. Johanson (AEPED), ter Weele (AEPED), Christoffersen/Cernea (AGR), Harma (ASP), Heyneman (EDC), Jamison (DED), Sud (URB), Price (AEP)
PEklund:jp

Research Committee Members

December 14, 1978

Suman Bery, VPD

Additional material for December 18th meeting

I attach the following additional memoranda for the Research Committee's meeting on December 18th.

Proposals

'Wage - Employment Trends and Structures': Memorandum from Mr. R. Grawe

Supplementary Requests

671-60: Memorandum from Francis Lethem

671-61: Review Panel report (memo from Mr. E. Lerdau)

671-80:

(i) Review Panel report (memo from Mr. J. Holsen)

(ii) Memorandum from Mr. T.N. Srinivasan

Attachments

Distribution:

Messrs. H. Chenery, B. Balassa, L. de Azcarate, J. Holsen, B.B. King, E. Lerdau, R. Picciotto, H. van der Tak, D. Turnham, B. Waide, A. Walters, J. Wood

SKBery:bf

Res. General

Mr. Suman Berry, DPSVP

December 12, 1978

Roger Crawe, ASADB

Research Proposal on Wage-Employment Trends and Structures

As the staff member responsible for recent reporting on employment trends and prospects in India, I would like to comment briefly on the India case study in the proposed DEDER research project. Although the study is sketched out with rather broad strokes in the proposal documentation, I have discussed the project with DEDER staff and believe that the study would complement and considerably extend our Division's current work on employment in India. Given the priority attached to employment issues in Indian planning, this involvement is quite appropriate. In particular, the project's focus on the relationship between wage and employment trends, its intention to place these in a long term context, and its use of Indian researchers to summarize the plethora of micro employment studies are objectives which I support fully. I am confident that given the intended degree of coordination between DEDER and regional staff, the India case study will usefully enhance our understanding of the functioning of labor markets in India.

cc. Mrs. Hamilton
Messrs. Wall
Leiserson
Lal

RGrawe/bd

DEC 19 1978

OFFICE MEMORANDUM

Research - General

TO: Mr. S. Bery (VPD)

DATE: December 12, 1978

FROM: S. Heyneman (EDC) ^{S.H.}SUBJECT: Defining Research Priorities

1. This is in response to Hollis Chenery's memo of November 14. I think the most urgent of our research needs is to gauge the external economic impact of our investments. So far we have been deficient in this; and I think we owe it to ourselves and to our Borrowers to do better.
2. We have thus far been hampered by two problems, both administrative. One is a scarcity of allocated time, on our part and on the part of the Borrower. This can be overcome. Evaluation skills exist in economics and sociology, both in and outside the Bank, and there is no non-monetary reason why they cannot be utilized.
3. Another problem is that of procedure. Project funds, the main financial source for evaluation, end when disbursement ends. We must find a way in which we can channel funds for supporting evaluations after the closure of disbursement.
4. To state the question to be answered would be to state the obvious. Thus I will rest by stating the problem: we need resources to develop our own and Borrower evaluations; and we need a system to use resources on a project-specific basis, after disbursement has ended. It would be helpful if we had more knowledge about project impact than guesswork.

cc: Messrs. Aklilu Habte (EDC)
Mats Hultin (EDC)

SH:th

NRIC

Research - General

Mr. Hollis B. Chenery


December 8, 1978

E. Lerdau

Research on Wage and Employment Trends and Structure

1. I am writing this note not as an outgoing member of the Research Committee, but as an eager customer. I have read Mr. de Azcarate's Panel report and am quite concerned about the possibility that the one part of the project which he seems to endorse be affected by the negative comments which other parts receive.
2. I am in no position to comment on these other parts but I would like to plead very earnestly that the Brazil study be approved. As you know, the Region has developed a quite ambitious work program on the general subjects of poverty, basic needs, income distribution and employment in Brazil in response to instructions of Mr. McNamara. The first outputs of these efforts are already available; they include the Webb-Pfeffermann draft report and the Knight-Lluch, etc. papers. Naturally we have structured our plans taking into account work that we understand was proposed, planned or already in execution in other parts of the Bank, so as to avoid duplication.
3. The Brazil component of the Research Project submitted to the de Azcarate Panel, for us, is part of these efforts and, in my view, killing it would leave a gaping hole in the network of studies that we thought should be undertaken to comply with Management's instructions. Moreover, there would, in my view, be a real advantage in approving this component since it would build on work that has already been done by Bank staff. It is not often that there is such good evidence of a medium term research strategy - as distinguished from individual research efforts, however meritorious - and I sincerely hope that the Research Committee will appreciate the opportunity to support continuity and consistency in the Bank's research activities.
4. In short, I urge you and my former colleagues of the Committee to support the Brazil effort, whatever your decisions on the rest of the proposal may be.

cc: Members of the Research Committee

 Elerdau:jd

OFFICE MEMORANDUM

NRIC

TO: Mr. Suman K. Bery, VPD

DATE: December 7, 1978

FROM: J.A.N. Wallis, Deputy Division Chief, LCPA2

SUBJECT: Defining Research Priorities

With reference to the memorandum dated November 14 from Mr. Chenery, members of this Division have been unable to respond specifically to the request because we do not know the range or scope of your inquiry. Furthermore, there is a pervasive feeling that, so far, studies sponsored by DPS have taken no account of current experience of Bank Projects' staff. This may or may not be correct but, for instance, no one in this Division can recall being consulted about Study 670-80 on Land Reform in Latin America; 671-39, "Price Intervention in Agriculture"; or 671-43, "The Consequences of Risk for Agricultural Policy", all of which are topics of great relevance to our work.

We have recently expressed interest in taking part in defining Bank policy with regard to agricultural research projects.

A continuing difficulty we face is that, as part of Bank policy, we press for monitoring and evaluation of projects, but we do not have the manpower allocation in our budget to provide the technical assistance repeatedly sought by project managements to design and carry out effective monitoring operations. Furthermore, we are not confident we know the answers anyway. In this connection, we suggest you explore the possibility of a research project to be carried out in Colombia to support the monitoring and evaluation efforts of the Government for the ongoing Integrated Rural Development, Nutrition and Urban Development Projects.

The marketing of the products of small-scale farmers and the timely and efficient supply of farm inputs are key problems limiting all our efforts at rural development to benefit, in particular, the low income population. Various forms of aggregation - cooperative farmer associations and groups - are tried but none is wholly satisfactory. Often the administration is bad and sometimes corrupt. Could this be improved by better training and public/philanthropic subsidies to administrative costs in the initial phase?

Agricultural price policies and subsidies often undermine projects which otherwise might have been successful. For countries in which a significant number of "the poor" are not in the farming sector (i.e., in urban, mining sectors), how can adequate incentives be provided to small-scale farmers and food prices be kept low?

These are just some of our preoccupations. In general, we feel that it must be possible to mobilize the large technical resource of DPS to assist in the design of better agricultural and rural development projects - but we do not know how to do this.

cc: LCPA2 Staff

JANWallis:ag

December 7, 1978

The Maurice Falk Institute for
Economic Research in Israel
Jerusalem
Israel

Dear

For the past few years the World Bank has had an arrangement with several research institutions to exchange information on research publications. This Documents Exchange Program has been a useful way of letting others know of our own research results and improving our knowledge of studies that are being undertaken elsewhere. We have recently received papers produced by your institution and I am writing therefore to inquire whether your institution would be interested in such an exchange.

Participation in the exchange would involve your receiving from us, as they are issued, the Bank's

- Catalog of publications, which gives a current list of all papers and books available to the public and explains how they may be ordered from the Bank's Publications Unit;
- Atlas, issued annually, giving country statistics on income and population; and the
- Research Program - Abstracts of Current Studies, also issued annually, which describes studies in progress, indicating the staff responsible for them and published reports.

The Bank's Publications Unit, to which your orders should be addressed, can send you on request Staff Working Papers or other Bank documents listed in the above. In return,

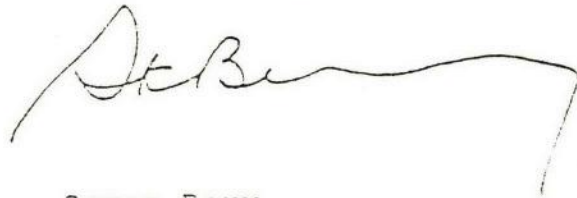
/2...

you would send us your annual or other progress report and catalog of publications, as they are issued, and would agree to send us on request any of the documents listed. We would also appreciate your indicating to whom publications should be sent, along with a corrected mailing address if needed.

I hope very much that you will consider this proposal favorably, and look forward to hearing from you.

With best regards,

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'S. Bery', with a long horizontal flourish extending to the right.

Suman Bery
Secretary to the
Research Committee
Development Policy

December 7, 1978

Erasmus University Rotterdam
Centre for Development Planning
P.O. Box 1738
Rotterdam - 3016
Netherlands

Dear

For the past few years the World Bank has had an arrangement with several research institutions to exchange information on research publications. This Documents Exchange Program has been a useful way of letting others know of our own research results and improving our knowledge of studies that are being undertaken elsewhere. We have recently received papers produced by your institution and I am writing therefore to inquire whether your institution would be interested in such an exchange.

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2...

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I hope very much that you will consider this proposal favorably, and look forward to hearing from you.

With best regards,

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'St. Bery', with a long horizontal flourish extending to the right.

Sumar Bery
Secretary to the
Research Committee
Development Editor

December 7, 1978

Dr. Ruth Vollmer
Librarian in charge of the
International Section
Bibliothek des Instituts fur
Weltwirtschaft an der Universitat Kiel
Postfach 4309
D-2300
Kiel 1
Federal Republic of Germany

Dear Dr. Vollmer:

Thank you for your letter of October 4, 1978. We have arranged for your institution to be placed on the list of institutions participating in our Documents Exchange Program.

You will receive the following documents as they are issued

- Catalog of Publications, which gives a current list of all papers and books available to the public and explains how they may be ordered from the Bank's Publications Unit;
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/2...

Dr. Vollmer

- 2 -

December 7, 1978

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With best regards,

Yours sincerely,

Suman Bery
Secretary to the
Research Committee
Development Policy

Mr. Lyn Squire, AEA

Nov. 29, 1978

Suman Bery, VPD

Your draft section III: 'Policies
Affecting Labor Demand'

1. While I have read the entire section for context, I have concentrated on pp. 40-50 as requested by you. Most of my comments have to do with the discussion on pp. 40-42.

2. I think it would focus the analysis (cf. para 2; p.40) if you made clear why capital markets are fragmented in the first place, what you mean by fragmentation, and how you propose to 'unify' capital markets. By fragmentation I take you to mean a situation where borrowing rates and lending rates differ in various credit markets by more than a 'warranted' risk premium. Such differences can arise for a variety of reasons: geographic barriers, information limitations, policy induced distribution (such as interest rate ceilings) and explicit credit subsidies. Your analysis seems based on the assumption (which I think McKinnon shares) that fragmentation is policy induced rather than 'natural'. Where fragmentation occurs for 'natural' reasons, there may still be gains in allocative efficiency from unifying capital markets, but such gains will involve real expenditure of resources which may or may not be warranted. An important analytic difference between 'natural' and 'policy' fragmentation is that in the former case there need not be quantity rationing in either markets, while in the latter there is more presumption that the distorted market uses non-price attributes to allocate credit.

3. If one characterizes a fragmented capital market as consisting of a price-allocating korb market and a non-price allocating institutional market, it is not immediately clear what is involved in the informal sector's demand for more 'institutional' credit. Does it represent merely a request for access to subsidized credit? Or does it imply that the informal market is also quantity constrained and no additional credit is available at any price? The former seems more probable.

4. What are the consequences for labor demand of a move towards unified interest rates in the two markets? Assuming first that only lending rates are unified (and that there are no effects on aggregate saving and/or aggregate credit flows) it is likely that the interest rate facing the borrowers previously in the korb market would fall, and that facing the borrowers previously in the institutional market would rise.

The comparative statics effect of this move on labor demand depends not on the observed capital labor ratios for the two groups prior to the change but instead on whether you regard them as having intrinsically different production functions. Put differently, one has to establish that differences in observed capital-labor ratios between the small scale and large scale sectors are not purely a consequence of the different factor prices that they face. The evidence you need therefore is of strong differences in factor intensity for efficient output after normalizing for factor price differences. One area where there might be such evidence is in micro studies of the Westphal/Pack type. I do not think that the evidence in Tables 14 and 15 can be regarded as pertinent.

5. The second argument that you provide on page 41 (1st full para.) is a variant of the first argument. Again the basic notion is that a more efficient deployment of capital will increase labor demand. Micro theory suggests that it must increase output - but does this necessarily mean more employment? Again, I don't think the answers are self evident, and general rather than partial equilibrium analysis will be needed. Further, the altered resource allocation will be an 'improvement' only if market prices are felt to be socially appropriate signals.

6. Your third and fourth arguments are unexceptionable but are arguments which apply to any source of increase in aggregate savings, rather than deriving from relative price changes.

7. To sum up, the static analytics are murkier than I had thought. Until we can think them through more convincingly, it may be best to drop those arguments altogether. The dynamic arguments are more credible in theory but less easily established empirically.

cc: Messrs. S. Acharya
B. Balassa
A. Gelb

SKBery:lt

Research - General

Letter No. 202

November 29, 1978

Mr. Oktay Yenel
World Bank Resident Mission
P.O. Box 416
New Delhi
India

Dear Oktay,

Thank you for your letter of October 23. I attach a copy of the letter sent to Mr. Madan from Bela Balassa as per your request. A copy has been sent to Bevan Waide for information.

I trust all is well with you and Aysel. I envy you the late November in Delhi.

Warm regards

Suman Bery

OFFICIAL FILE COPY

Mr. Montague Yudelman, Director (AGR)
(through Ted J. Davis)
Michael Cernea (AGR)

Mr. Suman Bery, VPD

November 20, 1978

Richard G. Grimshaw, Chief, WAPA 1

Research Proposal - Mass Media and Rural Education

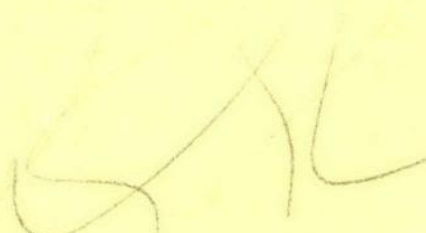
Attached please find a copy of the title page with my signature. We hope that it will be possible for you to analyse the data from our northern projects during Phase II of the project. We would like to point out, however, that this should not involve any further cost to the Nigerian Government nor any increased workload on their staff.

Your proposals in Phase III for testing different means of communication in the field are most interesting and their application in northern Nigeria would, have to be cleared with the Nigerian authorities and ourselves. There is a considerable investment at stake and one would not, ofcourse, want to see it put in jeopardy for any experimental purposes.

PSZuckerman:sg

Attachment

cc: Messrs. Aklilu (EDC), B. King/I. Singh (DED), A. Cole (WAP)
S. Futagami (EDC), and D. Jamison (DED)



WORLD BANK RESEARCH PROGRAM

Project Proposal

Date of Submission

November 10, 1978

PART I. PROJECT IDENTIFICATION

Title: Mass Media and Rural Education

Department(s) Responsible:
Development Economics
Education

3. Staff Participation

Principal Supervisors: Dean T. Jamison, DED
Shigenari Futagami,
EDC

No. of Contracts:
One major contact

5. Estimated Total Cost: .. 125,000..

Estimated Total Staff Time Required (weeks):

Professional: 45

Assistant: 20

PART II. COORDINATION AND APPROVAL

Interdepartmental Coordination:

<u>Department</u>	<u>Name and Signature</u>	<u>Support Project</u>	<u>No Objection</u>	<u>Do not Support Project-Comments Submitted</u>
a. Director, AGR	M. Yudelman			
b. Science Advisor, PAS	C. Weiss			
c. Chief, EAPED	G. Pennisi			
d. Chief, AEPED	R.K. Johanson			" "
e. Chief, Ag. 1, WAP	R.G. Grimshaw			

Departmental Approval:

Division Chief (signature)

Department Director (signature)

Timothy King, Chief
DEDPH

Benjamin B. King/Aklilu Habte
Director, DED Director, EDC

November 14, 1978

Professor T.N. Madan
Member Secretary
Indian Council of Social Science Research
IIPA Hostel Indraprastha Estate
New Delhi 11000

Dear Mr. Madan:

Mr. Oktay Yenel, of our resident mission in India, has passed your letter of September 20th, requesting information on the Bank's research program, on to us.

This reply deals with the central research program of the Bank, and does not deal with that research related to specific projects which is financed under loans and credits. Neither does it concern certain research of a technical nature, arising out of such activities as Bank participation in the Consultative Group on International Agricultural Research. The following refers to the points of inquiry in your letter.

- (1) Broad objectives of Bank Research - The Bank has designed its research program in the light of four major objectives:
 - (a) To support all aspects of the World Bank's operation, including the assessment of development progress in member countries.
 - (b) To broaden understanding of the development process.
 - (c) To improve the Bank's capacity to provide advice to member countries.
 - (d) To assist in developing indigenous research capacity in member countries.
- (2) Financial Research Inputs: 1974/5 to 1977/8 - Resources used in Bank research fall into two categories.
 - (a) "External expenditure", includes such payments as consultant fees, travel expenses in connection with research and data processing carried on outside of the Bank. Over the period 1974 to 1978 external expenditure on the research program averaged approximately \$2 million per year.
 - (b) "Staff time", refers to the time spent by Bank staff members in research. As some research is performed by Bank staff

who are not primarily researchers, and Bank researchers also perform operational duties, the number of man-years spent on research is a better measure of staff time than the number of researchers: the Bank's research program involves about 60 professional and 25 assistant man-years of staff time annually.

- (3) (a) Nature of Program - The general nature of the Bank's research program is best appreciated through the publication "World Bank Research Program", a copy of which is enclosed. This does not cover certain smaller research projects. Also relevant is the section "Economic Research and Studies", in the Bank's Annual Report (1978) (enclosed). Many research projects deal with more than one country. It is therefore not possible to obtain an estimate of resources spent on research into India alone. However, considering projects approved by the Research Committee, as of January 1978, out of 85 such ongoing or recently completed projects, 14 dealt wholly, or in part, with India. The Country Index in Abstracts of Current Studies October 1977, indicates most of these.
- (b) Institutions Assisted - The Bank does not award scholarships or fellowships to Indian (or other) research institutions, and does not, generally, offer them financial assistance. Involvement of institutions and individuals outside the Bank in the Bank's research program generally proceeds through collaboration in research projects, or through the use of contractual arrangements such as consultancy in Bank-sponsored research. As noted in the Annual Report (page 97), the number of Developing Country institutions involved in the research program is considerable. For the case of India, the following individuals and institutions have been involved in the 14 research projects noted above:

1. Ministry of Chemicals and Fertilizers
2. Fertilizer Association of India
3. Fertilizer Corporation of India, New Delhi
4. Director General, Border Roads, New Delhi
5. Ministry of Transport, New Delhi
6. Water & Power Commission, New Delhi
7. State Public Works Department
8. Central Road Research Institute, New Delhi
9. Department of Economics, Bombay University, Bombay
10. Central Statistical Organization, New Delhi
11. R. Krishna (Planning Commission, New Delhi)
12. Indian Institute of Management, Ahmedabad
13. National Environmental Engineering Research Institute, Nagpur


Professor T.N. Madan

-3-

November 14, 1978

I hope this information is of help to you in your study.

Yours sincerely,



Bela Balassa
Acting Research Adviser
Development Policy

AGelb:bf

Enclosure(s)

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: Nov. 13, 1978

FROM: Suman Bery, VPD *SKB*

SUBJECT: A Panel to Review a Research Proposal:
Mass-Media for Rural Education

1. A panel consisting of Messrs. B. Waide, ASA, (Chairman), F. Farner (AEP), M. Cernea (AGR), C. Weiss (PAS), and P. Hazell, (DRC), has been established to review the attached research proposal on Tuesday, November 21, at 3:30 p.m. in Room A-520.

<u>Proposal</u>	<u>Staff Responsible</u>	<u>Amount Requested</u>
Mass-Media for Rural Education	D. Jamison S. Futagami	\$125,000

2. The panel is expected to consider issues such as:

- (i) Is the proposed research of interest to the Bank?
- (ii) What contribution are the research findings expected to make to the Bank's operations?
- (iii) Are the hypotheses to be tested and the methods of analysis well defined? Will they yield robust conclusions?

Guidelines designed for the preparation and submission of research proposals are attached. Also attached is a memorandum indicating the principal points raised in the workshop discussion of a prior draft of the proposal. These may be of assistance in the review.

3. The recommendations of the panel should be sent to me by Tuesday, November 28.

Attachments:

Distribution:

Panel Members
cc: Messrs. D. Jamison, S. Futagami
cc: Messrs. B.B. King, A. Habte, B. Balassa (information)

SKBery:lt

Those Listed Below

Nov. 13, 1978

Suman Bery, VPD

A Panel to Review a Research Proposal:
Wage and Employment Trends and
Structures

1. A panel consisting of Messrs. L. de Azcarate, WANVP, (Chairman), R. Gulhati (EANVP), T.N. Srinivasan (DRC), P. Knight (LC2), and J. Wall (ASA) has been established to review the attached research proposal on Friday, November 17 at 3:30 p.m. in Room A-520.

<u>Proposal</u>	<u>Staff Responsible</u>	<u>Amount Requested</u>
Wage and Employment Trends and Structures	M. Leiserson S. Bose D. Lal R. Webb	\$129,300

2. The panel is expected to consider issues such as:

- (i) Is the proposed research of interest to the Bank?
- (ii) What contribution are the research findings expected to make to the Bank's operations?
- (iii) Are the hypotheses to be tested and the methods of analysis well defined? Will they yield robust conclusions?

Guidelines designed for the preparation and submission of research proposals are attached. Also attached is a memorandum indicating the principal points raised in the workshop discussion of a prior draft of the proposal. These may be of assistance in the review.

3. The recommendations of the panel should be sent to me by Monday, November 27.

Attachments:

Distribution:

Panel Members

cc: Messrs. M. Leiserson, S. Bose, D. Lal, R. Webb
B.B. King, B. Balassa (information only)

SKBery:lt

Messrs. D. Jamison, DED
S. Futagami, EDC
Suman Bery, VPD

November 6, 1978

Your draft proposal, "The Costs and Effects
of Distance Teaching for Formal Education"

Following Friday morning's discussion, here are some suggestions for the redrafting of the proposal.

The overall justification for the proposal could make explicit reference to Bank involvement (past and projected) in the use of distance teaching for non-formal education. Does the Bank have an explicit program or policy of inducing such technological change? If so, this should be mentioned.

The scope of the literature review proposed by you (paragraphs 7 and 8 of the October 15 draft) could be as wide as you suggest, covering the use of distance teaching in a variety of applications. The aim of the review would be to document existing practice and techniques, assimilate existing judgements on effectiveness and tabulate such information as is available on costs.

The case studies on the other hand, should be fewer but more intensive. I would suggest that they be restricted to the use of distance teaching in agriculture, specifically agricultural extension. The concern of the case studies should be to develop the methodology for evaluating distance teaching, demonstrate their use with existing or easily collected data and use this experience to design experimental components for forthcoming projects. There are several reasons for suggesting that the case studies be restricted to agriculture:

- (i) Judging by the workshop, the greatest Bank interest at present is in this area;
- (ii) measures of output, and the production function methodology seem most tractable in agriculture;
- (iii) the data are already or will soon be available in the case of Nigeria, Thailand and the Philippines;
- (iv) the alternatives to distance teaching are clearly defined.

By contrast the use of ex-post data in fields such as health and nutrition seems unlikely to establish anything conclusive. Inconclusive results would not advance policy making.

Even with this restricted focus certain analytic issues need to be addressed in the redraft. These include a clearer specification of the null hypothesis (are you out to establish whether the effects of media use are positive or whether they are superior to the alternatives), the choice between a cost effectiveness and a cost benefit framework, the measurement of outputs, the specification of appropriate control groups or other mechanisms of isolating the impact of the media interventions.

While the revised proposal should concentrate on these issues, it could indicate that this is the first step in a wider program of work which could ultimately extend to experimental ('action') research.

Please note that the revised proposal will need to have completed cover sheets as well as indications of inter-departmental coordination. In order for the panel review to be conducted on schedule I would need to have the formal proposal by c.o.b. Friday, November 10.

SKBery:lt

cc: Messrs. H. Aklilu
B. Balassa
B.B. King
B. Waide

November 9, 1978

Professor Juergen B. Donges
The Kiel Institute of World
Economics
P.O. Box 4309
D-2300 Kiel 1
Federal Republic of Germany

Dear Professor Donges:

This is just to acknowledge receipt of your first draft. We will be in touch with you about the next meeting shortly.

Yours sincerely,

Suman Bery

November 9, 1978

Sir W. Arthur Lewis
Economic Growth Centre
P.O. Box 1987
Yale Station
Yale University
New Haven, Connecticut, 06520

Dear Sir Arthur:

By now you ought to have received copies of two memoranda sent to you under separate cover. The first was the memorandum from Mr. Chenery to the Chairmen of the specialized panels, appending the revised notes of the General Panel's discussion. The second was a memorandum from me to members of the General Panel confirming dates, assignments and forthcoming documentation. I trust that these memoranda, and the revised notes on the panel's discussions, are in accordance with your wishes. Would it be alright for the 'Notes on the First Meeting of the General Panel' to be circulated to members of the Research Committee prior to its next meeting?

Alan Gelb will be dispatching additional materials to you shortly. These relate primarily to the work of the specialized panels, but include the notes we took at the meetings. I will send these notes to other panel members only if you think this is worthwhile after you have seen them.

The cushion is safe!

With regards,

Suman Bery

cc: Messrs. B. Balassa
H. Chenery
A. Gelb

SBery:lt

Messrs. M. Leiserson, S. Bose, D. Lal,
R. Webb
Suman Bery, VPD

November 7, 1978

Redraft of your proposal, "Wage and
Employment Trends and Structures"

The following seem to be the major points made at yesterday's workshop, pertinent to a redraft of the proposal.

- a) Closer specification of the research proposal within the overall work program.
- b) Greater emphasis on the limited scope and ambitiousness of the data documentation/ compilation exercise (I think the major problem is page 13, especially paragraph 2. The discussion on pages 15-17 seems appropriately modest).
- c) Some discussion of the treatment that might be given to non-wage employment, if any.
- d) A more explicit justification for why Research Committee, rather than Regional, funding is appropriate for the country studies, since the analyses to be undertaken appear to be quite disparate and country specific. In addition, I would request that the budget in the proposal be shifted toward FY80 to the degree possible in view of the present stringency on FY79 funds.

As agreed earlier, please let me have the finalized version of the proposal (including completed cover sheets) by Monday, November 13, for forwarding to the review panel. I anticipate that the panel meeting will take place on November 17. This will be confirmed with you later.

cc: Mr. B. King
Mr. B. Balassa
Mr. L. deAzcarate

SKBery:lt

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: November 7, 1978

FROM: Suman Bery, VPD

SUBJECT: Forthcoming Research Committee Meeting

1. The Research Committee will hold its next meeting on December 18. Following this meeting it is expected to meet in mid-February. Proposals to be considered at the February meeting should be submitted in a form suitable for workshop discussion by Friday, December 1, 1978. Sponsors are requested to provide this office with 20 copies of the draft proposal for workshop distribution.

2. Following the workshop discussions, proposals in final form should reach this office by Friday, January 5, 1979, for formal review by an ad hoc panel prior to Research Committee consideration. Sponsors are requested to provide this office with the original and 10 copies of the final proposal.

3. I would appreciate your letting me know, as soon as possible, of the submissions you expect to make for the February meeting, as well as any estimates that you can provide of other proposals in the pipeline that may be submitted this fiscal year.

Distribution:

Research Committee Members
DPS, CPS Directors and Division Chiefs
Regional Chief Economists
Ms. L. Cleave
Ms. M. Hazzah

November 2, 1978

Mr. Assar Lindbeck
Director
Institute for International
Economic Studies
Fack
S-104 05
Stockholm 50
Sweden

Dear Assar,

Here, finally, are the notes on your meetings in Washington. I'm sorry for the delay in getting them to you, but I've been swamped with work for the General Panel, which met here last weekend. I'm sending copies of these notes to all panel members. I also enclose copies of the 1975 and 1977 reports on the research program, so that you can follow up on the references that Ben King gave you.

We have received first drafts from Donges and Nelson only so far; the latter was sent on to you two days ago. In addition you should have received a memo from Mr. Chenery, reporting on the first meeting of the General Panel, and indicating their requests for information and comment from the specialized panels.

We will be initiating travel arrangements for all of you shortly, and I would appreciate getting an idea from you of the format for your days here. I am currently assuming that the bulk of the time will be spent in internal meetings of the group. If you think that the group as a whole, or specific individuals should have further meetings with Bank staff, please let me know.

With best wishes,

Suman Bery

cc: Mr. Bela Balassa



Record Removal Notice

File Title Research Projects - General - Volume 3		Barcode No. 30067330		
Document Date Oct. 31, 1978	Document Type Memorandum			
Correspondents / Participants From: Suman Bery To: H Groen				
Subject / Title Prof. Edmar Bacha				
Exception(s) Personal Information				
Additional Comments		<p>The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information or other disclosure policies of the World Bank Group.</p> <table border="1"><tr><td>Withdrawn by Ann May</td><td>Date August 04, 2022</td></tr></table>	Withdrawn by Ann May	Date August 04, 2022
Withdrawn by Ann May	Date August 04, 2022			

OFFICE MEMORANDUM

TO: Supervisors of 'External' Research Projects DATE: October 30, 1978
FROM: Suman Bery, VPD
SUBJECT: Abstracts of Current Studies

Attached for final approval are the galley proofs of the narrative on your research project. While there is no suggestion that major editorial revisions be undertaken at this stage, updated information on items such as completion dates and additional publications can still be included.

If I have not heard from you by Friday, November 3, I will assume the present draft is acceptable.

Attachment:

SKBery:lt

Distribution below.

October 27, 1978

Bela Balassa, VPD

Research Allocations, FY79

1. The attached lists show the revised financial allocations for all research projects in your department. These do not, however, incorporate research projects approved at the September 22nd meeting of the Research Committee.
2. Table 1 summarizes authorizations and expenditures for each project from FY76 onward. The "total authorization" for each project, which refers to the total amount authorized for FY76 and all subsequent years without further submission to the Research Committee, appears in Column 1. Expenses in FY76, FY77, and FY78 are subtracted, and the remainder is available for commitment in FY79 (Column 5) unless there are already commitments for FY80 or beyond (Column 6).
3. Table 2 provides a breakdown of FY78 expenses into disbursements and accruals, and shows the adjustments made for over- or underdisbursements against FY77 accruals. Column 6, Table 2 is thus the same as Column 4, Table 1. Funds available for commitment in FY79 (Column 99--the same as Column 5, Table 1) are derived by adjusting the existing FY79 authorization, if any, for performance in FY78.
4. Project supervisors should consider carefully whether a portion of the funds shown as available during FY79 (Column 5, Table 1) might not be required until later. If they would suggest a different allocation of remaining funds than that shown in Columns 5 and 6, a word to this office as soon as possible would be appreciated.
5. Supervisors are further reminded that commitments in excess of the total authorization will not be approved unless a memorandum is sent to the Secretary of the Research Committee, stating the reasons.

Attachments

Distribution: (See next page)

MAHazzah:tr

Distribution:

DRC: (List 1) Mr. Duloy
Ms. Stout

EPD: (List 2) Mrs. Hughes
Ms. Hidalgo-Gato

DED: (List 3) Mr. King
Mr. Stoutjesdijk
Mr. Lowther

CPS: (List 4) Messrs. Habte, Zymelman, Futagami, Heyneman,
R. Gomez, Willoughby, Harral,
Jaycox, Rathnam, Yudelman, Hotes,
Donaldson, Scandizzo, Verrart,
Rovani, Golloday, S. Bhatnagar

Regions: (List 5) Mr. Serageldin, Ms. Duani
Messrs. Bachmann, Greene, Jayarajah, Bergsman
Jayarajah, Bergsman

All lists: Messrs. Doud, Panickaveetil, S. Perch,
Bery
Mrs. Stone, Mrs. Hazzah

Mr. Hollis B. Chenery

October 27, 1978

Suman Bery

Abstracts 1978: Clearance of Drafts

I attach galley proofs of this year's abstracts for your comments and approval. While project supervisors have had an opportunity to examine earlier drafts, this version is also being sent to them for final approval and possible updating.

Attachment

cc: Mr. B. Balassa

SKBery:lt

OFFICE MEMORANDUM

TO: Distribution below.

DATE: October 27, 1978

FROM: Bela Balassa, VPD

SUBJECT: Research Allocations, FY79

1. The attached lists show the revised financial allocations for all research projects in your department. These do not, however, incorporate research projects approved at the September 22nd meeting of the Research Committee.

2. Table 1 summarizes authorizations and expenditures for each project from FY76 onward. The "total authorization" for each project, which refers to the total amount authorized for FY76 and all subsequent years without further submission to the Research Committee, appears in Column 1. Expenses in FY76, FY77, and FY78 are subtracted, and the remainder is available for commitment in FY79 (Column 5) unless there are already commitments for FY80 or beyond (Column 6).

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4. Project supervisors should consider carefully whether a portion of the funds shown as available during FY79 (Column 5, Table 1) might not be required until later. If they would suggest a different allocation of remaining funds than that shown in Columns 5 and 6, a word to this office as soon as possible would be appreciated.

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MAHazzah:tr

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Mr. Stoutjesdijk
Mr. Lowther

CPS: (List 4) Messrs. Habte, Zymelman, Futagami, Heyneman,
R. Gomez, Willoughby, Harral,
Jaycox, Rathnam, Yudelman, Hotes,
Donaldson, Scandizzo, Verrart,
Rovani, Golloday, S. Bhatnagar

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Messrs. Bachmann, Greene, Jayarajah, Bergsman

All lists: Messrs. Doud, Panickaveetil, S. Perch,
Bery
Mrs. Stone, Mrs. Hazzah

OFFICE MEMORANDUM

Research - General

TO: Research Advisory Panel

DATE: October 25, 1978

FROM: Alan Gelb, VPD

*AGelb*SUBJECT: Current Status of Panels

1. Commodities: First meeting held July 10-14;
Second meeting planned for February 79.
2. Transportation: First meeting held July 10-15;
Second meeting, October 30 - November 3.
3. Trade and Industry: First meeting held July 17-20;
Second meeting planned November 30 - December 2.
4. Agriculture: First meeting held September 7-15;
Second meeting planned December 11-15.
5. Public Utilities: First meeting October 17-19;
Second meeting planned for February 79.
6. Income Distribution and Employment: Panel report
distributed to EDs June 78 (SecM78-493).
Research Committee discussed Panel's
recommendations June 27, 1978.
7. Education: Panel members have visited several countries.
Panel meets October 30 - November 1 in Washington;
draft Panel report is currently being circulated.
A report is expected in November.

AGelb:tr

OFFICE MEMORANDUM

TO: Those Listed Below

FROM: Suman Bery, VPD *SB*

SUBJECT: Draft Research Proposal on 'Wage and Employment Trends and Structures'

DATE: November 1, 1978

You are invited to participate in a workshop discussion of the attached draft research proposal. The workshop will be held in Room K-4500 at 4:00 p.m. on Monday, November 6.

Attachment

Distribution: Messrs. L. de Azcarate
R. Gulhati
P. Knight
G. Pfeffermann
T.N. Srinivasan
J. Wall
R. Moran
L. Westphal
R. Mohan
M. Durdag
B. Balassa
A. Gelb
Ms. O. Meesook

cc: Messrs. M. Leiserson
S. Bose
D. Lal
R. Webb
A. Stoutjesdijk
H. Hughes
B. King
J. Duloy
G. Pyatt
M. Selowsky
S.E. Lee

SKBery:lt

THE WORLD BANK

INFORMATION CENTER
ROUTING SLIP

DATE: 11/7/78

NAME

ROOM NO.

(1) MR. Van Gent

D905

(2) NRIC

F338

In accordance with Administrative Manual Statement No. 5.01, will you please:

- ☐ Initial the attached to indicate that it has been released for filing.
- ☐ Indicate the loan, credit, investment or project to which the attached refers.
- ☒ Indicate the organization, meeting, research study (RPO No.) to which the attached refers.
- ☐ Forward the attachment referred to in the attached correspondence.
- ☐ Indicate the date of the covering letter of the attached.
- ☐ Prepare a summary translation of the attached.
- ☐ If you wish the attached "confidential" material placed in a Safe, please indicate:
- who is authorized to see it
 - when it can be declassified
- ☐ Prepare a typed version of the attached and return both
- ☐ Other:

COMMENTS:

Thank you

FROM:

ROOM NO.:

EXTENSION:

TAT

Class of Service: **TELEX**

Date: **OCTOBER 24, 1978**

Telex No.:

Originators Ext: **75304**

12

87394

10

Research - General

0 **START
HERE**
1 **TO**

EMANUEL DE KADT, THE UNIVERSITY OF SUSSEX, ANDREW COHEN BLDG.,
FALMER, BRIGHTON ENL 9RE, ENGLAND

CITY/COUNTRY

MESSAGE
NO.:

4
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REURTEL OCTOBER 24 MESSRS. TOLBERT AND MITCHELL PRESENTLY
ON MISSION. YOUR LETTER OCTOBER 20 NOT YET RECEIVED. IF
LETTER DOES NOT CONTAIN SPECIFIC DATES FOR YOUR COMING TO
WASHINGTON EARLY NOVEMBER PLEASE CABLE SPECIFIC PROPOSAL SO
THAT MR. TOLBERT CAN REPLY UPON HIS RETURN ON OCTOBER 30.
REGARDS VAN GENT

**END
OF
TEXT**

NOT TO BE TRANSMITTED

SUBJECT: *TOURISM RESEARCH*
Social Impact Study

CLEARANCES AND COPY DISTRIBUTION:

cc: Messrs. Tolbert, Mitchell, o/r

DRAFTED BY:

M.M. VAN GENT :bw

AUTHORIZED BY (Name and Signature):

M.M. VAN GENT - Chief Division I

DEPARTMENT:

TOURISM PROJECTS

SECTION BELOW FOR USE OF CABLE SECTION
CHECKED FOR DISPATCH

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: October 24, 1978

FROM: Suman Bery, VPD *SB*SUBJECT: Workshop on Research Proposal "The Costs and Effects of Distance Teaching for Nonformal Education"

You are invited to participate in an informal discussion of the attached research proposal, which will be held in Room A-520 at 9:30 a.m. on November 3, 1978.

Attachment

Distribution:

Messrs. B. Balassa
B. Waide
B.B. King
H. Aklilu
A. ter Weele
S. Reutlinger
R. Sabot
J. Bamberger
D. Papageorgiou
S. Yusuf
M. Cernea
C. Weiss
F. Lethem
B. Woods
F.H. Yun
D. Radel
S. Futagami
D. Jamison

SKBery:lt

OFFICE MEMORANDUM

TO: Mr. Hollis B. Chenery

DATE: October 23, 1978

FROM: Suman Bery *SKB*SUBJECT: Timetable for draft reports by Specialized Panels

1. The following is the current schedule for reports by the Specialized Research Advisory Panels:

Agriculture and Rural Development

Draft report expected to be prepared at December meetings and available for circulation by end December.

Commodities

Draft report to be prepared by Chairman at beginning of January. Panel will meet again in Washington end January, early February, 1979.

Industrial Development and Trade

Panel will prepare draft in Washington end November. Draft for circulation should be available mid December.

Public Utilities

Complete draft will be prepared at second meeting of Panel, February 12 to 18, 1979.

Transportation

First draft prepared. Second meeting of panel at end-October.

2. Detailed terms of reference and work programs are available for the Industrial Development and Trade, Public Utilities and Transportation Panels, and are attached.

Attachments:

SKBery:lt

Res. General

Mr. G. Pyatt, DRC

October 23, 1978

Suman Bery, VPD

Meeting with the General Research
Advisory Panel

This is to confirm your meeting with the General Panel at 4:30 p.m. on Thursday, October 26 in the DRC Conference Room (K-3700).

A copy of the Panel's draft terms of reference and biodata of the Panel members are attached for your information.

Attachments

cc: Mr. Balassa

SKBery:lt

Mrs. H. Hughes, EPD

October 23, 1978

Suman Bery, VPD

Meeting with the General Research
Advisory Panel

This is to confirm your meeting with the General Panel at 2:15 p.m. on Thursday, October 26 in the DRC Conference Room (K-3700).

A copy of the Panel's draft terms of reference and biodata of the Panel members are attached for your information.

Attachments

cc: Mr. Balassa

SKBery:lt

Mr. B.B. King, DED

October 23, 1978

Suman Bery, VPD

Meeting with the General Research
Advisory Panel

This is to confirm your meeting with the General Panel at 3:15 p.m. on Thursday, October 26 in the DRC Conference Room (K-3700).

A copy of the Panel's draft terms of reference and biodata of the Panel members are attached for your information.

Attachments:

cc: Mr. Balassa

SKBery:lt

Class of Service: **LT** Date: **OCTOBER 16, 1978**Telex No.: _____ Originators Ext: **76002**

12

*LT/Rest**Research. General*0 START
HERE

1 TO

PROFESSOR O. ABOYADE, VICE-CHANCELLOR, UNIVIFE, ILE-IFE

CITY/COUNTRY

OYO, NIGERIA

MESSAGE
NO.:

REURCAB OCTOBER 14 TO CHENERY STOP PLEASE NOTE THAT MEETINGS

OF GENERAL PANEL WILL START MORNING OCTOBER 26 STOP WOULD

GREATLY APPRECIATE YOUR ARRIVING 25 AFTERNOON TO REVIEW

MATERIALS AND PARTICIPATE FULLY IN THURSDAY MEETINGS STOP

HOTEL RESERVATIONS ALREADY MADE EMBASSY ROW HOTEL 2015

MASSACHUSETTS AVENUE, NORTHWEST OCTOBER 25 TO 29

SUMAN BERY
INTBAFRAD21 END
OF
TEXT
22

NOT TO BE TRANSMITTED

SUBJECT:

General Research Advisory Panel

DRAFTED BY:

S. Bery

CLEARANCES AND COPY DISTRIBUTION:

AUTHORIZED BY (Name and Signature):

DEPARTMENT:

VPD

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COMMUNICATIONS
SECTION

Res. General

The World Bank / 1818 H Street, N.W., Washington, D.C. 20433, U.S.A. • Telephone: (202) 393-6360 • Cables: INTBAFRAD

October 11, 1978

Professor Juergen B. Donges
The Kiel Institute of World
Economics
P.O. Box 4309
D-2300 Kiel 1
Federal Republic of Germany

Dear Professor Donges:

I enclose material referred to in the RAPIDE Report in which you have expressed interest. Most of them have come to light and I am sending you what is now available.

Working Papers (WPs) 243, 260, 278 are enclosed. Many of the papers listed are actually outputs of the research projects you have indicated.

- 670-40 - WP 151 is out of print.
- 670-43 - Output is not yet available.
- 670-45 - WPs 198, 211, 278 enclosed; 197 (out of print).
- 670-84 - Output is contained in the Fei-Ranis-Kuo manuscript which is enclosed.
- 670-90 - WP 237 is enclosed.
- 670-94 - A copy of the Anand paper is enclosed.
- 671-06 - WP 234 enclosed.
- 671-08 - appear to have generated no output yet.
- 671-30 - appear to have generated no output yet.
- 671-31 - enclosed is manuscript of Sabot's book.
This includes the Stiglitz, Lipton and Schuh papers.
- 671-39 - draft report by D. Anderson is enclosed.

The papers by Stern, Lal, Berry and Sabot, Webb, Pyatt and Round and the Anderson-Leiserson report are enclosed.

This leaves the Beenstock and Mazumdar paper, (I believe the last is related to 670-43) and the IDF report to come. I shall try to obtain them for you.

Yours sincerely,

Alan Gelb

Alan Gelb

Research General

OFFICE MEMORANDUM

TO: Research Committee Members

DATE: October 10, 1978

FROM: Suman Bery, VPD

SKB

SUBJECT: Minutes of the Meeting on September 22, 1978

1. Present at the meeting were Messrs. Balassa (Acting Research Adviser and Chairman), de Azcarate, Holsen, King, Lerda, Picciotto, Turnham, Waide, Walters and Wood. Mr. van der Tak was present for part of the meeting.

International Study of the Retention of Literacy
and Numeracy (Stage II: Egypt Case Study)
(Continuation of RPO 671-55)

2. The proposal was presented by Mr. van der Tak, Chairman of the review panel, who said that the importance of the subject was not disputed by the panel. There had, however, been controversy on the analytic design that was appropriate in order to achieve the objectives of the research. Initial drafts of the proposal had envisaged a single round of testing and surveying and had expected to analyze the data on a cross-sectional basis. Participants at various workshops as well as members of the review panel had urged the importance of re-testing some of the students identified in the first round, in order to permit adequate control for a variety of background and environmental factors. In response to these observations the project sponsors had agreed to include a retest in the study design. In order to provide funds for this retest they had agreed to reduce the size of the sample of schools to be surveyed in the first round. The proponents of the longitudinal approach were satisfied by this outcome. Mr. van der Tak noted that certain organizational issues on the study were still not fully resolved.

3. In the ensuing discussion general support was expressed for the aims of the proposal. Mr. Balassa noted that this was a case where the new workshop format had proved useful in clarifying the objectives of the research and modifying the methodology. There was concern expressed by committee members on the timing of the project and particular concern about the over-commitment of the time of one of the principal analysts on the project. A question was also raised about the

scale of the demands represented by the project, particularly in view of the strained budgetary situation.

4. On the specific organizational questions raised by Mr. van der Tak, there was general agreement that the substantial involvement of Mr. Hartley of the Development Economics Department in the statistical design and data analysis would be desirable. It was further suggested that a steering group which included staff from the departments be appointed to oversee the progress of the project.

5. After further discussion the committee agreed to accept the recommendations of the review panel and to approve the proposal in its revised form including a second round of testing, provided adequate funds were available and provided that Mr. Hartley joined Mr. Heyneman as team members responsible for statistical design and data analysis on the project. The committee asked that a steering group be formed which included representatives from the various departments, to oversee the progress of the study and to ensure adequate coordination between the departments involved in the execution of the study. The committee also suggested that target completion dates be reconsidered in light of the retesting now included in the proposal.

Resource Availability in FY79

6. Mr. Balassa drew the attention of the committee to the substantial overcommitment of FY79 funds that had already occurred, and asked Mr. Bery to explain the origins of the problem. Mr. Bery said that the major problem was the slippage of expenditure originally budgeted for FY78 into FY79, particularly on some of the larger projects. The resulting underexpenditure in FY78 had resulted in funds being lost to the program while the carryforward of commitments into FY79 when combined with prior commitments for FY79 had resulted in the present overcommitment of FY79 resources. The figures for slippage in FY78 expenditure and hence the degree of overcommitment in FY79 had only recently been finalized. It was now intended to undertake a review to determine whether certain funds could be decommitted for FY79 and phased into FY80. Committee members agreed that explicit overprogramming needed to be kept within reasonable bounds to ensure that overexpenditure did not occur.

They also agreed that in the case of proposals present before them, the best procedure was to indicate in each case the committee's general support or lack of it, and to indicate their rankings, leaving the actual authorizations to be determined in the light of budgetary availability.

School Resources and Educational Quality

7. Mr. Walters, panel chairman, said that this proposal had been thought worthy of support for a variety of reasons. The Uganda study, conducted under Phase I of the project, had found that school resources, including textbooks, did have a significant positive effect on academic achievement. These results were contrary to the conventional wisdom prevalent for the developed world; their confirmation or refutation on a larger scale would be worthwhile and would have definite implications for Bank lending policy. An attractive feature of the proposal was that it intended to use existing data rather than undertaking primary data generation. The rate of return on research committee funds ought therefore to be very high. The only major concern felt by the panel was that inadequate time might be being made available for the detailed consideration that the analyses deserved.

8. In the committee's discussion questions were raised on the intrinsic value of the work to the Bank, the coherence and relationship between the various elements being proposed and the phasing and timing of the additional work being contemplated. Some committee members were skeptical as to whether there would be genuine 'value added' as a result of the proposed research while others felt both that the questions being asked were of substantial policy interest, and that the exploitation of existing data sources to answer these questions should be supported. Some members were uncomfortable about the diffuseness of the proposal before them, had doubts about the comparability of the results that would be yielded, and were not convinced that work on all fronts needed to proceed simultaneously, particularly in view of the time pressure that had been mentioned by Mr. Walters. The discussion therefore turned to components of the work which committee members felt to be of high priority. There was a general view that the most interesting data set to be analysed was the data being generated by the Philippine textbook project and that the researchers would do best by concentrating on this work first. This view

was, however, opposed by some members who felt there were significant benefits to be derived from attacking the basic question on a variety of fronts. In conclusion the committee agreed to authorize work only on the Philippine component of the proposal at this stage.

Export of Manpower from Bangladesh and Pakistan
to the Middle East

9. Introducing the proposal, Mr. King reported that the principal reservations of the panel he had chaired were regarding the cost benefit framework to be adopted in the proposed study. The proposal had been through several reviews. Over the course of these it had been agreed that a common methodology for the cost benefit analysis be used in both country case studies. However, it had also been recognized that the issues were intrinsically difficult, and that the precise approach that could be taken depended substantially upon the data that were available. Accordingly, the panel had felt it important that a steering group be appointed for the project, and that the chief methodological consultant, Mr. Guisinger, discuss these conceptual issues with the steering group at an early stage. Provided this was done the panel was prepared to recommend approval of the proposal to the Research Committee.

10. Supplementing Mr. King's presentation, Mr. Waide commented that there had been steady improvement in the proposal through the review process and said that the project sponsors were in full agreement with the panel on the need for a detailed articulation of the methodology before launching into the heart of the work. However, he wished to request the committee that the project be permitted to proceed ahead directly to its second stage once the methodology had been finalized and accepted by the steering group instead of an approval of the first phase only, which would involve a return to the Research Committee for further approval.

11. In the discussion of the proposal some questions were asked as to the operational significance of the proposed research. Responding Mr. Waide said that the countries concerned had an urgent need to decide upon their overall policies towards temporary migration, which had become a very important source of foreign exchange for them. They were still unclear and the Bank was equally unclear on whether migration should be supported or restricted, whether explicit training schemes were warranted to encourage the flow of migrants, and whether existing policies on the collection and use of remittances were adequate. Mr. Picciotto commented

that the conclusions of this research would have a direct bearing on the design and justification of training projects currently proposed.

12. Some questions were also raised on the capacity of the principal consulting organization, PIDE, to execute the tasks to be assigned to it. In response, Mr. Waide acknowledged that there were weaknesses in the existing PIDE set up. It was expected, however, that the new Director would act to improve the quality of the institution markedly. It was also thought that Mr. Guisinger's prior links with PIDE would be a substantial force for getting the best out of the organization.

13. The committee agreed to accept the panel's recommendation and to support the project, subject to funds being available. It endorsed the panel's suggestion that a steering group be established to oversee the progress of the project, and that Mr. Guisinger be exposed to the methodological reservations expressed by the panel at an early stage so as to address these issues explicitly in the work on Phase I. Continuation of the project into the second phase would be contingent on approval of the results of the first phase by the steering group.

Penetration of Japanese, Canadian and
Australian Markets by LDC Manufactures

14. Introducing the proposal, Mr. Holsen said that the country studies to be funded were to employ a methodology similar to that being undertaken in Market Penetration studies of the U.S. and of other OECD countries under Research Project 671-66 and 671-67. The extension of the work to Australia, Japan and Canada seemed sensible and he recommended the proposal for the committee's support. He wished to point out, however, that the stated budget in the proposal was charged fairly heavily to FY79 and this did not seem in accordance with the phasing of the project envisaged in the detailed submission.

15. Commenting on the proposal, Mr. Walters said that he was surprised to see no mention of the work done by the tariff board of Australia on market penetration. This was probably the most extensive work done on market penetration anywhere and it was clearly important that the group of researchers identified in the present proposal be fully aware of what had already been done. On the Japanese study, Mr. Balassa noted that the objective circumstances were somewhat different from those facing other countries, in

October 4, 1978

that the problem was one of too little penetration rather than too much. In this connection he wondered whether it was entirely appropriate for full responsibility to be entrusted to the Japan Economic Research Organization (JERO), given that JERO was closely allied with the Ministry of Industrial Trade and Investment (MITI). He suggested that it might be useful to involve outside researchers capable of speaking Japanese in order to ensure that the analytic purposes of the research were adequately served.

16. The committee expressed its general support for the proposal and endorsed the comments of Mr. Walters and Mr. Balassa. It recommended that the scope for rephrasing the expenditure on the project be actively explored with the sponsors.

17. At the end of the discussion of the individual proposals, Mr. Balassa asked committee members to establish rankings for the proposals before them, in order to provide guidelines on how projects should be regarded following the budgetary review. The rankings were as follows:

Export of Manpower from Bangladesh and Pakistan	1st
Penetration of Developed Country Markets	2nd
Retention of Literacy and Numeracy	3rd
School Resources and Achievement	4th

18. Committee members were also asked to provide rankings considering just the Philippine component of the school resources study. In this vote the migration and penetration studies were again placed first and second respectively; however, the Philippine component of the school resources proposal was placed third and the retention proposal was placed fourth.

Determinants of Fertility in Egypt (Ref. No. 671-81)

19. Mr. Picciotto reported on the meeting of the steering committee on the project, "Determinants of Fertility in Egypt" of which he was chairman. He said that in approving the proposal the Research Committee had required that a steering committee review the proposed survey questionnaires and the

October 4, 1978

proposed methodology of analysis prepared by the investigators before releasing full funding. It was the judgement of the steering committee, which had included outside consultants and a representative from the Population Projects Department that there had been substantial progress made in articulating the goals of the study and the methodology to be used. The steering committee was, therefore, prepared to recommend release of the remaining funds subject to the continuation of the involvement of outside consultants in the preparation of the detailed survey module, and thereafter into the elaboration of the analysis.

20. The Research Committee accepted the steering committee's recommendation that full funding be released as per the initial budget request. It requested that the steering group continue to oversee the progress of the project for the time being and that Mr. Picciotto continue as committee chairman. The costs of consultants involved in the steering committee ought from now on to be charged against the project budget.

October 4, 1978

BY POUCH

Mr. Nurul Islam
Assistant Director General
Economic and Social Department
Food and Agriculture Organization
of the United Nations
Rome, Italy

Dear Mr. Nurul Islam

In preparation for the first meeting of the General Research Advisory Panel in Washington, D.C. on October 26-28, I enclose various materials to provide initial information on the Bank and its research program and to provide a general indication of issues on which the panel's guidance and advice are sought. A list of documents enclosed is at Annex 1. A brief guide to them follows. enc.

General information on the Bank is provided by the leaflet "The World Bank" and by the World Bank's Annual Report for 1978. You should already have received a copy of the Bank's World Development Report 1978.

Information on Bank research is provided by the two most recent reports on the World Bank Research Program. Your attention is particularly drawn to the description of the research cycle on pp. 4-10 of the 1977 report and by the case studies provided in Chapter 3 of both reports. The genesis and evolution of the Bank's research program is outlined in the memorandum "The Research Committee - An Informal Early History". Detailed descriptions of research projects currently underway are provided in the Abstracts of Current Studies. Since the last published issue is a year old, it is supplemented by summary narratives of research projects that have been added to the program in the last year. Output from the Bank's research program as well as other documents produced by the Bank for public circulation are described in the Catalog of Publications.

Draft terms of reference for the panel's work were sent to you earlier but are again enclosed for your convenience. Some issues of particular concern to the Board of Executive Directors of the Bank are discussed in the following documents:

the 'Supplementary Statement' of March 2, 1978 addressed to the Joint Audit Committee of the Executive Directors, the 'Suggestions by Directors' of March 7, 1978, and the 'Answers to Mr. H. Janssen's questions' of March 20, 1978.

As you are aware, the General Panel will be in a position to benefit from the findings and observations of six specialized research advisory panels which are examining Bank research in the areas of agriculture and rural development, industrial development and trade, income distribution and employment, public utilities, commodities and transportation. In addition external advisory panels have examined the full range of Bank activities in the fields of population and education. This review includes a discussion of the Bank's research activities in these fields and may be of interest to the General Panel.

The final report of the Research Advisory Panel on Income Distribution and Employment has been submitted and is enclosed. We expect that draft reports of the remaining specialized research advisory panels will be provided to you in late December or early January prior to the second meeting of the General Panel. A schedule of the meetings of these panels is enclosed as well as lists of panel members.

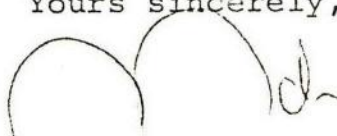
Extra copies of all these materials will be available in Washington. In addition to these materials special briefing papers are being prepared to assist the panel in its work. These will be sent to you shortly.

Hotel reservations have been made for you at the Embassy Row Hotel at 2015 Massachusetts Avenue, N.W. from Wednesday, October 25 through Sunday, October 29.

In case you have any enquiries my telephone number at the World Bank is (202) 676-1998; that of Suman Bery, secretary to the panel is (202) 477-6003. The Bank's telex no. is 440098 and the cable address is INTBAFRAD.

With best wishes

Yours sincerely,



Bela Balassa
Acting Research Adviser
Research Committee

cc: Research Committee Members
Mr. A. Karaosmanoglu

SKBery:lt